* **IN THE HIGH COURT OF DELHI AT NEW DELHI**

% ***Judgment Reserved on: 30th May, 2023***
Judgment Delivered on: 28th March, 2024

\+ CS(COMM) 65/2016

LAVA INTERNATIONAL LIMITED ..... Plaintiff
Through: Mr. Arun Kumar Varma, Senior Advocate with Mr. Abhay Raj Varma, Ms. Priyanka Ghosh and Mr. Arjun Rekhi, Advocates with Mr. Nishant Nandan and Mr. Kush Srivastava, Authorised Representatives.

versus

TELEFONAKTIEBOLAGET LM ERICSSON ..... Defendant
Through: Mr. Sandeep Sethi, Senior Advocate with Ms. Saya Choudhary Kapur, Mr. Ashutosh Kumar, Mr. Devanshu Khanna, Ms. Vrinda Bagaria, Mr. Vinod Chauhan, Ms. Radhika Pareva, Mr. Vivek Ranjan, Mr. Vikram Singh Dalal and Ms. Tanvi Tewari, Advocates.

\+ CS(COMM) 1148/2016 and CC(COMM) 14/2017

TELEFONAKTIEBOLAGET LM ERICSSON(PUBL) ..... Plaintiff
Through: Mr. Sandeep Sethi, Senior Advocate with Ms. Saya Choudhary Kapur, Mr. Ashutosh Kumar, Ms. Vrinda Bagaria, Mr. Devanshu Khanna, Mr. Vinod Chauhan, Ms. Radhika Pareva, Mr. Vivek Ranjan, Mr. Vikram Singh Dalal and Ms. Tanvi Tewari, Advocates.

versus

LAVA INTERNATIONAL LTD ..... Defendant

Through: Mr. Arun Kumar Varma, Senior Advocate with Mr. Abhay Raj Varma, Ms. Priyanka Ghosh and Mr. Arjun Rekhi, Advocates with Mr. Nishant Nandan and Mr. Kush Srivastava, Authorised Representatives.

CORAM:
HON'BLE MR. JUSTICE AMIT BANSAL

JUDGMENT

1. INTRODUCTION

1. The evolution of mobile telecommunication in India has made an indispensable contribution to the democratisation of access to information and digital services, bringing about profound changes in how people communicate, transact, and access information. It set the stage for a more connected and digitally empowered India, as we continue to embrace newer technologies in the coming years. Therefore, mobile telecommunication in India has been marked by rapid growth, increased mobile penetration and significant technological advancements.

2. The evolution of mobile phones has been a remarkable journey of technological advancement. Starting from the bulky and analogue mobile phones of the 1990s, we have witnessed a transition to sleek and multifunctional smartphones with powerful computing capabilities. Alongside this, telecommunications networks have evolved from basic voice-only systems like 2G with moderate internet capabilities in the form of GPRS and EDGE, to high-speed data networks like 3G, 4G LTE and 5G, enabling seamless communication, wider internet access and a myriad of applications. This evolution has not only transformed the way we connect with each other but has also reshaped industries, economies, and societies by fostering global connectivity and enabling innovations that were once unimaginable.

3. This transformative journey of mobile phones and telecom networks has been supported by the development and implementation of '*Standards'*. '*Standards*' are defined as agreed-upon specifications or protocols that ensure products, services and systems are compatible and interoperable across various environments and technologies. Standards have facilitated the

seamless integration of new technologies, such as the transition from 2G to 3G, 4G LTE, and now 5G. This enables devices to communicate more effectively, support a wider range of applications, and provide users with faster, more reliable internet access. Moreover, the standardization has played a pivotal role in ensuring that innovations in mobile technology can be adopted universally, allowing consumers worldwide to benefit from the latest advancements. This foundational work paves the way for Standard Setting Organizations (SSOs) to continue shaping the future of telecommunications, ensuring that the industry remains cohesive, forward-looking and universally accessible.

4. SSOs such as European Telecommunication Standards Institute (ETSI), Institute of Electrical and Electronics Engineers (IEEE), International Telecommunication Union (ITU), Bureau of Indian Standards (BIS) and Telecommunications Standards Development Society, India (TSDSI) set technological standards for the telecommunications industry including standards that are relevant to interoperability of mobile phone devices with telecommunication networks. Telecommunication devices such as cellular phone, handsets, tablets and dongles, which have certain components embedded in them to enable them to work on 2G/3G/4G/5G networks worldwide. The manufacturers of the aforesaid devices are required to comply with these technical standards. This is said to be possible only by a certain set of patents referred to as Standard Essential Patents (SEPs).

5. SEPs are patents that are deemed essential for the implementation of a particular industry standard, such as those used in telecommunication,

electronics or other technology sectors. These patents are typically assigned in the name of companies and individuals who have contributed to the development of a standard and they are considered essential because any product or technology complying with that standard must incorporate that patented technology. In short, when a patent covers a particular component/element/device/method corresponding to a technical specification for a technology that forms a part of a standard, such a patent is regarded as an SEP for such standard. SEPs play a crucial role in promoting interoperability, competition and innovation within industries that rely on technical standards, while also ensuring that the patent holders are adequately compensated for their contributions to these standards.

6. It is important to note that not all patents related to a standard become SEPs and only those patents that are deemed essential for implementing the standard are classified as SEPs. The assignees of SEPs commit to certain licensing obligations that are referred to as FRAND terms, i.e., fair, reasonable and non-discriminatory terms. The process of determining essentiality and adherence to FRAND terms is essential to ensure that SEPs contribute to interoperability, competition and innovation within an industry while avoiding monopolistic practices or unfair licensing practices.

7. A patentee typically declares a patent to be an SEP through a formal declaration process, which involves notifying relevant SSO or in some cases industry consortiums of the patent's essentiality to a particular standard. Thus, an SEP can be said to be a patent that corresponds to an industry standard. Such a standard is mutually agreed by various service providers, equipment manufacturers and in some cases sectoral regulators and is

mandatorily implemented for a particular technology. Such standards are also recognised and implemented by the governments of the countries. For instance, the Department of Telecommunications, India (DoT), has recognized ETSI standards and ITU, TEC, 3GPP, 3GPP2, IETF, ANSI, EIA, TIA, and IS standards as approved standards for GSM, WCDMA, UMTS, and EDGE network and equipment providers and as a consequence, the same are required to be complied with by various device importers, manufacturers and sellers. This is meant to ensure that complete compatibility and interoperability is achieved.

8. In many cases, the manufacturers and sellers of the aforesaid devices are in a peculiar situation where they are compelled to ensure that their devices conform with international standards governing the manufacture of devices. The said compliance is possible only by using technologies, for which patents are held by other companies. Recognizing the effects of such a monopoly, SSOs require that in addition to disclosure of patents/patent applications prior to the adoption of a standard, its members undertake to grant irrevocable licenses to all implementers/users of the standards on FRAND terms.

9. In light of the aforesaid, various elements, components, products, technologies, apparatus that correspond to these standards are implemented by entities manufacturing and selling devices, which comply with GSM/WCDMA/UMTS standards related to 2G, EDGE and 3G networks.

10. With this background, I shall now proceed to decide both the captioned cross suits, i.e., **CS(COMM) 65/2016**, filed on behalf of Lava International Limited (hereinafter referred to as 'Lava') and

CS(COMM)1148/2016, filed on behalf Telefonaktiebolaget LM Ericsson (hereinafter referred to as 'Ericsson').

2. BRIEF FACTUAL MATRIX

11. Ericsson is engaged in the business of designing and manufacturing telecommunications equipment, setting up telecommunication networks and driving innovation in the field of telecommunications, data communications and mobile networks.

12. Ericsson claims to have a global portfolio of patents, a large number of which are SEPs, that are also used in implementation of various standards set by the ETSI and other SSOs. Ericsson's business involves licensing those patents to companies manufacturing and selling telecommunications equipment such as mobile phones and infrastructure. Ericsson's suit against Lava, i.e., CS(COMM)1148/2016 is based on infringement of eight SEPs relating to the following technology areas:

i. Adaptive Multi-Rate (AMR) speech codec – Codec that conserves use of bandwidth and enhances speech quality (AMR). AMR is used mandatorily in 3G enabled phones and at the option of an implementer/manufacturer in 2G enabled phones.

ii. Enhanced Data Rates for GSM Evolution (EDGE) – A transceiving unit for block automatic retransmission request (EDGE). EDGE is used in 2G standard compliant devices at the option of an implementer.

iii. Features in 3G – Multi service handling by a single mobile station and a mobile radio for use in a mobile radio communication system (3G).

13. Ericsson claims to be the registered owner of the eight suit patents that are the subject matter of the present suit. Five of the said patents bearing numbers IN 203034, IN 203036, IN 234157, IN 203686 and IN 213723 are referred to as the 'AMR Patents' as according to Ericsson they are essential for implementing the AMR Standard. The patent bearing number IN 241747 is referred to as the 'EDGE Patent' as the same is stated to be essential for implementing the EDGE standard and the patents bearing numbers IN 229632 and IN 240471 are referred to as the '3G Patents' as the said patents are stated to be essential to the 3G standard.

14. Lava is an Indian company, which is engaged in the business of selling mobile phones, dongles, storage devices and tablets. As stated by Lava, the aforesaid products are primarily manufactured in China and are subsequently imported to India.

15. It is pleaded by Ericsson that the suit patents are implemented by Lava in the aforesaid devices sold by Lava. Further, the AMR Patents as well as the EDGE Patent, correspond to optional, but widely implemented portions of the 2G standard.

16. It is the case of Ericsson that Ericsson offered to license its SEPs to Lava on FRAND terms and requested Lava to enter into negotiations and discussions for obtaining license. However, despite Ericsson's request to execute a FRAND license, Lava continued with its activities in India and failed to obtain any license from Ericsson on FRAND terms qua Ericsson's portfolio of SEPs.

17. On the other hand, it is the case of Lava that the suit patents are

neither valid in terms of the Patents Act, 1970 (hereinafter referred to as 'Patents Act') nor essential, rendering them unenforceable. Therefore, there cannot be any claim of infringement against Lava. Further, it is pleaded by Lava that Ericsson waived its rights to enforce any of its SEPs against entities like Lava since Lava imports and distributes its mobile phones and other devices that incorporate chipsets, which alone can be said to implement Ericsson's patents.

18. It is also stated that Ericsson failed to make a full and fair disclosure to Lava with regard to its SEPs and provide FRAND terms of licensing of its SEPs to Lava and accordingly committed breach of its FRAND obligations towards Lava. Ericsson also issued groundless threats of legal proceedings including infringement action in respect of its SEPs.

2.1. BACKGROUND OF PROCEEDINGS IN THE TWO SUITS

19. In 2015, Lava filed a suit against Ericsson, being CS (OS) 01/2015 before the District Court, Gautam Budh Nagar, Noida (hereinafter referred to as 'Noida Suit'), in which following reliefs were claimed:

> "*(a) Declare that the Defendant is estopped and/or has waived its right to enforce its Indian patents and/or patent applications which are and/or have been claimed by the Defendant to be essential to 2G and/or 3G standards, in view of:*
>
> > *(i) Defendant's strategy to not assert any of its claimed standard essential patents against manufacturers/designers of chipsets;*
> >
> > *(ii) Defendant's strategy to not assert any of its claimed standard essential patents in China against any manufacturer of mobile phone and tablet devices; and/or*

(iii) Due to Defendant's failure to timely disclose such patents and/or patent applications to ETSI;

(b) Declare that in view of its inequitable conduct the Defendant cannot enforce its patents which are and/or have been claimed by the Defendant to be essential to 2G and/or 3G standards, against the Plaintiff;

(c) Declare that the Defendant, as claimant of standard essential patents, is bound to publish its standard licensing terms and conditions;

In the alternative to prayer (a) and (b) above:

(i) Declare that the Defendant is bound to grant an irrevocable license under its standard essential patents, including patents which are essential and/or claimed to be essential by the Defendant to 2G and/or 3G standards, on fair, reasonable and non-discriminatory (FRAND) terms, to the Plaintiff herein;

(ii) Declare the fair, reasonable and non-discriminatory (FRAND) terms, including royalty rates, on which the Defendant should grant a license under its Indian patents and patent applications which are enforceable and essential to 2G and/or 3G standards, to the Plaintiff herein; and

(iii) Grant an injunction in mandatory terms directing the Defendant to license its Indian patents and patent applications which are enforceable and essential to 2G and/or 3G standards at the FRAND terms determined by this Hon'ble Court.

d) Declare that the threats of legal proceedings issued by the Defendant are unjustifiable;

e) Grant an injunction restraining the Defendant and their directors, representatives, agents, officials, employees and any other person acting under or on behalf of the Defendant from, in any manner issuing any groundless threats against the Plaintiff.

f) Pass such other and further orders as this Hon'ble Court may deem fit and proper in the facts and circumstances of the case."

20. On 19th March, 2015, Ericsson filed a suit against Lava before this court seeking the following reliefs:

"*i. A decree of Permanent Injunction be passed in favour of the Plaintiff and against the Defendant, its officers. Directors, Agents, Distributors and Customers restraining them from manufacturing/assembling, importing, selling, offering for sale, advertising including through their and third party websites, products (telephone instruments, mobile handsets, tablets, hand held devices, dongles etc.), including the models mentioned in paragraph 7 of the plaint and any future or other devices or models, that include the AMR, 3G EDGE technology/devices/apparatus as patented by the Plaintiff in suit patents IN 203034, IN 203036, IN 234157, IN 203686, 213723 (THE AMR PATENTS), IN 229632, IN 240471 (THE 3G PATENTS) AND IN 241747 (THE EDGE PATENT), so as to result in infringement of the said suit patents, until the Defendant has procured appropriate licenses from the Plaintiff;*

ii. A decree of damages of at least Rs. Fifty crores for the past sale be passed in favour of the Plaintiff and against the Defendant and the Defendant be also directed to render sales accounts qua the telecommunication devices (handsets, tablets, dongles etc.) sold by it in India that incorporated the Plaintiff's patented technology till date. The Plaintiff submits that the valuation of damages is in approximate figures and on the complete disclosure of the revenues earned by the Defendant, the Plaintiff undertakes to pay further court fee as may be determined by this Hon'ble Court.

iii. A decree be passed declaring that the rates offered by the Plaintiff qua its portfolio of Standard Essential Patents are FRAND in nature;

iv. An order for delivery up of infringing components/elements, semi-manufactured products/ parts, products manufactured using the patented technology/devices/apparatus including packaging, labels, brochures and other printed material for the purposes of destruction;

v. Costs of the suit be awarded to the Plaintiff;

vi. Any further order(s) which this Hon'ble Court may deem fit and proper in the interest of justice and equity be passed in favour of the Plaintiff and against the Defendant."

21. Subsequently in the said suit, a counter claim was filed by Lava on 28th July, 2015 seeking the following reliefs:

"*(a) Dismiss the Suit filed by the Plaintiff;*

(b) The claims of Indian Patent No. IN 203034, IN 203036, IN234157, IN 203686, IN 213723, IN 229632, IN 240471 and IN 241747 be revoked;

c) Cost may be awarded in favour of the Defendant/Counter Claimant;

d) Pass any other relief as this Hon'ble Court may deem fit and proper in the interest of justice."

22. On a Transfer Petition filed by Ericsson before the Supreme Court, being T.P.(C) NO. 1071/2016, the Supreme Court vide order dated 31st July, 2015, transferred the Noida Suit to this Court and it was renumbered as CS (COMM) 65/2016.

23. On 18th January, 2016, a submission was made on behalf of Lava before this Court that Lava does not wish to press the Noida Suit. This request was vehemently opposed by Ericsson and hence, Lava was given liberty to file an application seeking withdrawal of the Noida Suit. However, no such application was filed by Lava.

24. On 2nd February, 2016, the following consolidated issues were framed in both the suits:

"*1. Whether the plaintiff is owner of following patents:*

i. IN 203034 titled as "Linear Predictive Analysis by synthesis encoding method and encoder";
ii. IN 203036 titled as "Apparatus of producing from an original speech signal a plurality of parameters";
iii. IN 234157 titled as "A method of encoding/decoding multi-codebook fixed bitrate CELP signal block";
iv. IN 203686 titled as "Method and system for alternating transmission of codec mode information";
v. IN 213723 titled as "Method and apparatus for generating comfort noise in a speech decoder";
vi. IN 229632 titled as "Multi service handling by a Single Mobile Station";
vii. IN 240471 titled as "A mobile radio for use in a mobile radio communication system";
viii. IN 241747 titled as "A transceiving omit unit for block automatic retransmission request"; OPP

2. Whether the defendant is infringing the abovesaid suit patents? OPP

3. Whether the counter-claims of the defendant is barred? OPP

4. Whether the abovesaid suit patents are invalid in nature and are liable to be revoked in the light of the grounds raised by the defendant in its counter claim? OPD

5. Whether the plaintiff is entitled to a decree declaring that the rates offered by the plaintiff qua its portfolio of Standard Essential Patents are FRAND in nature as claimed? OPP

6. Whether the defendant is liable to be permanently injuncted from infringes the plaintiff's patents? OPP

7. Whether the plaintiff is entitled to damages or accounts the profits? If so, on what terms and for what period? OPP

8. Relief."

25. By an order passed on 1st March, 2016, this Court allowed an application filed by Ericsson seeking constitution of a 'Confidentiality Club' and directed the parties to file a list of not more than three lawyers and two expert witnesses, who alone would be entitled to see the confidential documents and would be bound by the confidentiality orders of this Court. The relevant extract of the said order is set out below:

"*14. Under these circumstances, it is directed that within one week, each party is directed to provide on an affidavit, a list of not more than three lawyers (who are not and have not been in-house lawyers of one of the parties) and not more than two external expert witnesses, who alone will be entitled to see the aforesaid confidential documents/patent license agreements.* ***They (members of club) would be bound by confidentiality orders passed by this Court and shall not make copies or disclose the contents of the said aforesaid confidential documents/patent license agreements to anyone else or anywhere else, including in other legal proceedings, oral and written communications to the press, blog publications etc., so that the spirit of the confidentiality regime would be preserved. <u>The inspection can only be done through the confidentiality club members and no copies will be made of such confidential documents/license agreements.</u> After the inspection, the aforesaid***

> ***confidential documents/patent license agreements be resealed and again deposited with the Registrar General of this Court.*** *It is also made clear that* ***during recordal of evidence with respect to aforesaid confidential documents/patent license agreements etc., only the members of the confidentiality club shall be present.*** *The proceedings of this Court, when the said documents are being looked at, would be in camera to the effect that only the members of the confidentiality club be permitted to be present.*"
>
> *(Emphasis supplied)*

26. The aforesaid order was challenged by Lava before the Supreme Court. The Supreme Court disposed of the SLP via order dated 1st April, 2016 while observing as follows:

> "*At the time of hearing of the petition, it has been submitted by the learned senior counsel appearing for the respondent-plaintiff that* ***the respondent is willing, upon being directed by the Court, to give copies of the documents to the petitioner-defendant by redacting the confidential information including the name of the parties. However, the rates will not be redacted****.*
>
> *In view of the above statement made by respondent, the learned senior counsel appearing for the petitioner seeks permission to withdraw the petition.*
>
> *In pursuance of the above statement, the respondent is directed to abide by the above statement at the time of trial.*
>
> *The documents shall be given by the respondent in the course of the day to the present petitioner. Cross-examination shall proceed further on Monday, the 4th April, 2016 in the High Court.*
>
> *The special leave petition is, accordingly, disposed of as withdrawn*."
>
> *(Emphasis supplied)*

27. Pursuant to this order, Ericsson filed various documents in sealed covers, including 54 licensing agreements entered into by Ericsson with the third parties.

28. Subsequently, on the basis of a *prima facie* finding that the suit patents were valid and that Lava was infringing the same, an interim injunction was passed against Lava via judgment dated 10th June, 2016,

restraining Lava from importing or selling its devices infringing Ericsson's patents. However, subject to Lava depositing a sum of Rs. 50 crores with the Registrar General of this Court by way of an FDR, the operation of the aforesaid judgment was to be stayed till the final disposal of the suit. Lava was also directed to file statement of accounts for the period from 2011 to 31st May, 2016 and thereafter, quarterly statements till the final judgment is delivered. The operative portion of the said judgment is reproduced below:

> "*114. For the reasons aforesaid given, the application filed by the plaintiff is allowed. The application filed by the defendant being I.A. No.16011/2015, which is false and frivolous, is dismissed as in that application, the defendant sought injunction against the plaintiff for stay of operation of suit patent and to restrain the plaintiff from claiming any right to the suit patent.* ***Once this court, prima facie, holds that the defendant is guilty of infringement, the patents are valid and no credible defence is shown by the defendant, the question of passing the said relief does not arise.*** *The said frivolous application filed by the defendant is dismissed with cost of Rs.50,000/- which shall be deposited by the defendant with the Prime Minister's National Relief Fund, within two weeks from today.* ***The present case is a fit case wherein the defendant is liable to be injuncted from manufacturing, importing, selling, offering for sale its devices including phones, tablets, dongles, etc. which infringe the plaintiff's patented technology. The order of injunction is passed accordingly****.*
>
> *115.* ***It is clarified that the said interim order would become operative w.e.f. 21st June, 2016. From that date onwards, the defendant shall not import mobiles under the patents and technology, which are subject of the suit patents, and not to sell the same in the market, directly or indirectly through agent, shopkeepers, dealers, distributors or any other person on its behalf. The defendant shall also not export the impugned goods.*** *All Custom Authorities in India are directed not to release the impugned mobile phones if received from overseas countries under technology of suit patents of the plaintiff to the defendant or any person on its behalf w.e.f. 21st June, 2016.* ***The interim order, which is passed on merit, would be subject to the condition that if the defendant, without prejudice, will deposit a sum of Rs.50 crores with the Registrar General of this Court by way of FDR as security amount on or before 20th June, 2016, the operation of interim order shall remain stayed till the final***

> ***disposal of the main suit.*** *In addition to that, under those circumstances, the defendant shall also file the statement of accounts for the period of 2011 to 31st May, 2016 before Court by 10th July, 2016 and continue to file the same every quarterly till the final judgment is delivered in the main suit. The plaintiff would be also at liberty to move an application for further deposit, in case final hearing of the suit is delayed on account of the defendant's side*."
>
> *(Emphasis supplied)*

29. The aforesaid judgment was taken in appeal by Lava. Vide order dated 22nd June, 2016 read with order dated 22nd July, 2016, the Division Bench of this Court modified the aforesaid order by directing Lava to deposit a sum of Rs. 30 crores with the Registrar General of this Court. Pursuant thereto, Lava deposited a sum of Rs. 30 crores in the form of an FDR with the Registrar General of this Court. Resultantly, the interim injunction against Lava remained in abeyance till the final adjudication of the suits. Further, the Division Bench directed that the statement of accounts shall be filed by Lava in a sealed cover. Pursuant thereto, Lava filed statement of accounts till March, 2022.

30. Vide order dated 26th September, 2024, the Division Bench, disposed of the appeal, with the direction that the amount deposited in the FDR shall be subject to the outcome of CS(COMM) 1148/2016, i.e., one of the present suits. The said order is set out below:

> "*This appeal is directed against the order of the Ld. Single Judge who had ordered the defendant/appellant to deposit Rs.50 crores as interim licence fee. During the pendency of the present appeal, this court had reduced the amount to Rs.30 crores as an interim measure and at the same time clarified the Ld. Single Judge's observation permitting the plaintiff to move for further deposit in case final hearing was delayed on account of the defendant's conduct. The evidence of the parties in the deposition of the witnesses had been concluded. It is submitted that the Ld. Single Judge has scheduled the hearing from 03.12.2018 onwards. In the light of these developments, the court is of the opinion that the interim order made on*

22.07.2016 should be and is hereby made absolute. This is of course subject to the final outcome of the proceedings in the suit. ***The deposit made shall also await appropriation/disbursement, as the case may be, by the final judgment of the Ld. Single Judge and any consequential directions made in the course of CS(COMM)No.1148/2016.*** *All rights and contentions of the parties are reserved. This appeal is disposed of in the above terms. Pending application is also disposed of.*

2.2. RECORDING OF EVIDENCE

31. Vide order dated 22nd February, 2016, Dinesh Dayal, retired Additional District Judge (ADJ), was appointed as the Court Commissioner by this Court to record evidence of the parties in the both the suits. Evidence was recorded by the Court Commissioner over 32 sittings from 28th March, 2016 to 20th July, 2016.

32. The following four witnesses deposed on behalf of Ericsson:

i. **John Han** (PW-1), Vice-President of Ericsson since 2013. He deposed in relation to Ericsson's patent license agreements, FRAND terms, Ericsson's declarations to ETSI and the conduct of Lava and the royalties/damages payable to Ericsson. He was cross-examined over 7 sittings.

ii. **Stefan Bruhn** (PW-2), working at Ericsson Research, Expert Media Codec Technologies since 2008 as in-house technical expert. He deposed in relation to the essentiality and validity of Ericsson's patents and the infringement thereof. He also deposed in relation to the development and adoption of standards by the ETSI. He was cross-examined over 6 sittings.

iii. **Mats Sagfors** (PW-3), in-house technical expert for Ericsson. He deposed in relation to the essentiality and validity of Ericsson's

patents and the infringement thereof. He also deposed in relation to the development and adoption of standards by the ETSI. He was cross-examined over 4 sittings.

iv. **Jonathan D. Putnam** (PW-4), Founder and Principal of Competition Dynamics Inc., a Litigation Firm in USA. He deposed as an external expert in relation to determination of FRAND rates in general and the damages/royalties payable by Lava for Ericsson's patents. He was cross-examined over 2 sittings.

33. The following four witnesses deposed on behalf of Lava:

i. **G.S. Madhusudan** (DW-1), Senior Project Advisor with the Department of Computer Science and Engineering at Indian Institute of Technology, Madras. He gave expert testimony in relation to infringement, essentiality and validity of the suit patents. He was cross-examined over 4 sittings.

ii. **V. Kamakoti** (DW-2), Professor, Department of Computer Science and Engineering, Indian Institute of Technology, Madras. He gave expert testimony in relation to infringement, essentiality and validity of the suit patents. He was cross-examined for over 2 sittings.

iii. **Sunil Bhalla** (DW-3), the Founder-Director of Lava. He gave evidence related to the facts of the case and in rebuttal. He deposed as a fact-witness in relation to the FRAND negotiations and quantum of damages. He was cross-examined over 4 sittings.

iv. **Shankar Iyer** (DW-4), Vice President and Head of Intellectual Practice of Cornerstone Research, Washington. He deposed as an

external economics expert in relation to the FRAND licensing terms. He was cross-examined over 3 sittings.

34. The Court Commissioner had scheduled the recording of evidence of Lava in rebuttal from 18th July, 2016 to 26th July, 2016. Lava sought to lead evidence in rebuttal and filed an affidavit of Dr. Ray Perryman (DW-5). However, he could not travel to India from USA for cross-examination. Accordingly, on an application being filed by Ericsson for closing the evidence of Lava, its evidence was closed vide order dated 22nd July 2016.

35. On 22nd August, 2016, the suit filed by Ericsson being CS(OS) 764/2016 was renumbered as a commercial suit being CS(COMM)1148/2016. The counter claim filed by Lava was also renumbered.

2.3. FINAL HEARING

36. The final arguments in the present suits before this Bench commenced from 8th February, 2023 and were heard over nineteen dates of hearing of about two hours each. The hearing concluded on 30th May, 2023, on which date the judgment was reserved and both the parties were granted liberty to file final consolidated note of written arguments on or before 7th July, 2023. The written submissions were filed by Ericsson on 7th July, 2023 and by Lava on 10th August, 2023.

ANALYSIS AND ISSUE-WISE FINDINGS

37. My issue-wise findings are as under:

3. WHETHER ERICSSON IS THE OWNER OF THE SUIT PATENTS.

Issue no.1: *Whether the plaintiff is the owner of following patents:*

i. IN 203034 titled as "Linear Predictive Analysis by synthesis encoding method and encoder";

ii. IN 203036 titled as "Apparatus of producing from an original speech signal a plurality of parameters";

iii. IN 234157 titled as "A method of encoding/decoding multi-codebook fixed bitrate CELP signal block";

iv. IN 203686 titled as "Method and system for alternating transmission of codec mode information";

v. IN 213723 titled as "Method and apparatus for generating comfort noise in a speech decoder";

vi. IN 229632 titled as "Multi service handling by a Single Mobile Station";

vii. IN 240471 titled as "A mobile radio for use in a mobile radio communication system";

viii. *IN 241747 titled as "A transceiving omit unit for block automatic retransmission request.*

Onus of proof on Ericsson

38. With regard to its ownership of the suit patents, Ericsson has provided the following details:

S. No.	Patent Number	Date of Filing	Date of Publication u/S.11A	Date of Grant	Date of Expiry
1.	IN241747(EDGE)	24.08.1998	10.10.2008	22.07.2010	23.08.2018
2.	IN 229632(3G)	18.09.1998	14.07.2006	19.02.2009	17.09.2018
3.	IN203036(AMR)	06.08.1999	23.09.2005	19.10.2006	05.08.2019
4.	IN203034(AMR)	24.08.1999	11.112005	19.10.2006	23.08.2019

5.	IN234157(AMR)	24.08.1999	06.012006	07.05.2009	23.08.2019
6.	IN203686(AMR)	03.09.1999	19.08.2005	01.11.2006	02.09.2019
7.	IN213723(AMR)	08.11.1999	07.07.2006	10.01.2008	07.11.2019
8.	IN240471(3G)	09.05.2000	26.08.2005	12.05.2010	08.05.2020

39. Ericsson has filed certified copies of the Patent Certificates in respect of all the suit patents issued by the Office of the Controller General of Patents, Designs and Trade Marks (hereinafter referred to as 'Indian Patents Office'), which have been exhibited as **Exhibit P-26** (IN 203034), **Exhibit P-28** (IN203036**), Exhibit P-30** (IN 234157), **Exhibit P-32** (IN203686**), Exhibit P-34** (IN213723), **Exhibit P-36** (IN229632), **Exhibit P-38** (IN 240471) and **Exhibit P-40** (IN 241747).

40. Ericsson has also filed certified copies of the extracts from the Register of Patents in respect of all the aforesaid patents, which have been exhibited as **Exhibit P-17** (IN203034), **Exhibit P-18** (IN203036), **Exhibit P-19** (IN234157), **Exhibit P-20** (IN203686), **Exhibit P-21** (IN213723), **Exhibit P-22** (IN229632), **Exhibit P-23** (IN240471) and **Exhibit P-24** (IN241747).

41. The aforesaid documents have not been denied by Lava in their affidavit of admission/denial filed on 22nd January, 2016. Neither has this issue been disputed by Lava either in its written note of arguments or in the oral submissions made before this Court. It is the case of Lava that the grant of patents to Ericsson was invalid, which would be the subject matter of Issue no.4, to be discussed later in the present judgment.

42. Accordingly, it is held that Ericsson has filed sufficient material to

establish its ownership of the suit patents. Hence, Issue no.1 is decided in favour of Ericsson and against Lava.

4. WHETHER COUNTER CLAIM FILED BY LAVA IS BARRED.

Issue No. 3: Whether the counter claim of the defendant is barred?

Onus of proof on Ericsson

43. Under the scheme of Patents Act, a challenge can be made to the patent at multiple stages. A patent can be challenged before the grant of patent, after its publication or after its grant. Further, in terms of Section 64 read with Section 104 of the Patents Act, a patent can be revoked by way of a counter claim in an infringement suit. Section 64 of the Patents Act also provides the grounds for revocation of the patent.

44. In view of the unambiguous language of Section 64 read with Section 104 of the Patents Act, it cannot be said that the counter claim filed on behalf of Lava is barred. Further, no time limit has been prescribed for filing a counter claim in the Act. In the present case, Lava has duly filed its counter claim along with its written statement seeking revocation of the suit patents granted in favour of Ericsson.

45. Hence, Issue no.3 is decided in favour of Lava and against Ericsson.

5. WHETHER ERICSSON IS ENTITLED TO PERMANENT INJUNCTION.

Issue No.6: Whether the defendant is liable to be permanently injuncted from infringing the plaintiff's patents?

Onus of proof on Ericsson

46. Ericsson did not press the aforesaid issue in view of the interim orders passed in the suits and the fact that the term of the suit patents expired during the pendency of the present suit, particularly when the matter was taken up at the stage of final arguments. Consequently, it is held that the Issue no.6 has become infructuous and need not be decided.

6. INVALIDITY OF THE SUIT PATENTS

Issue No.4: Whether the suit patents are invalid in nature and are liable to be revoked in light of the grounds raised by Lava in its counter claim?

Onus of proof on Lava

47. The development of patent law in India has been significantly guided by the landmark judgment of the Supreme Court in ***Novartis AG v. Union of India and Ors.***[1] The said judgment has steered the course of patent jurisprudence and also embedded a deep sense of responsibility and foresight, ensuring that the patent law in India evolves in harmony with the landscape of innovation and public welfare.

48. In the said judgment, the Supreme Court highlighted that the scope of a patent cannot be broader than the disclosure made in the claims. It is crucial to note that insufficiency of disclosure is a ground for revocation of a patent. Axiomatically, this principle is also important in the context of SEPs to prevent patent holders from asserting undue control over the standard, by claiming that the scope of the patent is broader than the protection granted, or demanding excessive royalties, which can distort the market and impede the adoption of standard-compliant technologies. The relevant extract of the

[1] Novartis AG v. Union of India & Others, 2016 (6) SCC 1.

said judgement is set out below:

> *"138. The submissions of Mr. Andhyarujina and Mr. Subramanium are based on* ***making a distinction between the coverage or claim in a patent and the disclosure made therein****. The submissions on behalf of the Appellant can be summed up by saying that the boundary laid out by the claim for coverage is permissible to be much wider than the disclosure/enablement/teaching in a patent.*
> *139.* ***The dichotomy that is sought to be drawn between coverage or claim on the one hand and disclosure or enablement or teaching in a patent on the other hand, seems to strike at the very root of the rationale of the law of patent****. Under the scheme of patent, a monopoly is granted to a private individual in exchange of the invention being made public so that, at the end of the patent term, the invention may belong to the people at large who may be benefited by it.* ***To say that the coverage in a patent might go much beyond the disclosure thus seem to negate the fundamental rule underlying the grant of patents.****"*

49. In particular, the judgment in ***Novartis AG v. Union of India*** (supra) has highlighted that the importance of valuing patents based on the intrinsic worth of the disclosures given in the patent, rather than on the artful drafting of its Claims. In my considered view, this principle is equally relevant for SEPs, and it must be ensured that the status of SEP is only granted to those patents which are truly novel and inventive innovations, and whose inventive concept is essential for implementing standards. Adhering to these principles would not only reinforce the correctness of the patent grant process but also underscore the integrity of the standard-setting process and assist in unlocking the true and actual value of the portfolio of SEPs. The relevant extract of the judgement is set out below:

> *"156. However, before leaving Hogan and proceeding further, we would like to say that* ***in this country the law of patent, after the introduction of product patent for all kinds of substances in the patent regime, is in its infancy****. We certainly do not wish the law of patent in this country to develop on lines where there may be a vast gap between the coverage and the disclosure under the patent;* ***where the scope of the patent is***

> ***determined not on the intrinsic worth of the invention but by the artful drafting of its claims by skillful lawyers***, *and where patents are traded as a commodity not for production and marketing of the patented products but to search for someone who may be sued for infringement of the patent."*

50. In essence, the judgement of the Supreme Court in ***Novartis AG v. Union of India*** (supra) has highlighted the necessity of striking a balance between promoting innovation and facilitating access to technology, a rationale that is equally applicable to SEPs, as an SEP being fundamental to the widespread adoption of technological standards, must be awarded only for genuine innovations which satisfy the tests for patentability and essentiality, thereby nurturing an ecosystem that simultaneously rewards innovation and ensures the availability of crucial technologies. Additionally, the emphasis on patent quality in the judgment of the Supreme Court is also a critical aspect of SEPs. Appropriately granted SEPs strengthen the standard they support and provide clarity for implementers regarding their licensing obligations, the same aligns with the emphasis on granting patents for inventions that meet the rigorous criteria of novelty, inventive step and non-obviousness.

51. In the present suits before the Court, the issue of the validity of the suit patents has emerged as a focal point of contention, drawing extensive pleadings, evidence and arguments from both parties. Consequently, a substantial amount of the legal proceedings and have been dedicated to examining the grounds raised by Lava in its counterclaim for the revocation of the suit patents. Further, the issue of validity of suit patents is of paramount importance, as it directly impacts the enforceability of the suit patents. This, in turn, is crucial for determining the standing of the claim of

infringement and also plays a significant role in the broader context of setting and determining FRAND rates.

52. In its 'written statement and counter claim', Lava has challenged the validity of the suit patents on the following grounds:

i. The inventions claimed by Ericsson in the suit patents are mere algorithms or sequence of instructions. Algorithms and sequence of instructions are not inventions in terms Section 3(k) of the Patents Act and are liable to be revoked under Section 64(1)(d) of the Patents Act.

ii. The inventions claimed in the suit patents are not novel and do not involve any inventive step. The claimed inventions are obvious in light of the prior art. Thus, the suit patents are liable to be revoked under Section 64(1)(e) and Section 64(1)(f) of the Patents Act.

iii. The specifications of the suit patents do not sufficiently or fairly describe the claimed invention and also the method in which the claimed inventions are to be performed. Thus, the suit patents are liable to be revoked under Section 64(1)(h) and Section 64(1)(i) of the Patents Act.

iv. The suit patents were obtained by making misrepresentations to the Indian Patent Office regarding the nature of the claimed inventions and the status of earlier similarly granted patents in other jurisdictions. Thus, the suit patents are liable to be revoked under Section 64(1)(j) of the Patents Act.

53. I shall deal with each of the aforesaid grounds separately.

6.1. THE INVENTIONS CLAIMED BY ERICSSON IN THE SUIT PATENTS ARE MERE ALGORITHMS.

54. Lava has pleaded in its counter claim that all the suit patents are mere algorithms and have therefore, been incorrectly granted by the Indian Patent Office. It is also stated by Lava that the case made out by Ericsson in its reply to the counter claim regarding nature of the suit patents is contrary to what has been argued by Ericsson during oral arguments. Ericsson has pleaded in its reply to the counter claim that the suit patents are 'product patents' and not 'algorithms'. However, Lava claims that in the course of its arguments, Ericsson has argued that the inventions claimed in the suit patents are algorithms but with a technical effect and also result in advancement. Hence, Ericsson cannot argue a case that is contrary to its own pleadings.

55. In its replication to the counter claim, Lava has denied that the suit patents are product patents. Further, it is submitted that the suit patents do not have any novel or specialised hardware and that the inventive step, if any, only pertains to algorithms. In this regard reliance has been placed by Lava on the following:

i. Report dated 9th July, 2015 by Dr. V. Kamakoti, Indian Institute of Technology (IIT), Madras [**Exhibit DW-2/A**]
ii. Report dated 22nd July, 2015 by Dr. V. Kamakoti, IIT, Madras [**Exhibit DW-2/B**]
iii. Evidence of G.S. Madhusudan (DW-1)
iv. Evidence of Dr. V. Kamakoti (DW-2)

6.1.1. SUBMISSIONS ON BEHALF OF THE PARTIES

56. On the basis of the aforesaid pleadings/evidence, the following

submissions have been made on behalf of Lava:

I. Ericsson has specifically pleaded in the suit that the suit patents are not algorithms but 'product patents'. During the course of arguments, however, Ericsson have claimed that the inventions claimed in the suit patents are algorithms which result in a technical effect or advancement. In view of the specific pleadings made, Ericsson cannot submit that the suit patents are algorithms with a technical effect, which are patentable and therefore, Ericsson is required to prove existence of specialised hardware patented in its inventions. Accordingly, any evidence led by Ericsson to the effect that its patents are resulting in technical effect of algorithms is beyond the pleadings and hence, inadmissible.

II. None of Ericsson's witnesses were able to give details of any novel or inventive hardware relating to the claimed inventions. Despite notice to produce, Ericsson failed to produce any such novel or inventive hardware claimed by Ericsson as part of the suit patents and instead produced three mobile phones manufactured by Lava, Intex and Micromax.

III. G.S. Madhusudan (DW-1) and Dr. V. Kamakoti (DW-2), being independent experts, have done in-depth analysis of each claim of the suit patents and opined that the inventions claimed therein are mere algorithms and no novel or inventive hardware products have been developed by Ericsson. In this regard, Lava has placed reliance on the Report dated 22nd July, 2015 by Dr. V. Kamakoti, IIT, Madras [**Exhibit DW-2/B**].

IV. The 'technical effect' exception as pleaded by Ericsson is applicable only to computer programs and not to algorithms. Reliance placed by Ericsson on the judgments in ***Microsoft Technology Licensing LLC v. The Assistant Controller of Patents and Design***[2], and ***Ferid Allani* v *Union of India & Others***[3], is misplaced.

V. All algorithms, irrespective of whether they have a technical effect or not, cannot be patented in terms Section 3(k) of the Patents Act. In this regard, reliance is placed on the following:

i. ***OpenTV Inc.* v. *The Controller of Patents and Designs***[4]*,*

ii. Guidelines for Examination of Computer Related Inventions, 2017 (hereinafter referred to as 'CRI Guidelines')

57. *Per* contra, the following submissions have been made on behalf of Ericsson:

I. The term 'algorithm' used in Section 3(k) of the Patents Act applies to algorithms, which are theoretical in nature and/or abstract formulae.

II. Lava has submitted that the suit patents are in the nature of algorithms on the basis of selective reading and cherry-picking certain parts of the patent claims. Lava has failed to analyse the claims as a whole.

III. All suit patents relate to telecommunication devices/apparatus such as handsets, dongles, tablets or components of such devices such as encoders/transceivers. Hence, the suit patents are product patents and not directed towards algorithms.

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[2] *Microsoft Technology Licensing LLC v. The Assistant Controller of Patents and Design*, 2023 SCC OnLine Del 2772.
[3] *Ferid Allani v Union of India & Others*, 2019 SCC OnLine Del 11867.
[4] *OpenTV Inc. v. The Controller of Patents and Designs & Anr.*, 2023 SCC OnLine Del 2771.

IV. Stefan Bruhn (PW-2) and Mats Sagfors (PW-3) have deposed in their evidence that the suit patents relate to improved functional device with clear technical effects and improvements.

V. Ericsson's patented inventions have resulted in technical effects and advancements and the same has also been admitted by Lava's witnesses, G.S. Madhusudan (DW-1) and Dr. V. Kamakoti (DW-2). In this regard, reliance has also been placed on the judgment of the Coordinate Bench of this Court in ***Microsoft Technology*** (supra) and ***Ferid Allani*** (supra).

VI. In the Report dated 9th July, 2015 authored by Dr. V. Kamakoti (DW-2) [**Exhibit DW-2/A**], it has been admitted that ETSI Standards can be practiced by a complete hardware solution that uses special electronics to achieve the goal or a software that can run on existing generic hardware.

VII. Ericsson questions the understanding of the expert witnesses of Lava, G.S. Madhusudan (DW-1) and Dr. V. Kamakoti (DW-2), to label the patented inventions granted by the Indian Patents Office to various companies as being nothing but algorithms.

6.1.2. LEGAL PROVISIONS AND GUIDELINES

58. In the present suit and the counter claim, while contesting the validity of all the suit patents, Lava has raised a common ground that all the suit patents are liable to be revoked under Section 64(1)(d) of the Patents Act. The said provision is set out below:

"***64. Revocation of Patents***-

(d) Subject to the provisions contained in this Act, a patent, whether

granted before or after the commencement of this Act, may, be revoked on a petition of any person interested or of the Central Government by the High Court or on a counter-claim in a suit for infringement of the patent by the High Court on any of the following grounds, that is to say

xxx xxx xxx

(d) that the subject of any claim of the complete specification is not an invention within the meaning of this Act"

59. Section 3 of the Patents Act enumerates subject matters that do not constitute an invention. Specific reference may be made to Sub-Section (k) of Section 3 of the Patents Act, which is set out below:

"***3. What are not inventions -***

...

(k) a mathematical or business method or a computer programme per se or algorithms."

60. Section 3(k) of the Patents Act provides that the following three categories are not inventions and hence, not patentable:

i. mathematical or business method,

ii. computer programme *per se*,

iii. **algorithms**.

61. The provision of Section 3(k) of the Patents Act is unique to India where there is no qualification or limitation on the bar of patentability of 'mathematical or business method' and 'algorithm'.

62. A reference may also be made to the CRI Guidelines issued by the Indian Patents Office in the year 2017. The terms '*algorithm*', '*computer programme*' and '*hardwar*e' as defined in the aforesaid CRI Guidelines are set out as under:

"***3.1 Algorithm***

The term "algorithm" is not defined in Indian statutes and hence, for interpretation of this term, the general dictionary meaning is being used.

The Oxford Advanced Learners Dictionary defines 'algorithm' as "a set of rules that must be followed when solving a particular problem".

3.4 Computer Programme

The term computer programme has been defined in the Copyright Act 1957 under Section 2(ffc) as "computer programme" means a set of instructions expressed in words, codes, schemes or in any other form, including a machine readable medium, capable of causing a computer to perform a particular task or achieve a particular result;'

3.9 Hardware

The term "hardware" is not defined in Indian statutes and hence, for interpretation of this term, the general dictionary meaning is being used. The Oxford Advanced Learners Dictionary defines "hardware" as "the physical and electronic parts of a computer, rather than the instructions it follows"."

63. The relevant portions of the aforesaid guidelines that deal with the application of Section 3(k) in relation to Computer Related Inventions (CRIs) are set out below:

"***4.5 Determination of excluded subject matter relating to CRIs:***

Since patents are granted to inventions, whether products or processes, in all fields of technology, it is important to ascertain from the nature of the claimed Computer-related invention whether it is of a technical nature involving technical advancement as compared to the existing knowledge or having economic significance or both, and is not subject to exclusion under Section 3 of the Patents Act.

The sub-section 3(k) excludes mathematical methods or business methods or computer programme per se or algorithms from patentability. ***Computer programmes are often claimed in the form of algorithms as method claims or system claims with some 'means' indicating the functions of flow charts or process steps. It is well-established that, while establishing patentability, the focus should be on the underlying substance of the invention and not on the particular form in which it is claimed****.*

What is important is to judge the substance of claims taking whole of the claim together. If any claim in any form such as method/process, apparatus/system/device, computer program product/ computer readable medium falls under the said excluded categories, such a claim would not be patentable. However, if in substance, the claim, taken as whole, does not fall in any of the excluded categories, the patent should not be denied.

Hence, along with determining the merit of invention as envisaged under Sections 2(1)(j), (ja) and (ac), the examiner should also determine whether or not they are patentable inventions under Section 3 of the Act.

4.5.1 Claims directed as "Mathematical Method": *Mathematical methods are a particular example of the principle that purely abstract or intellectual methods are not patentable. Mathematical methods like method of calculation, formulation of equations, finding square roots, cube roots and all other similar acts of mental skill are therefore, not patentable. Similarly mere manipulations of abstract idea or solving purely mathematical problem/equations without specifying a practical application also attract the exclusion under this category.*
sion under this category.

However, mere presence of a mathematical formula in a claim, to clearly specify the scope of protection being sought in an invention, may not necessarily render it to be a "mathematical method" claim. Also, such exclusions may not apply to inventions that include mathematical formulae and resulting in systems for encoding, reducing noise in communications/ electrical/electronic systems or encrypting/ decrypting electronic communications.

4.5.3 Claims directed as "Algorithm": Algorithms in all forms including but not limited to, a set of rules or procedures or any sequence of steps or any method expressed by way of a finite list of defined instructions, whether for solving a problem or otherwise, and whether employing a logical, arithmetical or computational method, recursive or otherwise, are excluded from patentability."

(Emphasis supplied)

64. While the aforementioned guidelines were issued for use by Examiners and Controllers of the Indian Patents Office, the court, when it decides the validity of the patent, either in a suit or in revocation proceedings, in effect, reviews the decision of the Indian Patents Office.

Therefore, these guidelines also serve as a useful resource for the court in interpreting the claims and assessing their patentability. Moreover, since both the parties have relied on the aforementioned guidelines, it is undeniable that these guidelines do offer assistance in interpreting the patentability of inventions.

6.1.3. JUDICIAL PRECEDENTS

65. In this section, the relevant decisions on patentability of inventions, particularly focusing on the interpretations and applications of Section 3(k) of the Patents Act are discussed. By analysing the recent decisions, I delve into the nuances of how patentability of inventions relating to or involving computer programs, algorithms, and business methods are treated under the Indian patent regime. Additionally, I shall also consider the legislative intent behind the patentability of software-related inventions, as discussed in the judicial precedents.

66. In ***Microsoft Technology*** (supra), an appeal was filed on behalf of Microsoft against the order of the Controller rejecting the grant of patent based on Section 3(k) of the Patents Act. The appeal was allowed and the order of the Controller was set aside. It was the case of Microsoft that its claim relates to a technical process that solves a technical problem and provides a technical solution/advancement relating to security of the data accessed on a network. The relevant observations from the aforesaid judgment are set out below:

> "*50. In conclusion, the Controller's rejection stems from misinterpretation of Section 3(k) of the Act, and an oversight of technical effect and contribution of the claimed invention, resulting in erroneous determination that the subject patent constitutes "computer program per*

*se". **By focusing solely on the implementation of the invention using computer-executable instructions and algorithms on a general purpose computing device, the Controller has failed to consider the true technical nature and advancements provided by the invention**. The claimed invention offers a novel and inventive technical solution to a security problem related to the authentication of users for accessing sub-location(s) within a network location. It not only provides for a two-tier authentication process but also improves user experience, which is vital in the field of computer networks.*

xxx xxx xxx xxx

*53. It is essential for the Indian Patent Office to adopt a more comprehensive approach when assessing CRIs, taking into account technical effects and contributions provided by the invention rather than solely focusing on the implementation of algorithms and computer-executable instructions. **An invention should not be deemed a computer program per se merely because it involves algorithms and computer-executable instructions; rather, it should be assessed based on the technical advancements it offers and its practical application in solving real-world problems.** A more thorough and accurate assessment of the invention's eligibility for patent protection should be conducted to ensure that deserving inventions are granted the protection they merit under the Act*."

(Emphasis supplied)

67. In ***Ferid Allani*** (supra), the Coordinate Bench of this Court has observed that in today's digital world, when most inventions are based on computer programmes, it would be retrograde to argue that all such inventions would not be patentable. The relevant observations are set out below:

"*10.....**The bar on patenting is in respect of `computer programs per se….' and not all inventions based on computer programs**. **In today's digital world, when most inventions are based on computer programs, it would be retrograde to argue that all such inventions would not be patentable.** Innovation in the field of artificial intelligence, blockchain technologies and other digital products would be based on computer programs, however the same would not become nonpatentable inventions – simply for that reason. It is rare to see a product which is not based on a computer program. Whether they are cars and other automobiles, microwave ovens, washing machines, refrigerators, they all have some*

sort of computer programs in-built in them. Thus, the effect that such programs produce including in digital and electronic products is crucial in determining the test of patentability."

(Emphasis supplied)

68. A reading of Section 3(k) of the Patents Act makes it clear that the qualifier '*per se*' is applicable only in respect of 'computer programmes' and not in respect of 'algorithms', 'business methods' and 'mathematical methods.' This view has also been affirmed by a Coordinate Bench of this Court in ***Open TV*** (supra). While analysing the patentability of 'business methods' under Section 3(k), the Coordinate Bench has made the following observations:

"*74. The qualifier `as such' thus applies in both U.K. and Europe to all categories of excluded inventions including business methods. Thus the bar is not absolute and if there is something more than the business method itself, patenting could be permissible.* ***However, in India, the phrase 'per se' does not qualify business methods****. Thus, the patentability of inventions based on methods of doing business or financial transactions, raised on the basis of decisions from the U.K. and European Patent Office which analyse the technical effect of a business method invention would not be squarely applicable in India. The bar in India to grant of business method patents has to be read as an absolute bar without analysing issues relating to technical effect, implementation, technical advancement or technical contribution.*

75. Thus, ***the only question that the Court or the Patent Office while dealing with patent applications involving a business method, needs to consider is whether the patent application addresses a business or administrative problem and provides a solution for the same.***

76. In order to judge as to whether a particular patent application seeks to patent business methods or not, at the outset, the following aspects, ought to be considered –

(i) whether the invention is primarily for enabling conduct or administration of a particular business i.e., sale or purchase of goods or services;

(ii) whether the purpose of the invention is for claiming exclusivity or monopoly over a manner of doing business;

(iv) whether the invention relates to a method of sale or purchase of goods or services or is in fact a computer program producing a technical effect or exhibiting technical advancement. If it is the latter, it would be patentable but not if it is the former."

(Emphasis supplied)

69. After analysing the CRI Guidelines and the aforementioned judgments, I am of the view that the inventions that are solely directed towards algorithms, mathematical methods, business methods or are computer programmes *per se*, would not satisfy the test of patentability and would consequently, not be inventions. However, an invention that merely incorporates algorithms, sets of instructions, mathematical or business methods within a method or system, and satisfies all the criteria for patentability, is not inherently non-patentable. Therefore, what has to be seen is that if the algorithms are directed at enhancing the functionality of a system or a hardware component, the effect or the functionality derived by the system or the hardware component is a patentable subject matter However, the algorithm itself is not a patentable subject matter. To illustrate, we may consider the example of a smart thermostat algorithm that dynamically adjusts the heating or cooling of a room in a building based on real-time weather data, occupancy patterns and energy prices. This algorithm, by itself, is a series of computational steps and may not be patentable. However, the implementation of this algorithm within a device, even if the said device is a general-purpose computer, in such a way that it transforms the computer's capabilities and leads to tangible benefits like reduced energy consumption, cost savings and improved comfort levels for occupants can be considered as a patentable subject matter.

70. It is clear that an invention should not be deemed a '*computer*

programme per se' merely because it incorporates algorithms and computer-executable instructions. In fact, the patentability should be assessed based on its practical application in solving technical problems and the technical advancements it offers. Furthermore, if the subject matter is implemented on a general-purpose computer, but results in a **<u>further technical effect</u>** that improves the computer system's functionality and effectiveness, the claimed invention cannot be rejected as non-patentable for being a 'computer programme *per se*'. This aligns with the intent behind the qualifier '*per se*', introduced by the legislature in the Patent (Amendment) Act of 2002 for computer programmes. Further, the said approach also aligns with the legislative intent behind the patentability of software related inventions, which is evident from the press release issued by the Press Information Bureau dated 27th December, 2004 titled – '*Kamal Nath's statement on the Ordinance relating to Patents (Third) Amendment*'. The relevant extracts from the said press release are set out below:

> "*8.* ***In IT, the trend is to have software in combination with or embedded in hardware - such as in computers or cell phones or a variety of other gadgets.*** *Software as such has no patent protection (the protection available is by way of copyright), but the changing technological environment has made it necessary to provide for patents when software has technical applications in industry in combination with hardware. This has been a demand of NASSCOM.*
>
> *xxx* *xxx* *xxx*
>
> *11. The ordinance is the same as the Bill introduced last year with improvements in some significant respects.* ***We have introduced for patenting of software that is embedded in hardware*** *[...]*"
>
> *(Emphasis supplied)*

71. In view of the above discussion, refusing such inventions as non-patentable would be against the legislative mandate.

6.1.4. EVIDENCE LED BY THE PARTIES

72. At this stage, it may be relevant to refer to some of the evidences led by both the parties in this behalf.

73. The report dated 9th July, 2015 authored by Dr. V. Kamakoti (DW-2) [**Exhibit DW-2/A**], has been placed on record by Lava to claim that any SEPs, which are implementing ETSI standard would either be complete hardware solution or complete software solution. Ericsson has also relied upon the said report to claim that Lava has admitted that all the suit patents are either specialized hardware or are computer programmes. Therefore, the suit patents would not attract the objection of non-patentability under Section 3(k) of the Patents Act. Paragraph 1 of the said report is set out below:

> "*The European Telecommunications Standard Institute (ETSI) is a not-for-profit Organization developing standards that outline certain properties and methodologies that need to be adhered to by different mobile communication equipment manufacturers and integrators, so that, the different equipments in the market can operate together. The objective is to provide an open platform for mobile equipment manufacturers, which ensure them with a fair level playing field devoid of monopoly.* ***The goal of a mobile equipment manufacturer is to develop mechanisms and incorporate the same in their equipment so that the ETSI specified properties and methodologies are adhered to. There are multiple ways to achieve this goal, namely, a complete hardware solution that uses special electronics to achieve the goal; or, a complete software solution that develops software that could run on existing generic hardware to achieve the goal.***"
>
> *(Emphasis supplied)*

74. Further, Ericsson claims that Dr. V. Kamakoti (DW-2) in his cross-examination admits that the general purpose processor implements functionality in the hardware and further admits that the general purpose processor is the hardware of a cellular phone. The relevant extracts from the

cross-examination of Dr. V. Kamakoti (DW-2) are set out below:

> " ***Q.121.*** *Could hardware components perform such functions?*
>
> ***A.*** *I assume the word "such functions" as floating point operations. The general purpose processor today does implement these functions in the hardware.*
>
> ...
>
> ***Q.168.*** *Please see paragraphs 30, 38, 58, 65 and 76 of the Exhibit DW-2/A. Please state whether the general purpose computer referred by you in these paragraphs can function as a cellular phone?*
>
> ***A.*** *The cellular phone has three parts, which I have described earlier. The general purpose computer can function as the hardware for the digital processing part and a general purpose vector processor can function as the hardware for the digital baseband.*"

75. In addition, in response to question no.77, Dr. V. Kamakoti (DW-2) agreed that usage of Ericsson's patents on fully functional handsets may result in improved performance. Question no. 77 is set out below:

> "***Q.77.*** *I put it to you that Ericsson's patents are not mere algorithms. They consist of actual implementable solutions on fully functional handsets resulting in improved performance, including by using lesser bit rates and providing better speech quality.*
>
> ***A.*** *The question is in three parts and I will answer the parts individually. (i) Ericsson's patents are mere algorithms (ii) the patent document provided to me does not contain actual implementation details (iii)* ***the usage of Ericsson's patents on fully functional handsets may result in improved performance*** *but the proof of the same is again only on paper and actual performance details are not stated in the patents.*"
>
> *(Emphasis supplied)*

76. The above extracted evidence and cross-examination are general in respect of all the patents, which have been asserted. More specific analysis with respect to each of the suit patents shall be done at a later stage.

6.2. THE INVENTIONS CLAIMED IN THE SUIT PATENTS ARE NOT NOVEL AND DO NOT INVOLVE ANY INVENTIVE STEP.

6.2.1. SUBMISSIONS ON BEHALF OF THE PARTIES

77. Without prejudice to the submissions made by Lava in ground no.(i) raised above, following submissions have been made on behalf of Lava:

I. The patents claims are clearly anticipated by prior arts and the alleged improvements would have been obvious to the persons skilled in the art. In this regard, reliance has been placed on the prior art references placed on record and the evidence of G.S. Madhusudan (DW-1) and Dr. V. Kamakoti (DW-2).

II. The inventions claimed in the suit patents are not novel and do not involve any inventive step. In this regard, Lava has placed reliance on the evidence of G.S. Madhusudan (DW-1).

III. G.S. Madhusudan (DW-1) is an expert in the field of mobile telephony and chipsets and Dr. V. Kamakoti (DW-2) is an expert in the field of computer architecture and microprocessors. Therefore, their credibility is unimpeachable. On the other hand, Stefan Bruhn (PW-2) and Mats Sagfors (PW-3) are interested witnesses and therefore, their testimonies cannot be regarded as independent or unbiased.

78. *Per contra*, following submissions have been made on behalf of Ericsson:

I. Lava merely cites prior art references without highlighting the specific portion of the prior art references and how such prior arts invalidate

the suit patents. Only bald averments have been made by Lava without giving any details.

II. Ericsson has also countered all the prior arts raised by Lava. Ericsson's witnesses in their testimony have clearly distinguished the cited prior arts from the suit patents and have also reaffirmed the said aspect in their cross-examination.

III. G.S. Madhusudan (DW-1) has simply conducted a hindsight analysis by using keyword searches after reading the patents. In this regard, reliance is placed on the judgments of ***Avery Dennison Corporation* v. *Controller of Patents and Designs***, and ***Novartis AG & Anr.* v. *Natco Pharma Limited***[5].

IV. Stefan Bruhn (PW-2) and Mats Sagfors (PW-3) are highly specialized in their areas and have various inventions and publications relating to the subject matter of the suit patents to their credit.

6.2.2. LEGAL PROVISIONS AND SIGNIFICANT RULINGS

79. In ***Novartis AG & Anr* v. *Cipla***[6], a Coordinate bench of this Court has held that a challenge based on prior art has to be specifically pleaded by the defendant. Further, a defendant has to explain as to how the said document could be relied upon as a prior art in respect of the patent, which has been asserted in the suit. The relevant observations are set out below:

> "*48. It is settled law that the allegation to challenge the suit patent must be specifically pleaded. The defendant must deliver the particulars of objection on every ground on which its validity is challenged and must*

[5] *Novartis Ag & Anr.* v. *Natco Pharma Limited*, 2023 SCC OnLine Del 106.
[6] *Novartis AG & Anr v. Cipla*, 2015 SCC OnLine Del 6430.

include such particulars which will clearly define every issue. It is the admitted position that the defendant's packaging is showing INDACATEROL Maleate as active ingredient. Learned senior counsel has merely read over the grounds raised in the reply of invalidity of the patent. He has not explained the particulars to show as to how the said documents/prior patents constitutes prior art for the purpose of attaching the suit patent. No arguments were addressed on the aspect of how the suit patent is prior published from the date of priority date and what was already known and the suit patent is nothing than merely a workshop improvement and it involved no research and skill and it involved no novelty. Even prima facie it is not established that the suit patent lacked novelty, inventive steps and it is prior published by virtue of documents filed in order to show prior art. In fact merely the averment is made in the reply but nothing has been addressed during the course of hearing of the present application.

xxx *xxx* *xxx*

51. In the said attendant circumstances, wherein the prior arts are unexplained and the defendant is taking inconsistent position and also goes on to state that the product under patent which is INDACATEROL Maleate is highly efficacious in curing the COPD and thus desirable by the defendant when the defendant is itself making the other drugs for curing COPD which according to the defendant's own saying are not adequate (which stand is required to be tested before the relevant forum.), it can be said that the plaintiff is able to establish a case of prima facie valid patent on record. The said alleged prior arts which the defendant is duty bound to explain as it is the defendant who has urged the case of prior arts cannot be said to be prior arts in real sense of the term due to the defendants inability to explain the same properly as to how the same leads to workshop result or anticipated piece of art and further taking the position that the products under the patent is highly efficacious."

80. At this stage, a reference may be made to Section 64(1)(e) and Section 64(1)(f) of the Patents Act, as set out below:

"***64. Revocation of patents.—(1)***

...

(e) that the invention so far as claimed in any claim of the complete specification is not new, having regard to what was publicly known or publicly used in India before the priority dated of the claim or to what was published in India or elsewhere in any of the documents referred to in

section 13:

> *(f) that the invention so far as claimed in any claim of the complete specification is not obvious or does not involve any inventive step, having regard to what was publicly known or publicly used in India before the priority dated of the claim or to what was published in India or elsewhere before the priority date of the claim:*"

6.2.3. LACK OF NOVELTY – LEGAL PRINCIPLES

81. Before delving into the analysis on the assessment of novelty or the lack of novelty, it is crucial to define the concept of novelty in relation to an invention. Guidance on what constitutes novelty can be found in the judgment of the Bombay High Court in ***Farbewerke Hoechst & Bruning Corporation* v. *Unichem Laboratories & Ors.***[7]. In the said decision, while addressing the allegation of a patent's invalidity due to '*want of novelty*,' the Court adopted the test for novelty as formulated in ***Halsbury's Laws of England*[8],**. The relevant observations are set out below:

> "*To anticipate a patent,* ***a prior publication or activity must contain the whole of the invention impugned; i.e., all the features by which the particular claim attacked is limited****. In other words, the anticipation must be such as to describe, or be an infringement of the claim attacked.*"
>
> *(Emphasis supplied)*

82. In ***Patent Law Cases and Materials: A Synthesis for India***[9], it has been noted that ***Farbewerke Hoechst*** (supra) is one of the earliest final judgments in India on the legal test for addressing novelty of an invention. However, in the said Commentary, it has also been clarified that the test

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[7] *Farbewerke Hoechst & Bruning Corporation v. Unichem Laboratories & Ors.*, 1968 SCC OnLine Bom 118.
[8] *Halsbury's Laws of England*, 1985, 29, 58.
[9] Adarsh Ramanujan, Patent Law Cases and Materials: A Synthesis For India (Wolters Kluwer India Pvt. Ltd., 2020).

provided is what is popularly referred to as the 'reverse infringement test' of novelty, i.e., anticipation must be such as to be an infringement of the claim attacked. Therefore, although the reverse infringement test was deemed sufficient in the context of the case before the Bombay High Court, there is a need for a more comprehensive definition and test for assessing novelty. The relevant excerpt from ***Patent Law Cases and Materials*** (supra) is as follows:

> *"1. Continued Relevance?*
> *Farbwerke Hoechst is one of the earliest final judgments in India on the legal test for of an invention. When Farbwerke Hoechst was decided, s 38(1)(a) of the original 1911 Act (see Note 2 to § 3.1, supra) did not exist in that form. Nevertheless, the concept of what is 'new' as contemplated in the unamended version of the 1911 Act did not undergo any change and therefore, continued to have relevance.*
> ***Farbwerke Hoechst quotes with approval from Halsbury's, what is popularly called the "reverse infringement test" of novelty, i.e., the anticipation must be such as to be an infringement of the claim attacked.*** *This test is simply a moniker for the principle that the anticipatory reference must contain all the limitations of the claimed invention; there cannot be a gap in the teaching of the prior art and claimed invention. The prior art, in this case, did not provide information about two substituents in the molecule marked as R and R.1. Therefore, the Court sustained the novelty of the invention.* ***While the above explanation was sufficient for the Court to address the case at hand, it would be misconceived to construe this judgment as a precedent for the proposition that the "reverse infringement test" is an exhaustive enumeration of the test for assessing novelty.***"
>
> *(Emphasis supplied)*

83. In my opinion, the seminal guidance on determination of novelty has been provided in the decision of the ***House of Lords*** in ***Hills* v. *Evans***[10], wherein it has been concluded that the test of novelty evaluates whether an invention is truly new by assessing if it was previously disclosed in a manner that would allow a person skilled in the art to reproduce the

[10] *Hills* v. *Evans*, (1862) 4 DeG., F&J 288.

invention without additional research or experimentation. The relevant extracts from the said decision are set out below:

> "*I have therefore to consider, and to give my opinion upon, the question that has been argued, namely, whether there be or be not* ***anything in these specifications which has rendered the Plaintiff's invention matter of public knowledge, and therefore matter of public property, anterior to the granting of the patent****... With regard to the specification of a prior patent it is not to be distinguished in principle from any other publication. The only peculiarity attending the specification of a prior patent is this, that it must of necessity be considered as a publication. There has been some doubt with regard to books and documents under particular circumstances, whether they can be considered as amounting to a publication. With regard to a specification there can be no doubt, because the specification is that which the patentee gives to the public and makes a matter publici juris in return for the privilege which he receives. But upon all principle a specification is not to be distinguished from any prior publication contained in a book published in the ordinary manner. The question then is, what must be the nature of the antecedent statement? I apprehend that the principle is correctly thus expressed-the antecedent statement must be such that a person of ordinary knowledge of the subject would at once perceive, understand, and be able practically to apply the discovery without the necessity of making further experiments and gaining further information before the invention can be made useful. If something remains to be ascertained which is necessary for the useful application of the discovery, that affords sufficient room for another valid patent. By the words of the statute of James,* ***it is necessary for the validity of a patent that the invention should not have been known or used at the time.*** *These words are held to mean "not publicly known or publicly used." What amounts to public knowledge or public user is still to be ascertained. One of the means of imparting knowledge to the public is the publication of a book, or the recording of a specification of a patent. If, therefore, in disproving that an allegation which is involved in every patent, that the invention was not previously known, appeal be made to an antecedently-published book or specification, the question is, what is the nature and extent of the information thus acquired which is necessary to disprove the novelty of the subsequent patent? There is not, I think, any other general answer that can be given to this question than this:* ***that the information as to the alleged invention given by the prior publication must, for the purposes of practical utility, be equal to that given by the subsequent patent****. The invention must be shown to have been before made known. Whatever, therefore, is essential to the invention must be read out of the prior publication. If specific details are necessary for the practical*

working and real utility of the alleged invention, they must be found substantially in the prior publication.

Apparent generality, or a proposition not true to its full extent, will not prejudice a subsequent statement which is limited and accurate, and gives a specific rule of practical application.

The reason is manifest, because much further information, and therefore much further discovery, are required before the real truth can be extricated and embodied in a form to serve the use of mankind. It is the difference between the ore and the refined and pure metal which is extracted from it.

Again, it is not, in my opinion, true in these cases to say, that knowledge, and the means of obtaining knowledge, are the same. There is a great difference between them. To carry me to the place at which I wish to arrive is very different from merely putting me on the road that leads to it. There may be a latent truth in the words of a former writer, not known even to the writer himself, and it would be unreasonable to say that there is no merit in discovering and unfolding it to the world.

Upon principle, therefore, I conclude that the ***prior knowledge of an invention to avoid a patent must be knowledge equal to that required to be given by a specification, namely, such knowledge as will enable the public to perceive the very discovery, and to carry the invention into practical use.***"

(Emphasis supplied)

84. In addition, in ***General Tires & Rubber Co.*** **v.** ***Firestone Tyre & Rubber Co. Ltd***[11], it has been held that even if not all details are present in the earlier document cited as novelty destroying prior art, it is possible that the prior art document and the patent in question essentially convey the same message but in different terms. The key question to resolve in such instances is whether the prior art document provides clear and unmistakable instructions that, if followed, would inevitably lead to a result that falls within the scope of the patent's claims or inventive concept. The relevant

[11] *General Tires & Rubber Co. v. Firestone Tyre & Rubber Co. Ltd*, RPC 486 89.17.457

extract from the said decision is set out below:

> "*As to novelty, one must consider in relation to each of the documents cited whether all the specific details are disclosed and if not, whether the reader would assume from his ordinary knowledge that he should carry out the steps in question and if so how. One must also instruct oneself with the surrounding circumstances as they exist; Hills v. Evans (supra).* ***If one cannot find all the details in the early document, it may still be possible that the prior document and the patent-in-suit were really saying the same thing in different words. The question to be answered in such a case is; does the prior document give clear and unmistakeable directions which when carried out will inevitably result in something coming within the claims of the patent?***"
>
> *(Emphasis supplied)*

85. The aforesaid decisions lay down the legal framework for assessing the novelty of an invention, emphasising that for an invention to be considered novel, it must not have been previously disclosed in a manner that would enable a skilled person to reproduce the invention without further experimentation. It has also been specified that for prior knowledge or disclosure to challenge the novelty of an invention, it must offer practical utility equivalent to the invention. In addition, it has also been clarified that if disclosures from prior art inevitably led to the invention, even without explicit details, it can be said the novelty of an invention is compromised.

86. The Manual of Patent Office Practice and Procedure, version 3.0, dated 26th November, 2019, published by the Indian Patent Office also provides guidance to Examiners for assessment of novelty of an invention. As per the said Manual, an invention is novel if it is not anticipated by prior publication in patent and non-patent literature, meaning it has not been disclosed in any prior art before the filing or priority date of the Complete Specification. The Manual specified that while making a determination of novelty, an examiner would be required to consider various documents to

assess novelty, and anticipation or lack of novelty would be the result if all features of the invention are present in a cited prior art document, which must disclose the invention explicitly or implicitly. However, it has been clarified that a generic disclosure in prior art does not affect the novelty of an invention. The guidance in the Manual also appears to be based on legal principles and decisions emphasising the need for prior disclosures to offer practical utility equivalent to the invention. The relevant extracts from the Manual are set out below:

> "*Novelty*
> *1.* ***An invention is considered as new(novel), if it is not anticipated by prior publication in patent and non-patent literature****, i.e., an invention is novel if it has not been disclosed in the prior art, where the prior art means everything that has been published, presented or otherwise disclosed to the public before the date of filing/priority date of complete specification.*
>
> *2.* ***An invention is considered as novel, if it has not been anticipated by prior use or prior public knowledge in India****.*
>
> *3. For the purpose of determining novelty, an application for patent filed at the Indian Patent Office before the date of filing of complete specification of a later filed application, but published after the same, is considered for the purposes of prior claiming.*
>
> *4. While ascertaining novelty, the Examiner takes into consideration, inter alia, the following documents: - which have been published before the date of filing of the application in any of the specifications filed in pursuance of application for patent in India on or after 1st January, 1912. - such Indian Patent Applications which have been filed before the date of filing of complete specification and published on or after the date of filing of the complete specification, but claims the same subject matter.*
>
> *5. The examiner shall make such investigation for purpose of ascertaining whether the invention, so far as claimed in any claim of the complete specification, has been anticipated by publication in India or elsewhere in any document other than those mentioned in section 13(1) before date of filing of the applicant's complete specification.*

*6. **A prior art is considered as anticipating novelty if all the features of the invention under examination are present in the cited prior art document.***

***7. The prior art should disclose the invention either in explicit or implicit manner.** Mosaicing of prior art documents is not allowed in determination of novelty.*

8. A generic disclosure in the prior art may not necessarily take away the novelty of a specific disclosure. For instance, a metal spring may not take away the novelty of a copper spring.

9. A specific disclosure in the prior art takes away the novelty of a generic disclosure. For instance, a copper spring takes away the novelty of a metal spring.

10. In a case where a prior art is cited as an anticipation in the Examination Report, the onus of proving that the same is not to be an anticipation by reason of Section 29-34, lies on the applicant."

(Emphasis supplied)

6.2.3.1. SEVEN STAMBHAS APPROACH

87. Taking into consideration the judgements given by various Courts, and the guidance given in the Manual, I have deemed it appropriate to develop a step-wise approach for determination of novelty.

88. When assessing the novelty of an invention, a Judge or even a patent examiner ought to follow a systematic approach to ensure a thorough and unbiased analysis of the invention claimed and the prior art cited. Another important aspect of the test for assessment of novelty in an invention is to maintain a distinction between the test of novelty and test for inventive step or lack of obviousness. I am of the view that the following steps, which may be referred to as the '*Seven Stambhas*[12] *Approach*' serve as guiding

[12] *Stambhas* are referred to as columns or pillars in Indian Architecture

principles and provide a clear framework for assessing novelty, reflecting the distinction between novelty and non-obviousness:

(i) **Understanding of the Claims of the Invention**

- The determination of lack of novelty should begin with the understanding of the Claims of the invention as it is the Claims that define the boundaries of the invention and what the applicant considers as their novel contribution.

(ii) **Identify Relevant Prior Art**

- Collecting the prior art, including any public disclosure, publication, patent, or patent application that predates the filing date of the patent application which is relevant to the Claims of the patent.

(iii) **Analyse the Prior Art**

- Conducting a detailed analysis of the identified prior art to ascertain its relevance to the Claims of the invention. This step involves searching and documenting both the similarities and the differences, if any, between the Claims of the invention and the text of the prior art. This step requires comparing the technical details and features of the prior art against those claimed in the invention.

(iv) **Determine Explicit and Implicit Disclosures**

- Examining whether the prior art explicitly or implicitly discloses the same invention. Explicit disclosure means the prior art directly describes the invention claimed. Implicit disclosure refers to whether the prior art describes elements or aspects so similar to the claimed invention that a direct link can be drawn.

(v) **Assessment material differences while considering the entire scope**

of the Claims

- Identifying the material differences between the claimed invention and the prior art, if any, such that a material difference would indicate that the claimed invention has not been disclosed in the prior art and, therefore, the invention, is novel.

(vi) **Verifying Novelty in light of Comprehensive Scope and Specific Combination of Claimed Elements**

- Evaluation of novelty of the invention is carried out in light of the comprehensive scope of its claims, not just individual elements.
- The invention is novel only if the combination of claimed elements as a whole has not been previously disclosed.

(vi) **Documentation of the Analysis and Novelty Determination**

- Specify the finding of the examination of novelty, while providing a clear rationale for the said determination. The specific documentation must include references to specific sections of the prior art examined and a reasoning as to how the section affects the novelty of the claims and the inventive concept of the invention.
- Based on the analysis, issue a formal decision, if the invention or any of its claimed elements is found in the prior art, the invention is not novel. Conversely, if the invention is not disclosed by the prior art, it is considered novel.

6.2.4. LACK OF INVENTIVE STEP – LEGAL PRINCIPLES

89. One of the seminal tests for determining the existence of an inventive step was laid down by the Court of Appeal of England and Wales in

Windsurfing International Inc.* v. *Tabur Marine Ltd.[13]. Before the formulation of the '*Windsurfing test*', the assessment of inventive step in the UK was subjective and lacking a structured approach. In ***Windsurfing International*** (supra), a structured four-step approach was formulated to objectively determine whether an invention possesses inventive step by comparing it against the state of the art from the perspective of a person skilled in the relevant field, without any hindsight bias. The aforesaid four-step test is set out below:

> "*The said steps are as under:*
>
> *"1. Identifying the inventive concept embodied in the patent;*
>
> *2. Imputing to a normally skilled but unimaginative addressee what was common general knowledge in the art at the priority date;*
>
> *3. Identifying the differences if any between the matter cited and the alleged invention; and*
>
> *4. Deciding whether those differences, viewed without any knowledge of the alleged invention, constituted steps that would have been obvious to the skilled man or whether they required any degree of invention.*"

90. The aforesaid test was modified by the Court of Appeals of England and Wales in ***Pozzoli Spa* v. *BDMO SA***[14]. The Court of Appeal refined the '*Windsurfing test*' to a similarly structured, but more clearly defined, four-step process. This revised test includes identifying the notional '*person skilled in the art*', determining the relevant common general knowledge of that person, identifying the inventive concept of the claim, and deciding

[13] *Windsurfing International Inc. v. Tabur Marine Ltd*., [1985] RPC 59.
[14] *Pozzoli Spa v. BDMO SA*, [2006] EWHC 1398 (Ch)

whether the differences between the prior art and the claim constitute an inventive step. In the said decision, emphasis was given to the perspective of the skilled person, equipped with the common general knowledge, making the evaluation of inventive step more objective and less susceptible to hindsight bias. The modified test is set out as under:

> "*1. (a) Identify the notional "person skilled in the art"*
> *(b) Identify the relevant common general knowledge of that person;*
>
> *2. Identify the inventive concept of the claim in question or if that cannot readily done, construe it;*
>
> *3. Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;*
>
> *4. Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?"*

91. Building on the foundational principles established by the 'Windsurfing' and 'Pozzoli' tests, the Division Bench of this Court in ***F. Hoffmann-La Roche Ltd.*** **v.** ***Cipla Ltd***[15], examined and further developed the test for assessing inventive step. Recognising the evolving nature of technological innovation and the need for a dynamic legal framework, the Division Bench adapted the earlier tests to suit contemporary challenges in patent law. The Division Bench laid down a refined test that emphasised a more nuanced evaluation of the inventive step, taking into account the complexity of inventions and the increasingly collaborative nature of scientific research. This refined approach includes a detailed analysis of the inventive concept, the state of the art, and the common general knowledge,

[15] *F. Hoffmann-La Roche Ltd.* v. *Cipla Ltd*., (2016) 65 PTC 1 (Del)

while also considering the practical implications of the invention in the relevant field. The five-step test as identified by the Division Bench is set out below:

> "*Step No. 1 To identify an ordinary person skilled in the art,*
>
> *Step No. 2 To identify the inventive concept embodied in the patent,*
>
> *Step No.3 To impute to a normal skilled but unimaginative ordinary person skilled in the art what was common general knowledge in the art at the priority date.*
>
> *Step No. 4 To identify the differences, if any, between the matter cited and the alleged invention and ascertain whether the differences are ordinary application of law or involve various different steps requiring multiple, theoretical and practical applications,*
>
> *Step No. 5 To decide whether those differences, viewed in the knowledge of alleged invention, constituted steps which would have been obvious to the ordinary person skilled in the art and rule out a hindside approach"*

92. A Coordinate Bench of this Court in ***Bristol-Myers Squibb Holdings Ireland Unlimited Company & Ors*** **v.** ***BDR Pharmaceuticals International Pvt. Ltd.***[16] clarified the principles for assessing the obviousness of an invention. In the said decision, the Court reviewed the existing legal framework and jurisprudence on inventive step, aiming to synthesize the essence of what makes an invention obvious or not. The Court highlighted several key factors to be considered in obviousness analysis, such as the scope and content of the prior art and the differences between the prior art and the claims at issue. Additionally, the Court emphasised the importance of considering secondary indicia of non-obviousness as part of a holistic

[16] *Bristol-Myers Squibb Holdings Ireland Unlimited Company & Ors v. BDR Pharmaceuticals International Pvt. Ltd.*, 2020 SCC OnLine Del 1700.

assessment. The relevant observations are set out as under:

> "*(i) A hindsight reconstruction by using the patent in question as a guide through the maze of prior art references in the right way so as to achieve the result of the claim in the suit, is required to be avoided.*
>
> *(ii) The patent challenger must demonstrate the selection of a lead compound based on its promising useful properties and not a hindsight driven search for structurally similar compounds.*
>
> *(iii) There should be no teachings away from the patent in question in the prior art.*
>
> *(iv) Mere structural similarity cannot form the basis of selection of lead compound in a prior art and the structural similarity in the prior art document must give reason or motivation to make the claim composition.*
>
> *(v) Though mosaic of prior art documents may be done in order to claim obviousness, however, in doing so, the party claiming obviousness must be able to demonstrate not only the prior art exists but how the person of ordinary skill in the art would have been led to combine the relevant components from the mosaic of prior art.*
>
> *(vi) It has to be borne in mind, small changes in structures can have unpredictable pharmacological effects and thus, structural similarity alone is not sufficient to motivate to selection of the lead compound.*
>
> *(vii) Though it would be tempting to put together a combination of prior arts but this requires a significant degree of hindsight, both in selection of relevant disclosures from these documents and also in disregarding the irrelevant or unhelpful teachings in them.*"

93. The UK Supreme Court in ***Actavis* v. *ICOS***[17] summarised the relevant considerations that are to be made while assessing obviousness. The Court mentioned that the factors identified in the list are not exhaustive. The relevant considerations are set out below:

> "*(1) First, it is relevant to consider* ***whether something was "obvious to try" at the priority date,*** *in other words, whether it is obvious to undertake a specific piece of research which had a reasonable or fair prospect of*

[17] *Actavis* v. *ICOS*, [2019] UKSC 15

success ...;

(2) Secondly, ***it follows the routine nature of the research*** *and whether there is an established practice of following the research through to a particular point may be a relevant consideration which is weighed against the consideration that the claimed process or product was not obvious to try at the outset of a research programme. ...*

(3) Thirdly, the ***burden and cost of the research programme is relevant.*** *But the weight to be attached to this factor will vary depending on the particular circumstances....*

(4) Fourthly, the ***necessity for and the nature of the value judgments*** *which the skilled team would have in the course of a testing programme are relevant considerations ....*

(5) Fifthly, ***the existence of alternative or multiple paths of research will often be an indicator that the invention contained in the claim or claims was not obvious.*** *If the notional skilled person is faced with only one avenue of research, a "one way street", it is more likely that the result of his or her research is obvious than if he or she were faced with a multiplicity of different avenues. But it is necessary to bear in mind the possibility that more than one avenue of research may be obvious ...*

(6) Sixthly, ***the motive of the skilled person is a relevant consideration****. The notional skilled person is not assumed to undertake technical trials for the sake of doing so but rather because he or she has some end in mind. It is not sufficient that a skilled person could undertake a particular trial; one may wish to ask whether in the circumstances he or she would be motivated to do so. The* ***absence of a motive to take the allegedly inventive step makes an argument of obviousness more difficult*** *...*

(7) Seventhly, the fact that the results of research which the inventor actually carried out are unexpected or surprising is a relevant consideration as it may point to an inventive step ...

(8) Eighthly, the courts have repeatedly emphasised that one must ***not use hindsight****, which includes knowledge of the invention, in addressing the statutory question of obviousness. That is expressly stated in the fourth of the Windsurfing/Pozzoli questions ...*

(9) Ninthly, it is necessary to consider ***whether a feature of a claimed invention is an added benefit*** *in a context ...*"

94. In ***Avery Dennison*** (supra), a Coordinate Bench of this Court while relying upon the judgment of this Court in ***Bristol-Myers*** (supra) and the judgment of the UK Supreme Court in ***Actavis*** (supra), has held that it is not permissible to do hindsight analysis or *ex-post facto* analysis. Further, in the said judgement, the Coordinate Bench has carried out a detailed analysis of various tests for lack of inventive step and lack of obviousness. The relevant extracts from the decision in ***Avery Dennison*** (supra) are set out below:

> "***Test for Inventive Step/Lack of Obviousness***
>
> *11. For determining inventive step or lack thereof, various approaches and tests have emerged over the years from decisions of courts/authorities as also from examination guidelines of patent offices from different jurisdictions. The same include:*
>
> *i. Obvious to try approach:*
>
> *• This approach involves* ***an analysis of whether in view of the teachings/solutions proposed in the prior art, it was obvious to try and arrive at the subject invention****.*
>
> *ii. Problem/solution approach:*
>
> *• This approach considers* ***whether in the light of the closest prior art and the objective technical problem, the solution claimed in the invention would be obvious to the skilled person****. If the skilled person can decipher the solution being claimed, then the subject matter is held to be obvious.*
>
> *• This test has been discussed by the Division Bench in F. Hoffmann-La Roche Ltd. v. Cipla Ltd., (2016) 65 PTC 1 (Del).*
>
> *iii. Could-Would Approach*
>
> *• In this approach the question that is raised is* ***whether there is any teaching in the prior art as a whole that would and not simply could have prompted a skilled person, with the knowledge of the objective technical problem, to either modify or adapt***

the closest prior art to arrive at the subject matter of the claims.

iv. Teaching Suggestion Motivation (TSM test)

• This test originated in the USA as per which, ***if by the Teaching, Suggestion or Motivation from the prior art, an ordinary skilled person can modify the prior art reference or combine prior art references to arrive at the claimed invention, then the subject matter being claimed is obvious.***

• However, the application of this test ought not to be done in a narrow manner as held by the US Supreme Court in the case of KSR International v. Teleflex, 550 US 398 (2007).

12. The above mentioned approaches to determining inventive step have been discussed and debated in various jurisdictions, including the UK, EPO, USA etc. These approaches have also been applied, even with modifications, in order to suit the facts and circumstances of each case by Courts. Some of these approaches to determine lack of obviousness also find a mention in the Guidelines for Examination published by the European Patent Office.

xxx xxx xxx

Assessment of lack of obviousness

32. Some of the fundamental principles while analysing inventive step and whether an invention is obvious or not are:

i. That simplicity does not defeat an invention - even simple inventions are patentable.

ii. ***The inventive step has to be assessed on the basis of the date of priority of the subject patent and not after the publication of the same i.e., it is not permissible to do a hindsight analysis or an ex-post facto analysis.***"

(Emphasis supplied)

95. The aforesaid tests and legal principles shall be applied in the specific analysis with respect to each of the suit patents, which is discussed later in this judgment.

6.2.5. EXPERTISE/CREDIBILITY OF THE WITNESSES OF BOTH SIDES

96. In relation to the experts who deposed in respect of the validity of the suit patents, both Lava and Ericsson have made specific submissions with regard to the qualification, expertise and the nature of the witnesses.

97. Ericsson has argued that Lava's experts did not have the necessary expertise in the field involving suit patents. However, this submission fails to take into consideration that a person skilled in the art is a person who possesses average knowledge and ability in the relevant field of technology. The person skilled in the art need not be an expert in the specific field of the invention. Therefore, I do not accept this submission aimed at discrediting or disqualifying Lava's witnesses on the ground that they are not persons skilled in the art. If this submission of Ericsson was to be accepted, it would in effect mean that the inventors of suit patents or patents related to the suit patents are the only persons skilled in the art, which clearly was not the objective of using the reference point of 'person skilled in the art.'

98. Lava has also questioned the credibility of Ericsson's expert witnesses i.e., PW-2 and PW-3 as they are interested witnesses, being in full-time employment of Ericsson. In my considered view, their evidence cannot be disregarded only on the ground that they are employees of Ericsson. The evidence given by them has to be tested on merits.

99. Specific analysis with respect to each of the suit patents on the aspect of novelty and inventive step shall follow.

6.3. THE SPECIFICATIONS OF THE SUIT PATENTS DO NOT SUFFICIENTLY OR FAIRLY DESCRIBE THE INVENTION OR THE BEST METHOD BY WHICH THE CLAIMED INVENTION IS TO BE PERFORMED OR

IMPLEMENTED.

6.3.1. SUBMISSIONS ON BEHALF OF THE PARTIES

100. It is submitted on behalf of Lava that the specifications of the suit patents do not sufficiently or fairly describe the claimed invention and also the method in which the claimed inventions are to be performed. Thus, the suit patents are liable to be revoked under Section 64(1)(h) and Section 64(1)(i) of the Patents Act.

101. *Per contra*, Ericsson submits that the claimed inventions and the inventive elements are specified and detailed in the complete specifications filed along with the suit patents. Further, the complete specification is addressed to a person skilled in the art and it should enable such a person to perform the invention.

6.3.2. LEGAL PROVISIONS AND SIGNIFICANT RULINGS

102. To begin with, a reference may be made to Section 64(1)(h) and Section 64(1)(i) of the Patents Act:

> *"**64. Revocation of patents -***
> *...*
> *(h) that the complete specification does not sufficiently and fairly describe the invention and the method by which it is to be performed, that is to say, that the description of the method or the instructions for the working of the invention as contained in the complete specification are not by themselves sufficient to enable a person in India possessing average skill in, and average knowledge of, the art to which the invention relates, to work the invention, or that it does not disclose the best method of performing it which was known to the applicant for the patent and for which he was entitled to claim protection;*
>
> *(i) that the scope of any claim of the complete specification is not sufficiently and clearly defined or that any claim of the complete specification is not fairly based on the matter disclosed in the*

specification;"

103. In the well-known treatise on patent, ***Terell on the Law Patents***[18], it has been specified that, whether or not the teaching of a specification is sufficient to enable the invention to be performed across the full width of the claim is a question of fact, the answer to which is highly sensitive to the nature of invention and also depends on attributes of the skilled persons and the effort which they can reasonably be required to apply.

104. The Division Bench of this Court in ***Ace Technologies* v. *Communication Components***[19], has also made similar observations. The relevant extracts from the said judgment are set out below:

> "*71. The contention that only the Claims have to be read for the purposes of adjudicating the challenge under Section 64(1)(h) or Section 64(1)(a) of the Patents Act, is unmerited.* ***The Claims have to be read along with the specifications. The embodiments also aid in understanding and interpreting the Claims. The question whether the Suit Patent sufficiently discloses the method for working the patent is required to be examined with reference to the specifications.***
>
> *73.* ***As stated above, we are of the view that the question whether the specifications fully disclose the method of working the Suit Patent - including the construction/configuration of the sub-sector antenna is required to be determined after the parties have had the opportunity to lead expert evidence/evidence of a person skilled in the art.***"
>
> *(Emphasis supplied)*

105. From the aforesaid, the legal position that emerges is that the claims of a patent must be interpreted in the context of the complete specification of the patent, and the sufficiency of the invention's disclosure should be evaluated taking into consideration the references to the claims and the complete specification. Further, the question with regard to the sufficiency

[18] Terrel on the Law of Patents, Vol. Sixteenth Edition, Pg 1201.
[19] *Ace Technologies v. Communication Components*, 2023 SCC OnLine Del 2082.

of a specification has to be from the stand point of a person skilled in the art and not a layman. It cannot be disputed that the complete specification is addressed to the person skilled in the art and it should enable such a person to implement the invention.

106. In ***Agfa NV and Anr. v. The Assistant Controller of Patents and Designs and Anr.***[20], while applying the aforesaid legal position, I have held that when a patent is describing the preferred embodiments of an invention and sufficiently describing the components of an invention, the Complete Specification of the patent is in conformity with the requirement of sufficiency of disclosure as per Section 10 (4) and Section 10 (5) of the Patents Act.

6.3.3. EVIDENCE LED ON BEHALF OF THE PARTIES

107. Lava has placed reliance on the evidence of G.S. Madhusudan (DW-1) and Dr. V. Kamakoti (DW-2) to submit that the specifications of the suit patents do not disclose the steps to be followed by a person skilled in the art to actually implement the patents and achieve the desired results.

108. Dr. V. Kamakoti (DW-2) in his affidavit has deposed in relation to the implementation of the suit patents. The relevant extract from his affidavit is set out below:

> "*29. I say that the patent claims are not capable of being implemented by themselves since they describe an abstract algorithm without any guideline on how the same is to be implemented. In order to implement the objective claimed by the patent, a person skilled in the art would have to use his skill and imagination to write a computer program for speech encoding comprising the mentioned attributes and then run the same on a*

[20] *AGFA NV and Anr. v. The Assistant Controller of Patents and Designs and Anr.*, 2023 SCC OnLine Del 3493.

general purpose computer. ***In fact, it has been stated in the patent specification at internal page 13 that there are numerous and readily apparent applications of the 'speech encoder' according to the alleged invention and that the same can be readily implemented using, for example, a suitably programmed digital signal processor or other data processing device, either alone or in combination with external support logic.*** *This belies the need for any specialized apparatus/ hardware / device for implementation of the patent claims. I also state that no external support logic is needed to implement the algorithms mentioned in the patent.*"

(Emphasis supplied)

109. It is the case of Ericsson that the deposition of Dr. V. Kamakoti (DW-2) is based on an incorrect understanding that the complete specification is not addressed to a person skilled in the art. On this aspect, Dr. V. Kamakoti was specifically cross-examined on behalf of Ericsson. The relevant extract is set out below:

"***Q.44.*** *Are you aware that patents specifications are addressed to persons skilled in the Art?*

A. *The 8 patent documents I have perused do not specifically say that they are addressed to persons skilled in the art but* ***they do mention that persons skilled in the art can understand and improve on the concepts that are presented.*** *Patent specifications, as we are witnessing in this case, need to be understood by non-engineers also. In this context, the skill according to me as answered in the previous question may not be valid in the context of this question.*"

(Emphasis supplied)

110. On behalf of Ericsson, Stefan Bruhn (PW-2) deposed in relation to the sufficiency of the suit patents. The relevant paragraph in this regard is set out below:

"*39) Further, upon a perusal of IN '034, IN '036, IN ' 157, IN '686 & IN '723 the context of the patents and the application area is clearly mobile communication and GSM/UMTS in particular. The GSM/UMTS system is a standard specified by ETSI/3GPP. These standards provide very clear*

guidance to implementers to realize the system including mobile phones. ***Billions of mobile phones that have implemented the GSM/ UMTS standard give clear evidence that the standard provides sufficient guidelines. The patent needs to be understood with this as a background and ought to be read from the eyes of a skilled person. An implementer of the GSM/ UMTS standard understands immediately the implications of the suit patents and how the claimed methods can be implemented. In addition, it is also well known as to how and with what hardware components to build a mobile phone and to implement the GSM/ UMTS standard in it. With this background, the manner of realisation of the claimed inventions in handsets, tablets etc., is also very clear. As a result, Lava's allegation that the complete specifications do not provide any implementation details and guidelines is completely far from reality. The standards are so clearly understood by the industry that, in fact, they are openly adopted and implemented in all telecommunication devices.*** *Further, in view of my submissions hereinabove, the claimed functionality/elements/components of the suit patents cannot be said to be restricted or limited to the chipset alone.*"

(Emphasis supplied)

111. Stefan Bruhn (PW-2) was cross-examined on this aspect. Relevant extracts from his cross-examination are set out below:

"***Q.203.*** *If the patent IN'234517 in fact discloses an invention called a codebook selection apparatus why then does this patent according to you need to provide guidance of any sort for implementing the apparatus that has been invented?*

A. ***Sufficient guidance is needed and provided for anybody skilled in the art such that it becomes possible to implement an apparatus that has the claimed gains or achievements of the patent.***

Q.225. *Please refer to Page-34 of your affidavit, please tell us which are these well-known hardware components which you are referring to?*

A. *At the time of disclosure of the AMR suit patents mobile telephony standards of ETSI, GSM have already existed and mobile telephony was already widely established. This means that at that time already it was known that mobile phones have to be built with hardware components like wires and other components built in silicon.* ***Consequently these hardware components were well known and it was also known how to configure them. The effects provided by the disclosed patents that have led to inventive***

improvements over the prior art are consequently achieved by the person skilled in the art and understanding the AMR suit patents."

(Emphasis supplied)

112. Mats Sagfors (PW-3) was also cross-examined on this aspect. The relevant extracts from his cross-examination are set out below:

"***Q.93.*** *If as you claim that the Plaintiff has invented a handset, then please specify the complete specifications of that handset including RAM, Processing speed, OS, Screen size and all other physical components and features of that invented handset?*

A. ***The invention provides clear guidance to the implementer for how to implement and benefit from the invention****. For example, the amount of RAM memory in the handset ·or screen size appears less relevant for establishing whether infringement has taken place or not.*

Q.94. *Can you please go' through the specifications of IN'747 and answer question No.93?*

A. ***IN'747 provides clear guidance to the implementer by referencing and describing the GSM state of art at that time****. For example, multiple ETSI documents were incorporated by reference with the submission of the invention so as the implementer would start from a position where he would know how to implement a GSM phone that incorporates GPRS. Then the skilled person will appreciate by reading IN'747 how he can benefit from the current invention by modifying the solution so that it now also includes IN'747.*

Q.l12. *You have stated that "IN'747 requires a functional handset integrating specialized hardware that can implement the solution of IN'747. Please name and provide specifications of the specialized hardware in a mobile handset which according to you is required to implement the solution of IN'747?*

A. *IN'747 gives clear guidance to the implementer of how to implement the mobile handset taking into account his knowledge about GPRS that is provided as background information in the patent specification. IN'747 sets out a transceiver unit that corresponds to the mobile station and describes precisely how this mobile station can be*

implemented. One such piece of hardware that is called specialized hardware in the question is for example a Base Band Processor. If one takes a 2G phone that does not support EDGE, it cannot be upgraded to support EDGE. The handset that supports EDGE needs to have the required support from start as set out in IN'747. IN'747 sets out the solution where the mobile station is capable of receiving a negative acknowledgement and in response to that it sub-divides a missing block into at least two blocks and retransmits those blocks with a different modulation and/or coding scheme. To have this specialized hardware is required.

Q.138. *Am I to understand that according to you a person skilled in the art as at 24th September, 1997 would be able to after reading IN'632 implement a 3G handset?*

A. *At that date the full specifications of 3G as we know them today were not yet completed. However, a significant amount of research that forms the basis of 3G had already been performed at that date. Ericsson and the concerned inventors of IN'632 were one of the main contributors to this activity.* ***It is my sincere understanding that a skilled person would on the basis of IN'632 have been able already then, provided IN'632 had been available to the skilled person, to implement and benefit from IN'632.*** *In fact, IN'632 can be said to be a core of 3G. Of course, there were other solutions that we now know as 3G that had not yet been conceived at that date, such as IN'471****. So, if the skilled person had been implementing and taking benefits of IN'632 at that very early date then the innovative handset would not have contained all the solutions that we recognize from a 3G phone as of today.*** *It should be noted that one handset can contain many innovative inventions such as IN'471 and IN'632 which are both included in a 3G handset. But no one could naturally have made a phone with the functionality of IN'471 before the inventors invented it.*

Q.172. *I put it to you that, the claims in IN'471 do not provide any method of their implementation?*

A. ***An implementer shall not read the claims alone. He shall read the background description and summary and the detailed description in order to appreciate how to take benefit of the invention and how to implement it.***"

(Emphasis supplied)

6.3.4. ANALYSIS AND FINDINGS

113. After analysing the evidence led on behalf of both the parties, I am of the considered view that the patent claims of Ericsson read with the complete specifications fairly and sufficiently describe the invention to enable the person skilled in the art to work the invention. I do not find any merit in the objection taken by Lava that the suit patents do not sufficiently or fairly describe the invention or that the method by which the claimed invention is to be performed or implemented is not disclosed. Consequently, the ground for revocation taken by Lava under Section 64(1)(h) and Section 64(1)(i) of the Patents Act is devoid of merits.

6.4. THE SUIT PATENTS WERE OBTAINED BY MAKING MISREPRESENTATIONS TO THE PATENT OFFICE.

6.4.1. SUBMISSIONS ON BEHALF OF THE PARTIES

114. It is submitted on behalf of Lava that Ericsson played a fraud on the Indian Patent Office for grant of suit patents and hence, Lava invokes ground of revocation under Section 64(1) (j) read with Section 8(1) of the Patents Act. In support of this submission, Lava claims that Ericsson has misled the Indian Patents Office by claiming that the suit patents are relating to 'devices' or 'apparatus'. According to Lava, the suit patents have only been obtained on account of clever drafting. In addition, specific averments have been made by Lava with regard to IN 241747, wherein Lava contends that the said patent does not involve any hardware component and is only a basic technique used in internet protocols since 1970s.

115. Further, it is the case of Lava that initially Ericsson claimed that the

suit patents are product patents and thereafter during oral submissions, Ericsson argued that the suit patents are algorithms with a technical effect. Therefore, Lava alleges that Ericsson engaged in deliberate misrepresentation to secure the suit patents from the Indian Patent Office by shifting their characterisation from product-based to algorithmic with technical effects, which underscores Lava's claim for revocation.

116. *Per Contra*, Ericsson rebuts the aforesaid submission by stating that all details and required information as also relevant documents regarding suit patents were duly provided by Ericsson to the Indian Patents Office. In the replication to the written statement of Lava, Ericsson has specifically rebutted Lava's claim that all the suit patents are algorithms by clarifying that all the suit patents actually relate to devices, apparatus, components and mobile stations and are consequently, product patents. It has been further stressed by Ericsson that the suit patents cannot be labelled as algorithms, which are only a set of instructions and are thus, theoretical in nature.

117. Broadly, it is submitted on behalf of Ericsson that only bald averments have been made on behalf of Lava that Ericsson obtained suit patents by misleading the Indian Patents Office and Lava has failed to lead any evidence in support of the said pleading.

6.4.2. LEGAL PROVISIONS AND SIGNIFICANT RULINGS

118. To appreciate the aforesaid ground taken by Lava, a reference may be made to Section 8(1) of the Patents Act as well as Section 64(1) (j) and Section 64(1)(m) of the Patents Act, which are set out below:

> "***8. Information and undertaking regarding foreign applications.***—*(1) Where an applicant for a patent under this Act is prosecuting either alone*

or jointly with any other person an application for a patent in any country outside India in respect of the same or substantially the same invention, or where to his knowledge such an application is being prosecuted by some person through whom he claims or by some person deriving title from him, he shall file along with his application [or subsequently [within the prescribed period as the Controller may allow]—

a) a statement setting out detailed particulars of such application; and

(b) an undertaking that, up to the date of grant of patent in India, he would keep the Controller informed in writing, from time to time, of detailed particulars as required under clause (a) in respect of every other application relating to the same or substantially the same invention, if any, filed in any country outside India subsequently to the filing of the statement referred to in the aforesaid clause within the prescribed time.

64. Revocation of Power patents.-
….

(j) that the patent was obtained on a false suggestion or representation;

(m) that the applicant for the patent has failed to disclose to the Controller the information required by section 8 or has furnished information which in any material particular was false to his knowledge."

119. Section 8 and Section 64(1)(m) of the Patents Act were the subject matter of consideration before the Division Bench of this Court in ***Sukesh Behl* v. *Koninklijke Phillips Electronics***[21]. It was observed that the revocation of a patent under Section 64 (1) (m) is not automatic and the Court can examine whether omission to furnish information under Section 8 of the Patents Act was deliberate or intentional. A patent can be revoked only if the Court comes to the conclusion that the failure to furnish said information on behalf of the patentee was deliberate. In this regard, the

[21] *Sukesh Behl v. Koninklijke Phillips Electronics*, 2014 SCC OnLine Del 2313.

relevant observations of the Division Bench are set out below:

> "*48. In the instant case, it is no doubt true that the Patent Attorney of the plaintiff himself in his affidavit filed before the COP stated that certain information in relation to corresponding foreign applications was omitted while filing the information as required under Section 8 of the Patents Act. However, it is not as if there was total failure on the part of the plaintiff to disclose the information in terms of the undertaking filed under Section 8(1)(b). The omission was only to furnish a part of the information for the reasons stated therein. It is also the specific case of the plaintiff that the information so omitted is not material to the grant of the patent in question.*
> *he information for the reasons stated therein. It is also the specific case of the plaintiff that the information so omitted is not material to the grant of the patent in question.*
> *e information for the reasons stated therein. It is also the specific case of the plaintiff that the information so omitted is not material to the grant of the patent in question.*
> *49. Under the circumstances, as rightly held by the learned Single Judge* ***revocation is not automatic under Section 64(1)(m), but it is always open to the Court to examine the question whether the omission to furnish the information was deliberate or intentional****. **The revocation would follow only if the Court is of the view that the omission to furnish the information was deliberate.** Therefore, it cannot be held that there is any unequivocal admission by the plaintiff and consequently, it is not a matter for granting a decree even before the evidence is let in by the parties as provided under Order XII Rule 6 of CPC.*"
>
> *(Emphasis supplied)*

120. A similar challenge premised on Section 8 and Section 64(1)(m) of the Patents Act was made before the Division Bench of this Court in ***Intex*** (Supra) in respect of the very same patents of Ericsson. The Division Bench observed that in its *prima facie* view, Intex has failed to show that Ericsson had deliberately suppressed any information relevant under Section 8 of the Patents Act from the Indian Patents Office. The Division Bench went on to hold that it is the obligation of the defendant to show how the breach of Section 8 is patent and manifest and that Intex failed to show how non-production of any document by Ericsson was material for revocation of the

patents asserted in the suit. It was held that Ericsson has duly filed all materials, which it deemed appropriate before the Controller and the Controller was satisfied with the same and hence, the patents were granted. The relevant observations of the Division Bench are set out below:

> "*CHALLENGE UNDER SECTIONS 3 AND 8 OF THE ACT ARE NOT MADE OUT*
> *139. In any event, Intex's validity challenge is primarily based on Sections 8 and 3(k) of the Act and the alleged lack of novelty and an inventive step. The said grounds prima face did not find favour with the learned Single Judge.* ***This Court is in agreement with the aforesaid prima facie findings and is of the view that Intex has failed to show how Ericsson has deliberately suppressed any information relevant under Section 8 of the Act from the Patent Controller.*** *In Communication Components Antenna Inc. v. Ace Technologies Corp., (2019) 79 PTC 270, it has been held that examination of patents is subjective and amendments are clarificatory in nature, if they do not alter the scope of the patents.*
>
> *xxx* *xxx* *xxx*
>
> *141. However, the Division Bench in Merck Sharp & Dohme Corporation v. Glenmark (supra) after considering the judgment in Chemtura Corporation v. Union of India (supra) has held that* ***Defendant is obligated to demonstrate how the breach of Section 8 provision is "patent and manifest". Without such evidence, the breach of Section 8 of the Act cannot be made the sole ground for non-grant of interim injunction*** *...*
>
> ***142.*** *Consequently, the argument by Intex of a 'Strict liability' test for noncompliance of Section 8 is contrary to law and it was in this context that the learned Single Judge has rendered the following findings:—*
> *"105.* ***The obligation of Section 8 cannot be so stressed in an action for infringement of patent*** *is concerned,* ***otherwise the injunction despite infringement cannot be granted in any matter for such a plea which appears to be false and frivolous. The same is not the scheme of the law****."*
>
> *143. In fact, acknowledging that the test in Chemtura Corporation v. Union of India (supra) has been watered down, Intex has sought to change*

its argument in the present appeal. But this Court is of the view that a new plea which was not considered by the learned Single Judge in its judgment cannot be raised to contend that the learned Single Judge has erred in interpreting Section 8 of the Act. ***In any event, Intex has failed to show how non-production of any document by Ericsson was material to grant/non-grant of the patents.***
rant of the patents.

144. Section 8(2) of the Act required a Controller to call for the information it deemed relevant. In response to the queries, Ericsson duly filed all relevant material, it deemed appropriate, before the Controller, after receipt of which no further demand was made by the Controller and the patents were duly granted ..."

(Emphasis supplied)

121. Even though the aforesaid observations were made in the context of interim injunction, the said observations would have direct bearing on the final adjudication of the present suit as the challenge made by Ericsson in the present suit is almost identical in respect of the same patents.

6.4.3. ANALYSIS AND FINDINGS

122. It is pertinent to note that while Lava has claimed that the suit patents of Ericsson are liable to be revoked on the ground of fraud/misrepresentation being played on the Indian Patents Office in its counter claim, it failed to present any substantial evidence to support the accusation of fraud or misrepresentation to the patent office.

123. As I have already discussed above, to successfully pursue the revocation of a patent on account of fraud or misrepresentation, it is essential to conclusively prove with cogent evidence that there has been deliberate or intentional misrepresentation(s) made by the patentee to the Indian Patents Office. A patent can be revoked only if such misrepresentation or omission is proven to be intentional inasmuch as the

statutory framework governing patents law is designed to ensure that patents are granted based on accurate and truthful disclosures. When a claim of fraud or misrepresentation is made, it challenges the very foundation of the granted patent and, by extension, the credibility of the patent system. Consequently, the threshold for proving such allegations is understandably high, requiring clear and convincing evidence of intentional wrongdoing. Mere allegations are not sufficient to revoke a patent; there must be a clear demonstration of intentional deceit. Therefore, given the lack of concrete evidence from Lava to support its contentions for revocation of the patents under Sections 64(1)(j) and 64(1)(m) of the Patents Act, the said claim is found to be unsubstantiated and is therefore, rejected.

7. INVALIDITY OF IN 203034

124. The first suit patent asserted by Ericsson in the present suits is IN 203034 titled as '*Linear Predictive Analysis by Synthesis Encoding Method and Encoder.*' The Bibliographic details of the said patent are set out in the following table:

Patent Number	203034
Application Number	IN/PCT/2001/00260/MUM
Priority Date	16/09/1998
Type of Application	PCT NATIONAL PHASE APPLICATION
PCT International Application Number	PCT/SE99/01433
PCT International Filing Date	24/08/1999
Date of Patent	24/08/1999

Date of Grant	19/10/2006
Date of Recordal	29/11/2006
Appropriate Office	MUMBAI
Title of the Patent (As granted)	APPARATUS OF PRODUCING FROM AN ORIGINAL SPEECH SINGAL A PLURALITY OF PARAMETERS

125. The Independent Claims of the said patent are Claim No. 1 and 8, which are set out below:

> *"1. A **linear predictive analysis-by-synthesis coding method**, characterized by*
> ***determining optimum gains** of a plurality of subframes;*
> *vector quantizing said optimum gains; and*
> *updating internal encoder states using said vector quantized gains.*
>
> *xxx xxx xxx*
>
> *8. A linear predictive analysis-by-synthesis encoder, characterized by*
> ***a search algorithm block** (50) for determining optimum gains of a plurality of subframes;*
> *a vector quantizer (58) for **vector quantizing said optimum gains**; and*
> *means (50, 52, 54, 56) for **updating internal encoder states using said vector quantized gains**."*

7.1. CLAIM CONSTRUCTION

126. From a reading of the Complete Specification of IN 203034 including the claims of the said patent, it is evident that the object of the invention of the said patent is to increase coding efficiency by vector quantizing the optimal gain parameters of several sub-frames. Thereafter, the encoder states are updated using these vector quantizing gains as determined by the first Independent Claim. The technical advancement claimed by Ericsson is the feature reduction in the number of bits required to encode a frame and in maintaining the synchronisation between the internal

states of the encoder and decoder to ensure seamless communication. The said finding has been drawn on the basis of the summary of the invention as given in the complete specification of this suit patent. The relevant extract of the 'Summary of the Invention' in the Complete Specification is set out below:

> *"SUMMARY OF THE INVENTION*
> *An object of the present invention is a linear predictive analysis-by-synthesis (LPAS)*
> ***CELP based encoding method and encoder that is efficient at low bitrates, typically at bitrates below 8 kbits/s, and which synchronizes its internal states with those of the decoder.***
> *This object is solved in accordance with the appended claims.*
> *Briefly,* ***the present invention increases the coding efficiency by vector quantizing optimal gain parameters of several subframes. Thereafter the internal encoder states are updated using the vector quantized gains.*** *This reduces the number of bits required to encode a frame while maintaining the synchronization between internal states of the encoder and decoder."*

127. The background of this patent specifically reveals that at low bit rates, coding efficiency decreases as the number of bits available for each parameter decreases and the quantization accuracy suffers. This is one of the problems that the present invention aims to solve.

128. Before going further, the question that needs answering is what exactly does coding efficiency refer to in the context of this suit patent. Coding efficiency in the present context is about reducing the bitrate necessary to encode speech while maintaining high audio quality, ensuring synchronisation between the encoder and decoder, and achieving these goals without overly complicating the encoding process. The relevant extracts of the complete specification are set out below:

> *"In the above description it has been assumed that **gains of 2 subframes are vector quantized.** If increase complexity is acceptable, a further performance improvement may be obtained by extending this idea and vector quantize the gains of all the subframes of a speech frame. This requires backtracking of several subframes in order to obtain the correct final internal states in the encoder after vector quantization of the gains.*
>
> *Thus, it has been shown that **vector quantization of gains over subframe boundaries is possible without sacrificing the synchronization between encoder and decoder. This significantly improves compression performance and allows significant bitrate savings.** For example, it has been found that when 6 bits are used for 2 dimensional vector quantization of gains in each subframe, 8 bits may be use in 4 dimensional vector quantization of gains of 2 subframes without loss of quality. Thus, 2 bits per subframe are saved (14(2*6-8)). This corresponds to 0.4 kbits/s for 5 ms subframes, a very significant saving at low bit rates (below 8 kbits/s, for example).*
>
> *It is to be noted that no extra algorithmic delay is introduced, since processing is changed only at subframe and not at frame level. Furthermore, this changed process-ing is associated with only a small increase in complexity.*
>
> *The preferred embodiment, which includes error weighting between subframes (α, β) **leads to improved speech quality**"*

129. In effect, maintaining coding efficiency is a natural goal in speech encoding, where the aim is to reduce the amount of data (bitrate) required to encode audio signals without significantly compromising quality. With this clarity, I shall move on with the assessment of the patentability of the Claims of IN 203034. In this regard, I shall firstly consider the evidence placed on record by both parties.

7.2. PATENTABILITY OF THE CLAIMS

7.2.1. EVIDENCE LED ON BEHALF OF LAVA

130. Evidence of Dr. V. Kamakoti (DW-2) and GS Madhusudan (DW-1) has been led by Lava, to support their contention that IN'034 is directed towards an algorithm.

131. In his deposition, Dr. V. Kamakoti (DW-2) deposed that the core of the invention involves converting analog speech signals into digital form and then compressing these digital signals for efficient transmission, while maintaining speech quality through speech encoding. According to him, the Linear Predictive Analysis-by Synthesis (LPAS) method, is a well-known speech encoding algorithm which has been in use since 1996 and has applications in data compression and speech encoding.

132. The primary contention of Dr. V. Kamakoti (DW-2) is that the main Claim of the patent is solely directed towards a well-known algorithm. To support this assertion, he has stated that both the Independent Claims are essentially representing an algorithmic process without a distinct hardware or specialised apparatus to support implementation of the Claims. The relevant extracts from the Evidence of Dr. V. Kamakoti (DW-2) are set out below:

> *"10. I say that in IN 203034, the claimed invention.is directed to Linear Predictive Analysis-by Synthesis (LPAS) encoding method and encoder. When a person speaks into a mobile phone, the speech (analog signal) is converted into digital signal. In order to effectively transmit the digital speech to the receiver phone, the digital speech signals are compressed so that they use as few bits as possible while maintaining speech quality. This process of compressing digital speech is referred to as speech encoding.*
>
> *11.* ***I say that Linear Predictive Analysis-by-Synthesis method is widely accepted as a speech encoding algorithm which has been well-known in the art since 1996. LPAS coding is used in several applications such as compression of other forms of data.***
>
> *12.1 say that distinction being claimed in IN'034 from the prior art*

LPAS encoding method is that it pertains to the following three steps which are claimed as characteristic of the method patented by IN '034:
a) Determining optimum gains across plurality of subframes;
b) Vector quantization of the determined optimised gains; and
c) Updating internal encoder states using said vector quantized gains.

13. ***I say that all three aforementioned steps claimed to be characteristic of the LPAS method claimed in IN '034 are algorithms which may be considered as sub-functions of the parent LPAS encoding algorithm. Thus, Claim 1 of IN '034 is drawn to an algorithm.***

14. I say that Claim 8 of IN '034 is drawn to an LPAS encoder which has been claimed to be characterised by the following:
a) A search algorithm. block (50) for determining optimum gains of plurality of subframes;
b)A Vector quantizer (58) for vector quantizing said optimum gains, and
c) Means (50, 52, 54, 56) for Updating internal encoder states using said vector quantized gains.

15. ***I say that an LPAS encoder is nothing but an algorithm and the distinction drawn between "LPAS method", as referred in Claim 1, an "LPAS encoder", as referred in Claim 8, is not borne out from anything in the patent claims or specifications.*** *The patent specifications do not provide for any specialised speech encoding apparatus I hardware / device for implementing the algorithm claimed in Claim 1 and, instead, admit that the functionality of algorithm search block (50) and vector quantizer (58), which, it has been claimed characterise the "LPAS encoder" in terms of IN '034, may be implemented using one or several microprocessors or micro/signal processor combinations.*

16.1 say that the only possible way in which a person skilled in the art may implement an LPAS encoder in accordance with the suggested algorithmic technique is by using his own skill and imagination to write a computer program and then performing the software on a general purpose computer, i.e. a microprocessor or micro/signal processor combinations. No implementation, either in software or hardware, is provided in IN '034."

133. Further, G.S. Madhusudan (DW1) has deposed in his affidavit that the

LPAS method suggested in IN'034 is an algorithm which is only setting out the required steps to be carried out in the process of encoding of digital signals that are to be transmitted. Specifically, he has claimed that algorithms have been used to calculate values like gains and to minimize weighted error. Further, he claims that the use of a 'First In First Out' (FIFO) method for state storage, a standard approach in computer science, is clarifying that the invention does not extend beyond the realm of a typical algorithm, employing well-understood concepts in computer science. The relevant extracts from the affidavit of G.S. Madhusudan (DW1) are set out below:

> *"40.* ***The algorithm described in the patent uses known techniques to calculate values like gains and to minimize weighted error.*** *The final formula used to give weightage to each frame is also a simple weightage formula.* ***Ericsson has used a 'First In First Out' method for temporary state storage which is an extremely common computer science data structure.*** *It should also be noted that other data structures like queues can be used if the implementer wants access to values in the middle of the queue for say debugging reasons. In fact, these aspects are decided by the implementer of the software and the use of the FIFO is not mandatory.* ***A FIFO simply is a First In First Out data structure.***
>
> *44.* ***In my opinion, the reference to apparatus or hardware elements in relation to IN 203034 is completely superfluous. I find no reference in the text of the patent claims or specifications to any hardware component or any physical element****. A* ***speech encoder, as described in the patent claims and specifications is an algorithm and not a physical apparatus / device / hardware element.*** *In fact, the technical specification of the patent itself states that software derived from this specification can be run on a microprocessor. So Ericsson agrees that the claims refer to algorithms, the algorithms need to be translated to software separately and the method for doing so is not specified and when realized as software no special Hardware or apparatus is required.*
>
> *45. In fact, the following elements used in the patent claims:*

- *Vector quantizing / quantizer;*
- *Determining optimum gains of a plurality of subframes;*
- *Encoder;*
- *Internal inner states;*
- *Weighting error contributions;*
- *Weighting factor*
- *Search algorithm*

are all mathematical subcomponents of the encoding algorithm claimed in the patent and cannot be construed to be physical manifestations of any form. In fact, if the only novelty claimed by Ericsson is the way in which sub-frames are quantized, it is obvious that the hardware involved does not require any change from existing known hardware. Only the algorithm used changes. So it is evident that no special apparatus is involved.

46. ***An encoder is nothing but a sub-component of the parent algorithm described in the patent claims and the diagrams are merely visual aids to explain the scheme of the algorithm. Figure 3 is not an embodiment of an encoder, as claimed, but a representation of the claimed algorithm.*** ***The mere representation of these elements in a block / flow diagram does not transform them from abstract mathematical entities into apparatuses / devices.*** *These diagrams are merely visual aids to explain the scheme of the algorithm. The patent itself refers to the claimed invention as an algorithm and acknowledges that the functionality of algorithm search block 50 and vector quantizer 58 is, for example, implemented using several microprocessors or micro / signal processor combinations.*

47. There is no implementation guideline given for implementing the higher level algorithm specified in the patent and implementation techniques are left to the imagination of the implementer. The patent itself assumes use of vector quantizing algorithms which in themselves are not unique. ***Vector quantizing itself can be implemented via multiple algorithms.*** *The patent itself allows use of multiple sub-algorithms for a possible implementation and also does not give any guideline for selecting the sub-algorithms. For instance, there is a reference to a search algorithm. Implementers can choose different algorithms to optimize search depending on the type of computing system used. In effect, a lot more work has to be done by the*

implementer to realize an actual system and these need not necessarily be the techniques outlined here.

48. Typically, the algorithm described in the patent are performed using general purpose hardware and use of specialized hardware is not required. ***Even as per the patentee, the patents are drawn to algorithms and the inventive step resides in the algorithm only. In any event, there is no specific hardware implementation mentioned in the patent.*** *Even if any software is developed or designed for implementing the algorithm which is described in this patent, that software would not cause any physical change in the hardware i.e. the physical device/computer or mobile phone. The software merely utilizes the general purpose hardware for performing its functions at the level of microprocessor or hardware and there would be no change effected in the hardware. The paper "The Implementation and Optimization of AMR or Mobile Device" by Jie Yang, Journal of Software, Vol. 4, No. 9, November 2009, clearly establishes that AMR is an algorithm and shows a software implementation of the same on a mobile device having general purpose processor. The said paper is available at http://www.jsoftware.us/ and I have myself downloaded it on my computer which was functioning properly at the time and the print out of the same is being tendered by me and may be marked as Exhibit DW-1/5."*

7.2.2. EVIDENCE LED ON BEHALF OF ERICSSON

134. *Per Contra*, on behalf of Ericsson, Stephan Bruhn (PW-2) has deposed and argued against Lava's claim that IN' 034 is merely an algorithm and not related to any device, mobile handset, or apparatus. He asserts that Dr. V. Kamakoti (DW-2) and G.S. Madhusudan (DW-1) have not considered the granted Claims of IN'034 in their entirety and only focused narrowly on certain elements to disregard the hardware or technical effect of the claimed invention. Specifically, he asserts that Claim 8 and its dependent claims, describe an improved speech encoder, which is a physical apparatus that encodes speech into a compressed form for efficient

transmission. According to him, this process involves tangible components including a digital signal processor within a mobile phone, emphasizing that the invention has a practical realisation and a physical effect, going beyond just an algorithm. He also highlights that the claimed invention results in a technical advancement by improving speech quality for transmission, utilising physical components to achieve this result. The relevant extracts of Stephan Bruhn (PW-2) are set out below:

> *7) I disagree with Lava's contention that IN '034 is purely an algorithm, and does not relate to a device or mobile handset or an apparatus. I have perused the reports filed by Dr. V Kamakoti and the affidavits filed by Mr. G.S. Madhusudan and say that the averments contained therein are flawed.* ***Both Kamakoti and Madhusudan, in their analysis have failed to take into consideration, the granted claims in their entirety and have focused on certain elements, in an attempt to overlook hardware or apparatus or the technical effect of the claimed invention.*** *Madhusudan has made an incorrect averment that ..... reference to network or hardware elements, 'apparatus' or components is completely superfluous. I find no reference in the text of the patent claims or specifications to any hardware component or physical elements and as mentioned above, the elements mentioned in the patent are merely mathematical/algorithm constructs .... even as per the patentee the patents are drawn to algorithms and the inventive step resides in algorithm alone."*
>
> *8)* ***The invention and claim 8 (and dependent claims) of IN '034 in particular relate to an improved speech encoder. A speech encoder is a physical apparatus, encoding input speech into a compressed representation that is more suitable and used for transmission (as a radio wave) to a decoder that re-synthesizes the speech. Encoder and decoder are hence practical realizations of a speech coding and decoding method, which have a physical effect and as such are much more than just an algorithm. Speech is by definition not an abstract, but a physical item*** *(a sound pressure wave propagating through air) produced by a human. The ultimate object of the invention is an efficient encoder, meaning that the synthesized speech quality in relation to the radio resource needed for transmission is as high as possible. Speech quality is an effect perceptible by humans, and thus the claimed*

invention possesses a technical effect/advancement. The characterizing features of claim 8 are a search algorithm block, a vector quantizer, and means for updating encoder states using vector quantized ga ins. These features require practical realizations for the encoder as claimed to function. A mobile phone device that realizes the encoder, does this in practice in an inbuilt digital signal processor with among others a processing unit, a memory unit and wired connections between these units i.e. by means of physical components/elements. Numbers and numeric values like for e.g. the vectors of the vector quantizer, optimum and quantized gain values and internal encoder states are represented by electric charges, that are compared (the result of the comparison is a furth er electric charge), held and transferred within and between processing and memory units. The input to the claimed encoder, is in any case a physical representation of the speech, by means of electric charges, the output is encoded speech, also represented by electric charges, and any intermediate calculation value that occurs during the claimed encoding, including the characterizing features are represented by electric charges or comparisons of such charges. ***The algorithmic description in the patent is merely used for illustrating the functionality of the apparatus.***

9) It is further notable that the method claimed in claim 1 and dependent claims also require a physical realization. This is since speech is a physical signal rather than a mere abstract item. The claimed elements, optimum and vector quantized gains, and internal encoder states are derivatives of the speech signal and as such also physical representations. Accordingly, ***it is incorrect to say that the claimed invention can be incorporated in a general purpose computer as it has to be implemented in a dedicated hardware of a mobile phone to function in cellular telephony****. General averments related to Linear Predictive Coding have been relied upon by Dr. V Kamakoti without giving details of 'actual alleged multiple implementations' of the patented invention. The claimed encoder and method of coding have resulted in a more efficient and advanced handset (UE) and it cannot be said that there is no technical effect or technical advancement over what was previously known. In fact, the efficacy of not only the UE is improved but also of the spent resources. Given that bitrate is a limited resource, the same effect (i.e. a certain degree of speech quality) is achieved with reduced bitrate usage as the phone needs to transmit fewer information bits.*

7.2.3. ANALYSIS AND FINDINGS

135. I have considered the Complete Specification of the patent IN 203034, the pleadings on record and also the evidence led by both the parties. Consequently, upon analysis of Claim 1, it is revealed that the said Claim is outlining a method characterised by three steps:

Step 1: determining optimum gains of subframes,

Step 2: vector quantizing these gains, and

Step 3: updating internal encoder states using the quantized gains.

136. In my considered view, the focus in IN 203034 here is on a series of procedural steps to achieve a certain result in coding. The key to understanding if this is fundamentally an algorithm lies in the nature of these steps. If these steps involve mathematical or computational procedures that are algorithmic in nature, then this Claim could be seen as based on an algorithm. In the present case, in my assessment, the complete specification reveals that methods which are used in the present invention are substantially being derived from algorithmic processes. The relevant extracts of the complete specification are set out below:

> *"The present invention will now be described with reference to fig. 2 and 3.*
> ***Fig. 2 is a flow chart illustrating the method in accordance with the present invention***. ***The following algorithm may be used to encode 2 consecutive subframes*** *(assuming that linear prediction analysis, quantization and interpolation have already been performed in accordance with the prior art):*
>
> *xxx xxx xxx*
>
> *Fig. 3 is a block diagram illustrating an embodiment of an LPAS encoder in accordance with the present invention. Elements 10-40 correspond to similar elements in fig. 1.* ***However, search algorithm block 32 has been replaced by a search algorithm block 50 that in addition to the codebooks and scaling elements controls storage blocks 52, 54, 56 and a vector quantizer 58 over control lines 60, 62,***

64 and 66, respectively.
Storage blocks 52, 54 and 56 are used to store and restore states of adaptive code-book 18, synthesis filter 14 and weighting filter 16, respectively. Vector quantizer 58 finds the best gain quantization vector from a gain codebook 68.
The functionality of algorithm search block 50 and vector quantizer 58 is, for example, implemented as on ore several micro processors or micro/signal processor combinations.*"*

137. Therefore, it is evident that the present patent involves specific mathematical formulas and computational procedures, which are also predominantly using an algorithm i.e., the search algorithm and consequent updating of the states of the encoder and decoder. As per this understanding, it is evident that the first Independent Claim is directed towards algorithms as the subject matter.

138. Upon analysis of Claim 8, it is revealed that this Independent Claim describes a physical device (encoder) comprising several components, including a search algorithm block for determining optimum gains, a vector quantizer for quantizing these gains, and means for updating internal encoder states using the quantized gains. Here, the focus is on a tangible apparatus with specific components, one of which is a 'search algorithm block'. This suggests that an algorithm, i.e., the search algorithm is a part of the encoder, but the Claim as a whole is about a physical device that incorporates this algorithm and thereby enhances the capability of the physical component. Therefore, this Claim is not purely about an algorithm, but rather about a hardware device that utilizes an algorithm as part of its function. However, the said technical advancement on the device is being achieved predominantly by means of an algorithm and the algorithmic aspects are central to the overall invention.

139. I have perused the affidavit of Stephan Bruhn (PW-2), in which he has presented a different perspective on the nature of the invention claimed in IN'034, emphasizing the physical aspects and technical effects of the encoder. However, the reasoning that the Independent Claims and summary of the invention are solely related to an algorithm is not negated by the deposition of Stephan Bruhn (PW-2). Instead, he has highlighted a different interpretation of the patent claims, focusing on their practical realization in hardware.

140. I have considered the deposition presented by Stephan Bruhn wherein it is his contention that the algorithms defined in IN'034 require practical realizations in hardware to function. However, this does not necessarily contradict the assertion that the Claims themselves are describing an algorithm and a series of procedural steps to be followed. In my considered view, the distinction lies in the difference between the algorithm as a concept and its implementation in a physical apparatus. While I acknowledge that Stephan Bruhn has pointed out in his affidavit that that the encoder and its components ultimately have physical realizations in a mobile phone device, this does not change the fact that the claims are written in algorithmic terms indicating a series of procedural steps to be followed.

141. Stephan Bruhn (PW-2) has argued that IN 203034 has a technical effect and advancement, as it improves speech quality and efficiency in relation to radio resource usage, which is a hardware component according to him. However, this does not at all negate the earlier findings that Claims in effect are describing an algorithm and sequence of processes to follow and even the technical effect so claimed is dependent on the algorithm and

the sequence of processes to be followed. Further, while Stephan Bruhn (PW-2) emphasizes that speech is a physical signal and that the claimed elements have some physical representations, the fact that the signals are physical in nature does not negate the conclusion that the method for processing the physicals signals, for which protection has been sought in the Claims of IN 203034, is algorithmic in nature and involves procedural steps.

142. I have also taken into consideration Ericsson's submission that IN'034 specifically has been implemented on hardware components. The relevant extract relied upon by Ericsson for the said purpose is:

> *".....*
> *Fig. 3 is a block diagram illustrating an embodiment of an LPAS encoder in accordance with the present invention. Elements 10- 40 correspond to similar elements in fig. 1. However, search algorithm block 32 has been replaced by a search algorithm block 50 that in addition to the codebooks and scaling elements controls storage blocks 52, 54, 56 and a vector quantizer 58 over control lines 60, 62, 64 and 66, respectively. Storage blocks 52, 54 and 56 are used to store and restore states of adaptive codebook 18, synthesis filter 14 and weighting filter 16, respectively. Vector quantizer 58 finds the best gain quantization vector from a gain codebook 68.*
> ***The functionality of algorithm search block 50 and vector quantizer 58 is, for example, implemented as on ore several micro processors or micro/signal processor combinations.***
> *...."*

143. In the above extract, various elements of the LPAS encoder, including the search algorithm block, storage blocks, and vector quantizer have been described briefly. It is crucial to note that the extract specifies the functions of these elements, which includes controlling storage blocks, finding the best gain quantization vector, and storing as also restoring states of different filters. In my considered view, these functions are further indicative of the finding that IN'034 is primarily directed at algorithmic processes, as the said

functions are involving data manipulation and decision-making based on input data. Further, the contention that the functionality of the algorithm search block and vector quantizer in IN'034 is implemented using one or several microprocessors or micro/signal processor combinations is a self-defeating statement, inasmuch as it directly indicated that the specific hardware used for implementation is not fixed and thereby, not the focus of IN'034 and the actual scope of IN'034 is concerned with the functionality, which in my considered view, is a result of algorithmic processes. Finally, the specific usage of the terms control lines and the interactions between different elements further emphasizes the algorithmic nature of the invention claimed in IN'034, inasmuch as control lines indicate that there is a logical flow of information and control signals between different parts of the encoder, which is again a characteristic of algorithms.

144. Overall, the description of IN'034 includes both hardware elements including like the adaptive codebook, synthesis filter, vector quantizer, etc. and processes (such as the search algorithm block). The invention details various steps in the encoding process, such as quantizing filter coefficients, scaling code vectors, and updating internal states. These steps indicate a method that involves algorithmic processing. The search algorithm block is an essential component in the encoder's design. It works in conjunction with other parts like the vector quantizer and various storage blocks, indicating that the algorithm is a part of a larger system claimed in the invention.

145. The main objective of the invention is to improve coding efficiency at low bitrates and maintain synchronization between the encoder and decoder's internal states. The algorithms significantly contribute to

achieving this goal, while the implementation involves the strategic use of hardware components and specific encoding techniques. In summary, algorithms are integral to the function of the encoder described in this invention. The solution to the problem as presented in the description is centred around algorithms. The algorithms are central to the design choices and functioning of a comprehensive encoding system that includes algorithms as a substantial part of its operation.

146. I have already noted that, in ***OpenTV (supra)***, a Coordinate Bench of this Court, has clarified that in India, due to the unique nature of Section 3(k) of the Patents Act, the bar on grant of patents on mathematical or business methods and also algorithms have to be read as an absolute bar without analysing issues relating to technical effect, implementation, technical advancement or technical contribution. In the present invention, the specific mention of a 'search algorithm block' implies that the algorithm is an essential part of the encoder's design and functionality. The indications that the invention is about a physical device that uses an algorithm as part of its operation make it clear that the technical advancement of the invention relies on algorithms at the heart of the solution. Therefore, there is merit in the counter-claim of the Lava that IN'034 is liable to be revoked as it conforms to non-patentable subject matter in terms of Section 3(k) of the Patents Act.

147. Even though, the above analysis has revealed that IN'034 is liable to be revoked on the ground of Section 64(1)(d) read with Section 3(k) of the Patents Act, considering a specific challenge has been made under Section

64(1)(e) and 64(1)(f) of the Patents Act. I shall proceed to deal with the same.

7.3. CHALLENGE TO THE NOVELTY OF IN 203034

7.3.1. PRIOR ART: G.729

148. It has been claimed by Lava that IN 203034 is liable to be revoked in terms of Section 64(1)(e) of the Patents Act for lacking novelty. For this purpose, Lava has relied upon the ITU-T Recommendation G.729 titled Coding of Speech at 8kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP) issued by the ITU-T (Telecommunication Standardization Sector) which is a permanent organ of the International Telecommunication Union (ITU). As per the said document, the ITU-T Recommendation G.729 was prepared by ITU-T Study Group 15 (1993-1996) and was approved under the World Telecommunication Standardization Conference (WTSC), Resolution No. 1 procedure on the 19th March, 1996. Considering that the priority date of IN'034 is 16th September, 1998, the said prior art is prior to IN'034 and would qualify to be a prior art document. The claim of lack of novelty of IN'034 has been made on the basis of the ITU recommendation G.729 and the relevant portion has been identified and extracted in the written statement and counter claim. Specific evidence has also been led by Lava to substantiate its claim of lack of novelty.

7.3.1.1. ANALYSIS AND FINDINGS: G.729

149. The said prior art document describes the process involved in speech encoding and processing as part of a digital communication system, specifically focusing on encoder operations, linear prediction (LP) analysis and quantization, gain quantization and memory update mechanisms. In essence, the prior art outlines a method for encoding speech signals, while emphasising the importance of linear prediction for filter coefficient computation, efficient quantization techniques, and adaptive processing to minimize perceptual distortion. Further the prior art also highlights the requirement of optimising memory and computational resources in speech encoding systems.

150. The comparison between the G.729 document and the patent Claims reveal key areas of overlap in speech encoding techniques. Both the G.729 document and the patent employ LPAS encoding methods, in addition both the documents are emphasising their applicability in low bitrate scenarios. Further, both the documents incorporate vector quantization methods for optimising gains, with a focus on processing speech in subframes for efficiency. A crucial aspect of both the prior art document and also IN'034 is the management of internal encoder states for ensuring synchronisation. While the patent IN'034 outlines a structured procedure for storing, restoring, and updating encoder states, the prior art document G.729 incorporates perceptual weighting. Contrarily, the patent distinctly articulates the use of error weighting based on subframe energy, showcasing a refined strategy for preserving audio quality at reduced bitrates. This distinction underscores the patent's targeted approach towards enhancing performance in scenarios of low bitrate, differentiating it from the broader,

implicit methods suggested by the prior art document G.729.

151. In my considered view, the novelty of the patent is indeed tested by the prior art document G.729 due to significant overlaps in methodology and technology. Both the prior art and IN 203034 address linear predictive analysis-by-synthesis encoding, employ vector quantization of gains, and process speech in subframes, which are foundational to the Claims of IN' 034. While IN' 034 introduces specific mechanisms for internal state synchronization and error weighting, these are incremental enhancements at best and not groundbreaking departures from the established G.729 standard, which has been relied upon as a prior art by Lava.

152. A tabular chart of the comparison of the different elements of the prior art and the invention in IN203034 is set out below:

Feature	**G.729 (Prior Art)**	**Claims of IN'034**
Encoding Method	Uses LPAS	Specifies LPAS encoding for low bitrates
Vector Quantization of Gains	Employs vector quantization	Focuses on vector quantizing optimum gains
Subframe Processing	Processes speech in subframes	Details processing and quantizing in subframes
Internal State Management	Implicitly updates internal state	Explicitly stores/restores/updates internal states for synchronization
Error Weighting	Uses perceptual weighting (implied)	Weighting based on subframe energy

Adaptive and Fixed Codebook	Utilizes adaptive and fixed codebooks	Uses codebooks for determining gains
Optimization for Low Bitrates	Designed for efficient low-bitrate encoding	Aims to increase efficiency at sub-8 kbits/s bitrates

153. Consequently, I hold that the novelty of IN 203034 is compromised as the core components, techniques and objectives of IN'034 closely mirror those already disclosed in the prior art, challenging the patent's claims to being a novel solution.

7.4. CONCLUSION

154. In light of the above discussion and analysis, the patent protection granted to IN 203034 is liable to be revoked, as the Claims of the said patent pertain to non-patentable subject matter and also lack novelty in light of the prior art cited.

155. Consequent upon the determination that the inventive concept and the Claims of IN 203034 relate to non-patentable subject matter and are also liable to be revoked on account of lack of novelty, there is no requirement to proceed with a further analysis on lack of Inventive Step or obviousness.

8. INVALIDITY OF IN 203036

156. Now, I shall proceed with the analysis on the issue of invalidity for the second patent asserted i.e., IN 203036 titled as '*Apparatus of producing from an original speech signal a plurality of parameters*'. The Bibliographic

details of the said patent are set out in the following table:

Patent Number	203036
Application Number	IN/PCT/2001/00290/MUM
Priority Date	01/09/1998
Type of Application	PCT NATIONAL PHASE APPLICATION
International Filing Date	06/08/1999
Date of Grant	22/07/2010
Date of Recordal	29/11/2006
Appropriate Office	MUMBAI
Title of the Patent (As granted)	APPARATUS OF PRODUCING FROM AN ORIGINAL SPEECH SIGNAL A PLURALITY OF PARAMETERS

8.1. CLAIM CONSTRUCTION

157. The said patent has been filed with thirteen Claims. The Independent Claims of the said patent are Claim No. 1 and 12, which are set out below:

> "*1. A speech encoding apparatus, comprising:*
> *an input for receiving an original speech signal;*
> *an output for providing information indicative of parameters from which an approximation of the original speech signal can be reconstructed; and*
> *a controller coupled between said input and said output for providing in response to the original speech signal a further signal intended to represent the original speech signal, said controller further for determining at least one of said parameters based on first and second differences between the original speech signal and the further signal, wherein said first difference is a difference between a waveform associated with the original speech signal and a waveform associated with the further signal, and wherein the second difference is a difference between an energy parameter derived from the original speech signal and a corresponding energy parameter associated with the further signal.*
>
> *xxx xxx xxx*

12. A transceiver apparatus for use in a communication system, comprising:
an input for receiving a user input stimulus;
an output for providing an output signal to a communication channel for transmission to a receiver via the communication channel; and a speech encoding apparatus having an input coupled to said transceiver input and having an output coupled to said transceiver output, said input of said speech encoding apparatus for receiving an original speech signal from said transceiver input, said output of said speech encoding apparatus for providing to said transceiver output information indicative of parameters from which an approximation of the original speech signal can be reconstructed at the receiver, said speech encoding apparatus including a controller coupled between said input and said output thereof for providing in response to the original speech signal a further signal intended to represent the original speech signal, said controller further for determining at least one of said parameters based on first and second differences between the original speech signal and the further signal, wherein said first difference is a difference between a waveform associated with the original speech signal and a waveform associated with the further signal, and wherein the second difference is a difference between an energy parameter derived from the original speech signal and a corresponding energy parameter associated with the further signal."

158. From a reading of the Complete Specification of IN 203036 and the Claims of the said patent, it is clear that the said invention is primarily concerned with the objective of improving the efficiency and accuracy of speech signal processing and transmission in communication systems. In IN'036, this is achieved through a specific speech encoding technique that focuses on key differences in waveform and energy parameters.

159. For the purposes of understanding the invention, I have also considered the abstract of IN'036 from the Complete Specification. For ready reference, the said abstract is also set out below:

"In producing from an original speech signal a plurality of parameters from which an approximation of the original speech signal can be reconstructed, ***a further signal is generated in response to the original speech signal****, which further signal is intended to represent the original speech signal.* ***At least one of the parameters is determined using first***

> ***and second differences between the original speech signal and the further signal. The first difference is a difference between a waveform associated with the original speech signal and a waveform associated with the further signal, and the second difference is a difference between an energy parameter derived from the original speech signal and a corresponding energy parameter associated with the further signal***."

160. From a reading of the Abstract, it is understood that there are three key concepts and processes involved in the speech encoding apparatus being claimed in the present invention. The said three concepts and processes are

i. Generating a Further Signal - A new signal is generated in response to the original speech signal, intended to closely represent the original speech signal.

ii. Producing Parameters for Reconstruction of a speech signal - IN'036 involves extracting multiple parameters from the original speech signal, which are critical for accurately reconstructing an approximation of the original speech signal.

iii. Determination of Parameters Using Differences in wave forms and energy parameters - At least one of the parameters is determined by evaluating both the waveform and energy differences between the original speech signal and the further signal.

161. The clarity that emerges is that the apparatus being claimed as an invention in the present case generates a further signal. This further signal is intended to represent the original speech signal, suggesting a focus on maintaining reliability or a close approximation to the original. Thereafter, the apparatus produces a set of parameters from the original speech signal. These parameters are used to reconstruct an approximation of the original speech signal. This indicates that the encoded signal is not an exact *replica*

but a very close approximation that retains essential characteristics of the original speech signal. Finally, the process of determining the parameters for the further signal is described. This is done on the basis of the first difference and the second difference. This first difference and second difference are described as follows:

i. First Difference - The first parameter is determined by analysing the difference between the waveform of the original speech signal and that of the further signal. This suggests an emphasis on the temporal or shape aspects of the sound wave.

ii. Second Difference - The second parameter is derived by comparing the energy parameter of the original speech signal with a corresponding energy parameter of the further signal. This comparison focuses on the intensity or loudness aspects of the speech signal.

162. From the above analysis, it is clear that IN'036 is having several core elements, which make up the inventive concept of the invention. Therefore, given the inherent complexity of the Complete Specification, which details a speech encoding system by emphasizing waveform and energy characteristics, a tabular breakdown is essential to achieve a comprehensive understanding of IN'036. In my view, this approach systematically organises the intricate details of IN'036, facilitating a clear analysis and understanding. In my considered view, this kind of a structured approach is indispensable for evaluating the validity or invalidity of a patent, enabling a detailed comparison with prior art and ensuring a clear understanding of its

contributions and boundary. The tabular representation is set out below:

Key Element or Concept	**Relevant Claim(s)**	**Definition and Elaboration from Complete Specification**
Speech Encoding Apparatus	Claim 1	Describes an apparatus that processes an original speech signal to generate and use a further signal for efficient speech encoding, focusing on waveform and energy matching criteria.
Generating a Further Signal	Part of Claim 1	The generation of a further signal in response to the original speech signal, intended to represent the original signal, for improved encoding.
Producing Parameters for Reconstruction	Part of Claim 1	The process of producing parameters from the original speech signal, enabling the reconstruction of an approximation of the original speech.
Determination of Parameters Using Differences	Part of Claim 1	Determining parameters based on first and second differences between the original and further signals, focusing on waveform and energy differences.
Adaptive Balance Factor	Claims 2, 3, 9, 10	Adjusting the balance between waveform and energy matching using a balance factor that adapts based on the voicing level or periodicity of the speech segment.
Median Filter Application	Claims 4, 7	Employing a median filter for processing the voicing level before it influences the balance factor calculation, enhancing the robustness of parameter determination.
Voicing Level Determination	Claims 3, 9, 10	Assessing the voicing level of the original speech signal to influence the balance factor calculation, critical for adjusting the encoding process to the signal's characteristics.

Incorporation into a Transceiver Apparatus	Claims 12, 13	Extending the speech encoding technique to a transceiver apparatus, illustrating the invention's applicability in practical communication systems.

163. In conclusion, the objective of the present invention is to create a system that can efficiently encode speech by focusing on critical aspects of the speech signal, such as its waveform and energy characteristics. The technical advancement of the present invention lies in using the approach defined, which would appear to be beneficial in scenarios where accurate yet compact representation of speech signals is required, such as in telecommunications and digital audio processing. The problem that is being solved in the present invention is in the improvement of the efficiency of speech signal transmission and storage, reducing the required bandwidth and storage space while maintaining a high-quality approximation of the original speech.

164. The challenge to the validity of this patent by Lava is premised on the following grounds:

i. The invention so claimed is based on lying in a mathematical equation;

ii. The main inventive feature of the invention is an algorithm that requires determination of values derived from certain mathematical equation(s);

iii. Speech encoding claimed in the present invention is in itself an algorithm and;

iv. That as per ETSI Standards, the speech codecs are implemented through computer programs;

8.2. PATENTABILITY

8.2.1. EVIDENCE LED ON BEHALF OF LAVA

165. In support of its contentions, Lava has led evidence of both Dr. V. Kamakoti (DW-2) and G.S. Madhusudan (DW-1).

166. Ericsson's counter arguments to the same are primarily premised on the evidence given by Stefan Bruhn (PW2). The main counter arguments to the grounds raised by Lava are as follows:

i. Speech is not an abstract entity and is in fact a physical entity;

ii. Speech encoder as described in the invention is a physical apparatus and the speech encoders require practical realisation to function;

iii. Speech quality is an effect perceptible by humans and using AMR technology improves and even enhances speech quality;

iv. Speech signals are represented by electric charge and comparison of speech signals is also undertaken on the basis of comparison of electric charge.

167. In his analysis, Dr. V. Kamakoti (DW2) asserts that the heart of the invention lies not in any tangible apparatus or novel hardware configurations, but rather in a mathematical equation—Equation 4 ($D_{WE} = K \cdot D_w + L \cdot D_E$)—that underpins a speech encoding system. According to him, this equation, which is pivotal for establishing a balance factor crucial to the system's operation, is highlighted as the substantive essence of the invention,

illustrated graphically in Figure 3 of the patent specification. Further, Dr. V. Kamakoti contends that the main inventive feature of the patent is inherently algorithmic, relying on the determination of values derived directly from Equation 4. According to him, this algorithmic essence is further exemplified in the method claimed in IN'036 for determining parameters based on the differences between the original speech signal and a coded signal. He extends this contention to characterise the entire speech encoding process claimed within the patent as algorithmic in nature, challenging the conceptual framing of the invention as an apparatus or system endowed with novel hardware components.

168. Dr. V. Kamakoti (DW2) further questions the implementation of IN'036, aligning with ETSI Standards, which traditionally utilises speech codecs implemented using computer programs. Thus, he raises questions about the necessity and novelty of any specialised hardware components purported IN'036, in light of his assertion that such components are ubiquitously present in mobile communication devices. Dr. V. Kamakoti (DW-2) critically examines the inclusion of a 'transceiver apparatus' within the Claims, suggesting that the transceiver apparatus along with the other described hardware elements, are standard features in mobile phones and fail to confer any novel aspect to the patent. Moreover, Dr. V. Kamakoti (DW-2) posits that the patent essentially describes an abstract algorithm lacking in concrete guidelines for implementation. According to him, realisation of the objectives of IN'036, would necessitate a skilled individual to not only interpret but also creatively apply their knowledge to develop a suitable computer program for speech encoding, which according to him would be a

process that could ostensibly be conducted on any general-purpose computer without yielding any unique technical effect. The relevant extracts of his evidence are set out below:

> "*21. I say that the specifications of IN '036 states that in case of transmission of noise-like signals, i.e. unvoiced speech and background noise, at low bit rates, and for this waveform matching does not work well and energy matching gives better results. It is stated that one of the drawbacks of prior art is the need for mode decision i.e, choosing between waveform matching mode for voiced speech and energy matching mode for unvoiced speech. It is therefore claimed that the alleged invention in IN 203036 is directed to improved speech coding which combines waveform matching and energy matching to improve speech coding of noise-like signals at lowered bit rates without the disadvantages of multi-mode coding.*
>
> *22.* ***I say that a perusal of the patent specifications reveals that the claimed invention lies in a mathematical equation****, i.e. Equation 4, [DWE = K·Dw+L·DE]. The claimed invention is in 'Figure 3' enclosed to the patent specification which "illustrates graphically a balance factor according to the present invention". This balance factor is given by the equation 4. Equation 4 can be found at page 6 of the published specification.*
>
> *23. I say that IN '036 has two independent claims - Claims 1 and 12. The invention claimed in Claim 1 claims a speech encoding apparatus comprising the following elements:*
>
> *a) an input for receiving an original speech signal;*
>
> *b) an output for providing information indicative of parameters from which an approximation of· the original speech signal can be reconstructed;*
>
> *c) a controller coupled between the said input and the output for providing in response to the original speech signal, a coded signal representing the original speech signal; and,*
>
> *d) the said controller determining at least one of the said parameters based on first and second differences between the original speech signal and coded signal, wherein, the said first difference is a difference between waveform associated with the*

original speech signal and waveform associated with the coded signal, and wherein the second difference is a difference between energy parameter derived from the original speech signal and a corresponding energy parameter associated with a coded signal.

24. I say that ***the invention claimed is only in step (d) outlined in the above para which is nothing but an algorithm that in tum requires the determination of values derived from certain mathematical equations.*** *The notion of an apparatus brought into the drafting of Claim 1 is fallacious since Claim 1 merely describes an algorithm which is performed in. the mathematical domain. The remaining attributes referred in Claim 1 are all well-known in prior art. An input for receiving and output for transmitting lie at the very core of any communication system. Further, the conversion of speech from analog to digital and its coding for the purposes of transmission, as explained earlier, is also intrinsic to mobile communication since its inception.*

xxx xxx xxx

27. ***I say that the reference to a "controller" in steps (iii) and (iv) is a literary construct. The actual reference is to a mathematical equation*** *for determining the parameter for transmission to the receiving mobile device for reconstructing an approximation of the original speech signal. As stated earlier, this equation is as represented in equation 4, i.e. DWE = K·Dw+L·DE where Dw is the waveform matching distortion (difference between waveform associated with the original speech signal and waveform associated with the coded signal) and DE is the energy matching distortion (difference between energy parameter derived from the original speech signal and a corresponding energy parameter associated with a coded signal). Thus, a "controller" is not a device / hardware element but is only a mathematical component of the algorithm described in IN '036.*

28. I say that the reference to a "transceiver apparatus" in the claims is superfluous since it is extraneous to the invention claimed in IN '036. The attributes, namely - (i) a transceiver; (ii) an input for receiving a user input stimulus; (iii) an output for providing an output signal to a communication channel for transmission to a receiver via the communication channel; (iv) a speech encoding 'apparatus' coupled with a transceiver for receiving an original speech signal input from said transceiver, providing coded speech information to said transceiver for transmission to the receiver - are common to all mobile phones and there is nothing in the patent claim or specifications to suggest that any novelty has been infused into the above.

> *29.* ***I say that the patent claims are not capable of being implemented by themselves since they describe an abstract algorithm without any guideline on how the same is to be implemented.*** *In order to implement the objective claimed by the patent, a person skilled in the art would have to use his skill and imagination to write a computer program for speech encoding comprising the mentioned attributes and then run the same on a general purpose computer. In fact, it has been stated in the patent specification at internal page 13 that there are numerous and readily apparent applications of the 'speech encoder' according to the alleged invention and that the same can be readily implemented using for example, a suitably programmed digital signal processor or other data processing device, either alone or in combination with external support logic. This belies the need for any specialised apparatus / hardware / device for implementation of the patent claims. I also state that no external support logic is needed to implement the algorithms mentioned in the patent.*
>
> *30.* ***I say that even if the algorithm described in the patent is coded into a computer program by the use of skill and imagination by a person skilled in the art, the computer program can be executed on any general purpose computer without any accompanying technical effect***."
>
> *(Emphasis supplied)*

169. Similarly, G.S. Madhusudan (DW-1) has also raised similar contentions, to assert that IN'036 is purely a mathematical invention and not directed towards hardware components. He asserts that the patent IN 203036 primarily delineates an algorithm for the improved encoding of unvoiced speech, emphasising that the claimed combination of waveform and energy matching operates purely within the mathematical domain. He further contends that while the Claims of IN'036 are pointing to apparatus Claims, no novel apparatus or hardware is actually introduced, with the process and its components, such as the speech encoding apparatus and various determiners, essentially serving as parts of the algorithm. He concludes that the patent does not offer concrete implementation guidelines for the claimed

algorithm. The relevant extract from his evidence is set out below:

> "*57. While Claim 1 is drawn to an apparatus, it is apparent that the invention claimed, i.e. combining of waveform and energy form matching for encoding noise-like signals, is purely in the mathematical domain. Claim 1 of the patent comprises the following steps:*
>
> > *(i) A mathematical representation of digital unencoded voice (weighted or unweighted PCM in all likelihood) being the input parameter to the algorithm; and*
> >
> > *(ii) A set of algorithms acting on this input to achieve the claims of the patent namely, reduction of noise in the signal.*
>
> *58.* ***The entire process described in the claims happens only in the mathematical domain****. The various apparatuses described in the claims i.e. Speech encoding apparatus; Controller; Balance factor determiner; Voicing level determiner; Median filters are not "apparatus" in sense of being a physical product, but, in fact, are subcomponents of the algorithm.*
>
> *xxx xxx xxx*
>
> *81. My conclusion in respect of IN 203036 are as follows:*
>
> > *(a)* ***The patent describes an algorithm for improved encoding of unvoiced speech.*** *The invention claimed, i.e. combining of waveform matching and energy matching, is in the mathematical domain.*
> >
> > *(b)* ***Even though an apparatus is claimed in the patent, I find that the patent does not relate to any novel apparatus / hardware.*** *The entire process described in the claims happens only in the mathematical domain. The various apparatus described in the claims are nothing but subcomponents of the algorithm.*
> >
> > *(c) The claims of the patent are not inventive and are known in prior art, including standards of ITU and ETSI which predate the patent.*
> >
> > *(d) The patent does not provide any guidelines for implementation of algorithm claimed to be inventive.*"
>
> *(Emphasis supplied)*

8.2.2. EVIDENCE LED ON BEHALF OF ERICSSON

170. To counter Lava's contentions, Ericsson presented evidence from Stefan Bruhn (PW-2), who argued against Lava's claim that IN'036 is merely algorithmic. He asserted that the invention indeed includes physical apparatus elements, specifically within the context of speech encoding, thereby emphasising the tangible aspects of IN'036. He highlights the application of IN'036 in cellular telephony and the tangible encoding process that transforms speech signals into a compressed format suitable for transmission. He refutes the reduction of IN'036 to mere mathematical equations and algorithms, emphasising the importance of encoders in mobile communication systems and the contribution of IN'036 in enhancing speech quality coupled with transmission efficiency, thereby showcasing a clear technical advancement and physical implementation. The relevant extract from his evidence is set out below:

> "*14) I disagree with Lava's contention that IN '036 is nothing but a set of algorithm which uses certain mathematical equations and that the same does not relate to a device or mobile handset or an apparatus.* ***Upon perusal of the reports filed by Dr. V Kamakoti and the affidavits filed by Mr. G.S. Madhusudan, it is evident that both of them have failed to take into consideration, the hardware elements or apparatus or the technical effect of the claimed Invention and have incorrectly relied upon sub-elements of the granted claims in their analysis.*** *Madhusudan has made incorrect averment that "the entire patent claim comprises of, a mathematical representation of digital unencoded voice being the input parameter to the algorithm; - a set of algorithms acting on this input to achieve the claims of the patent namely, reduction of noise in the signal.....various apparatus described in the claims-i.e. speech encoding apparatus; controller; balance factor determiner; voicing level determiner; median filters are not apparatus' in the technical sense of being physical product, but, in fact, are subcomponents of algorithm.....the other apparatus mentioned in the claims, like the*

transceiver.....are extraneous to the invention claimed in the patent. The inputs and outputs specified in the algorithm are inputs and outputs of a mathematical function and do not necessitate any specific physical system like a communication system to complete the definition of the algorithm claimed in the patent".

15) The invention in claim 1 (and dependent claims) of IN '036 in particular relate to a speech encoding apparatus. ***A speech encoder is a physical apparatus encoding input speech into a compressed representation that is more suitable and used for transmission (as a radio wave) to a decoder that re-synthesizes the speech.*** *The patent specification clearly addresses the producing of parameters by the encoding apparatus from an original speech signal, which by its nature is a physical and not just an abstract item. It also clearly specifies cellular telephony in which corresponding coding models are applied.* ***This means that it is clear that the invention relates to a physical input speech signal of an encoder that is part of one mobile phone.*** *That mobile phone encodes the speech signal into a (compressed) parametric representation suitable for radio transmission to a receiving phone, which in turn decodes the received parameters to synthesized speech that are played out as a sound pressure wave.* ***The invention hence, has a physical effect which lies in that improved coding criteria lead to better representation (quality) of noise-like signals at lower bit rates which in turn leads to a better and improved apparatus. This is much more than a 'mathematical equation' and 'just algorithms' as argued by Kamakoti and Madhusudan.***

16) The ultimate object of the invention is an efficient and improved encoder, meaning that the synthesized speech quality in relation to the radio resource needed for transmission is as high as possible. Speech quality is an effect perceptible by humans and thus the claimed invention possesses a technical effect/advancement. With reference to claim 1, the claimed elements of the speech encoding apparatus are essentially

- An input for receiving an original speech signal;

- An output for speech parameters;

- A controller providing at least one parameter in response to the original speech signal based on

• An waveform difference between original speech signal and coded signal; and

> • *An energy difference between original speech signal and coded signal.*
>
> *All these signals and parameters are derivatives of the original speech signal. As the original speech signal is a physical signal, these derivatives are as well physically represented.* ***The input to the claimed encoder is a physical representation of the speech by means of electric charges, the output is encoded speech, also represented by electric charges, and any intermediate calculation value that occurs during the claimed encoding including the characterizing features are represented by electric charges or comparisons of such charges. Accordingly, the claimed encoder and transceiver have resulted in a more efficient and advanced handset (UE) and it cannot be said that there is no technical effect or technical advancement over what was previously known.*** *The algorithmic description in the patent is merely used for illustrating the functionality of the apparatus.*"
>
> *(Emphasis supplied)*

171. I have carefully considered the grounds for challenge of this patent taking into account the pleadings placed on record in the present suits, the submissions made in Court during final arguments and the evidence led by the parties.

8.2.3. ANALYSIS AND FINDINGS

172. The invention described in the claims and the specification involves speech encoding. There cannot be any doubt that the process of speech encoding does involve use of mathematical methods as part of its process. However, the question that needs determination is if the invention solely relies on mathematical methods or solely uses abstract algorithms or mathematical methods as a tool for implementation.

173. The methods used for processing signals and carrying out various processes in IN'036 such as calculating differences in waveforms and energy parameters, for encoding signals into a format that can be transmitted

or stored efficiently. However, in my considered view, the invention, does more than just performing mathematical calculations. It processes an original speech signal to generate a further signal and uses a controller to analyse and encode this speech signal. This process includes receiving, processing, and outputting signals, which goes beyond mere mathematical computation.

174. The controller being used and also referred to in Claim 1 also has physical components. In addition, the present invention is also described as a part of a transceiver apparatus in a communication system. Further, to specify the nature of the contribution of the various elements of the Claims of IN'036, a tabular representation giving the nature of various elements of the Claims and also the analysis in respect of the nature of the said elements and the contribution they give to the inventive concept of IN'036. The said tabular representation is set out below:

Element of the Invention	**Category**	**Analysis of the elements and the effect of the element on the invention**
Speech encoding apparatus	Apparatus/Device	Incorporates physical components for encoding speech, transforming any algorithms and processes into tangible technology.
Controller	Device/System	Acts as the central unit within the apparatus, managing signal processing and parameter determination, indicative of a physical device rather than mere conceptual methodology.
Balance factor determiner	Algorithm/System	While algorithmic, it is implemented through hardware or software within

		the device, contributing to its functionality as a product.
Voicing level determiner	Algorithm/System	Functions within the apparatus, analyzing speech signals to adjust encoding parameters, showcasing integration of algorithmic processes into the physical system.
Median filters	Component/System	Physical or software components that process signals within the apparatus, exemplifying how mathematical concepts/methods are applied in a hardware context.
Digital unencoded voice representation	Algorithm/Equation	Basis for input into the system, but the physical apparatus's capability to process this representation showcases the product aspect.
Noise reduction algorithms	Algorithm/Equation	Though mathematical, their implementation in the apparatus for practical signal processing underscores the product-oriented nature of the invention.

175. In my considered view, the integration of various elements within a device, even if the said device is a general-purpose computer indicates that IN'036 is not limited to just a mathematical method but has functional components within a larger communication system. Therefore, the said invention is playing a role in the practical application of transmitting and receiving encoded speech signals.

176. In summary, while the invention uses mathematical methods, especially in the encoding process, it is not based solely on these methods. It

involves a combination of mathematical algorithms, signal processing techniques, and hardware components integrated into a communication system, which collectively constitute an invention beyond just mathematical methods.

177. To encapsulate, while the invention indeed leverages mathematical methods, particularly in the encoding phase, its essence is not confined to these techniques alone. It represents a holistic integration of mathematical algorithms, signal processing methodologies, and physical hardware, all coalescing within a communication system. In my view, this synergy elevates the invention beyond the scope of mere abstract algorithms or mathematical methods.

178. There is no matter of doubt that the present invention is having a technical effect and the said effect is on a physical entity i.e., speech. Ericsson has submitted to the Court that speech in itself is a physical entity, which is then converted into signals and waveforms by the devices. In the present invention, no ground for claiming that the invention is an algorithm is made out as the invention is clearly directed towards an apparatus and a larger communication system, which is ensuring the better transmission and receiving of the speech signal.

179. Lava has given no basis of their contention that the invention resides purely in mathematical domain and that the basis of the invention only lies in modification of a mathematical equation.

180. While I do recognise that even in case an invention that resides in or made on the basis of merely mathematical methods, then the same cannot be saved from the grounds of non-patentability by any caveat. However, in the

present case, as the invention is directed towards an apparatus, improving the functionality of the apparatus and also directed towards producing a signal, the said signal is also then converted into a physical entity, i.e., speech. Therefore, the challenge to the validity of IN'036 on the ground that the inventive concept and the Claims of IN'036 are merely algorithms and non-patentable subject matter under Section 3(k) of the Patents Act, does not succeed.

181. Now I shall move on to assess the contentions of Lava that IN'036 is liable to be revoked on the ground of lack of novelty and inventive step.

8.3. CHALLENGE TO THE NOVELTY OF IN 203036

182. It has been claimed by Lava that IN 203036 is liable to be revoked in terms of Section 64(1)(e) of the Patents Act for lacking novelty. For this purpose, Lava has relied upon the ITU-T Recommendation G.729 titled Coding of Speech at 8kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP) issued by the ITU-T (Telecommunication Standardization Sector). As already discussed for IN'034, the said document is dated 19th March, 1996. Considering that the priority date of IN' 036 is 1st September, 1998, the said prior art is prior to IN' 036 and would qualify to be a prior art document. The claim of lack of novelty of IN'036 has been made on the basis of the ITU recommendation G.729 and the relevant portion has been identified and extracted in the written statement and counter claim. Specific evidence has also been led by Lava to substantiate its claim of lack of novelty.

8.3.1. PRIOR ART: G.729

183. As has already been discussed, the said prior art document describes the process involved in speech encoding and processing as part of a digital communication system, specifically focusing on encoder operations, linear prediction (LP) analysis and quantization, gain quantization, and memory update mechanisms. The relevant extracts of the said prior art relied upon by Lava to claim lack of novelty are set out below:

> "*3.9 Quantization of the gains*
>
> *The adaptive-codebook gain (pitch gain) and the fixed-codebook gain are vector quantized using 7 bits. The gain codebook search is done by minimizing the mean-squared weighted error between original and reconstructed speech which is given by:*
>
> $$E = \mathbf{x}^t\mathbf{x} + g^2\,\mathbf{y}^t\mathbf{y} + g^2\,\mathbf{z}^t\mathbf{z} - 2g_p\mathbf{x}^t\mathbf{y} - 2g_c\mathbf{x}^t\mathbf{z} + 2g_pg_c\mathbf{y}^t\mathbf{z} \quad (63)$$
>
> *where* $\mathbf{x}$ *is the target vector (see 3.6),* $\mathbf{y}$ *is the filtered adaptive-codebook vector of Equation (44), and* $\mathbf{z}$ *is the fixed- codebook vector convolved with h(n),*
>
> $$z(n) = \sum_{i=0} c(i)h(n-i) \qquad n = 0,\ldots,39 \quad (64)$$
>
> *The predicted gain* g_c' *is found by predicting the log-energy of the current fixed-codebook contribution from the log- energy of previous fixed-codebook contributions. The 4th order MA prediction is done as follows. The predicted energy is given by:*
>
> $$\tilde{E}(m) = \sum_{i=}^{4}$$

184. The specific portion highlighted by Lava, the section of '*Quantization*

of the gains' describes the technical process and process used to quantise the gains in the speech encoding process. This process involves converting the continuous range of gain values into a finite set of values, which as per the document is crucial for efficient encoding and transmission. The specific methods, models, and criteria used for this quantisation process contribute in maintaining speech quality and minimising data loss.

185. Now, I shall assess the similarities between the specific portion of the prior art cited by Lava and the inventive concept of the IN'036. Both IN'036 and Section 3.9 of the document demonstrate that the integration of the quantisation process is pivotal in ensuring high-quality speech encoding. This commonality extends to the use of mathematical models aimed at optimising the quantisation of gains, underscoring a synergy focused on enhancing the reliability and efficiency of speech transmission. From the assessment of the documents, it is also clear that such methodologies and processes are not standalone but are integrated within larger speech encoding systems, emphasising their role in facilitating efficient signal transmission.

186. However, I deem that it is necessary to highlight the differences between that IN'036 substantially distinguishes itself from prior art, particularly the methods detailed in section 3.9 of the referenced document, through several innovative facets. It introduces a specific technique for gain quantisation, which significantly enhances the efficiency and quality of speech encoding beyond what has been disclosed in the prior art. Additionally, IN'036 integrates new parameters and considerations into the quantization process, aspects not explored in the Section 3.9 of the prior art

cited by Lava. Moreover, the unique integration and interaction in IN'036 with other components of the speech encoding system provide distinct advantages and features, setting it apart from conventional methodologies described in IN'036.

187. Now, I shall move on to assess the challenge to the validity made by Lava on account of lack of inventive step.

8.4. CHALLENGE TO THE INVENTIVE STEP OF IN 203036

8.4.1. PRIOR ART: ETS 300 726 (1996)

188. The first document relied upon by Lava to claim that the lack of inventive step in IN'036 is ETS 300 726 (1996) which is an ETSI Standard document which details Enhanced Full Rate (EFR) speech transcoding for the GSM digital cellular telecommunications system. Lava has claimed that the said standard document clearly explains the functionality of audio parts and how raw speech signal is fed as input to speech encoder.

189. ETS 300 726 outlines the procedures and requirements for converting speech into a digital format that can be efficiently transmitted over the GSM network. It emphasises the use of the Algebraic Code Excited Linear Prediction (ACELP) coding scheme, to ensure high-quality speech encoding within the constraints of available bandwidth. ETS 300 726 includes detailed descriptions of speech encoding and decoding processes, including pre-processing, linear prediction analysis, and quantization techniques. It also addresses the compatibility and integration of these processes within the GSM system, ensuring that the encoded speech can be effectively transmitted and received across the network.

190. The Claims of IN'036 and ETS 300 726 share similarities, particularly in the context of speech encoding, focusing on the processes and techniques used for speech signal processing and the emphasis on efficient and high-quality speech transmission. Both discuss the use of sophisticated algorithms for encoding speech signals and the importance of parameters in reconstructing an approximation of the original speech signal.

191. However, there are some differences in the specific processes, techniques, and the integration within the broader communication system in both the documents. In my considered view, IN'036 introduces some enhancements not explicitly covered in ETS 300 726, potentially offering advancements in speech encoding efficiency and quality. Additionally, while ETS 300 726 employs the Algebraic Code Excited Linear Prediction (ACELP) coding scheme, which is well-established and designed for efficient speech encoding within the bandwidth constraints of the GSM system, IN'036 introduces a specific process leveraging differences between the waveform and energy parameters of the original and further (encoded) signals. The differences in the approaches of IN'036 and ETS 300 726 are further encapsulated in the following table:

Feature	**Claims of IN'036**	**ETS 300 726**
Speech Encoding Process	Employs specific process for speech encoding, focusing on waveform and energy parameter differences. Introduces an approach that adaptively adjusts the balance between waveform and energy matching.	Utilizes the ACELP coding scheme for efficient speech encoding within bandwidth constraints.
Parameter Use in	Determines parameters	Details the sequence and

Reconstruction	based on differences between original and further signals for accurate reconstruction. Enhanced by novel algorithm for improved noise-like signal encoding at reduced bit rates.	importance of encoded parameters for compliance verification through digital test sequences.
Efficiency and Quality Emphasis	Introduces advancements for enhanced efficiency and quality beyond existing standards, including adaptive adjustment for better encoding of various speech signals.	Aims for high-quality speech transmission with a focus on compatibility and integration within the GSM system.
Integration within Communication Systems	May offer unique integration and interaction features with other system components. Novel algorithm impacts positively on mobile device functionality, including better voice communication and efficient use of bandwidth.	Ensures encoded speech can be effectively transmitted and received across the GSM network.

192. In light of the detailed comparison between the Claims of IN'036 and the specifications outlined in ETS 300 726, it is evident that IN'036 presents significant advancements and novel contributions to the field of speech encoding. In my considered view, IN'036 introduces a unique approach that adaptively adjusts the balance between waveform and energy matching, enhancing the encoding process beyond the capabilities described in ETS 300 726, which relies on the ACELP coding scheme. This adaptive adjustment for encoding of various speech signals, particularly for improved noise-like signal encoding at reduced bit rates, underscores the innovative step beyond the cited prior arts. Further, IN'036 indicates a clear

advancement in integration within communication systems, offering potential unique features not contemplated by the prior art of ETS 300 726.

8.4.2. PRIOR ART: SCHROEDER

193. Now, I shall proceed to the evaluation of the second prior art relied upon by Lava to claim lack of inventive step in IN'036, which is an IEEE research paper titled "*Code-Excited Linear Prediction (CELP): High-Quality Speech at Very Low Bit Rates*" authored by Manfred R. Schroeder and Bishnu S. Atal (*hereinafter referred to as 'Schroeder')*, which was published in the year 1985. The said research paper presents a novel approach to speech coding (at the relevant point of time), aimed at achieving high-quality speech reproduction at very low bit rates.

194. Lava asserts that Schroeder discloses a technique for Code-Excited Linear Prediction (CELP) aimed at achieving high-quality speech at very low bit rates, specifically under 8 kbits per second. Further, a key aspect of the technique given in Schroeder is the combination of waveform parameters with energy parameters to optimize the speech coding process. Therefore, Lava contends that the combination of waveform parameters with energy parameters for CELP, as disclosed in Schroeder, is fundamentally the same as the claimed invention in IN'036. According to Lava, the use of waveform and energy parameters in the context of CELP to achieve high-quality speech at low bit rates would have been obvious to a person skilled in the art at the time when IN'036 was filed. Consequently, Lava asserts that the criteria of the inventive step is not met by IN'036, and therefore, the patent should be invalidated.

195. *Per Contra*, Ericsson submits that IN'36 involves an inventive step that is not anticipated nor rendered obvious by Schroeder. They assert that IN'036 provides a novel and non-obvious solution to the problem of encoding speech signals at low bitrates, particularly in the presence of noise segments, which is not addressed by Schroeder. Further, it is claimed that IN'036 addresses the limitations of general waveform matching in noise segments at low bitrates, which is not taught or suggested by Schroeder.

196. Ericsson submits that while Schroeder discusses the general codebook-driven linear prediction of speech signals and the creation of a difference signal based on waveform matching error, it primarily focuses on determining the best type of excitation codebook for the low-rate analysis-by-synthesis CELP coding model. Consequently, Schroeder does not disclose, teach, or enable overcoming the drawbacks associated with general waveform matching *qua* noise segments of a signal at low bitrates. Ericsson asserts that IN'036 goes beyond the general waveform matching approach disclosed in Schroeder and specifically addresses the issue of noise segments in speech signals at low bitrates by employing a novel technique that involves different error criteria and a balancing between these error criteria. As per Ericsson, this approach is neither disclosed nor hinted at in Schroeder.

197. I have considered the rival submissions by both Lava and Ericsson in respect of lack of inventive step or novelty thereof. In my considered view, IN'036 specifically addresses the issue of encoding speech signals at low bitrates, particularly in the presence of noise segments. I hold that this is a significant technical advancement as noise segments can pose challenges in

achieving high-quality speech reproduction at low bitrates. Schroeder, on the other hand, primarily focuses on the general codebook-driven linear prediction of speech signals and does not specifically address the issue of noise segments at low bitrates.

198. Further, IN'036 employs a specific technique that involves different error criteria and a balancing between these error criteria. This approach is aimed at optimizing the speech coding process, especially in the presence of noise segments. In my considered view, Schroeder does not disclose, teach, or enable any such technique involving different error criteria or balancing between these criteria.

199. Consequently, the technical advancements claimed in IN'036, particularly in addressing of noise segments at low bitrates and the employment of different error criteria and balancing, would not have been obvious to a person skilled in the art at the time when IN'036 was filed. While Schroeder discloses a general approach to CELP coding, it does not provide any guidance or suggestion on how to specifically handle noise segments or employ different error criteria and balancing in the context of low bitrate speech encoding.

8.4.3. FINDINGS ON PRIOR ARTS

200. Further, upon evaluating both documents, i.e., ETS 300 726 and Schroeder individually and collectively, it is evident that while ETS 300 726 provides foundational knowledge in the field, it does not foresee the innovative contributions of IN'036. Similarly, the prior art Schroeder, despite its significance in the development of CELP techniques, does not

encapsulate the specific advancements introduced in IN'036. The inventive aspects detailed in IN'036, particularly the techniques for addressing noise segments at low bitrates and employing different error criteria with a balancing mechanism, are not mere obvious extensions of the teachings found in ETS 300 726 or Schroeder. Nor can they be construed as a straightforward amalgamation of known technologies within the prior art. Consequently, no challenge to the inventive step of IN'036 is substantiated, as it distinctly demonstrates a substantial technological advancement over the existing knowledge base, including both ETS 300 726 and Schroeder.

8.5. CONCLUSION

201. Therefore, no grounds for revocation of the patent IN 203036 are made out and considering that the said patent has overcome a challenge to the validity in a final proceeding, I also direct the issuance of a Certificate of Validity of the Complete Specification of IN203036 in accordance with Section 113 of the Patents Act.

9. INVALIDITY OF IN 234157

202. Now, I shall proceed with the assessment of the patentability of the next patent, i.e., IN 234157 titled '*A Method of Encoding/Decoding Multi-Code Book Fixed Bitrate CELP Signal Block*'. The Bibliographic details of the said patent are set out in the following table:

Patent Number	234157
Application Number	IN/PCT/2001/00246/MUM
Priority Date	16/09/1998

Type of Application	PCT NATIONAL PHASE APPLICATION
PCT Application No.	PCT/SE99/01432
International Filing Date	24/08/1999
Date of Grant	07/05/2009
Date of Recordal	04/06/2009
Appropriate Office	MUMBAI
Title of the Patent (As granted)	A METHOD OF ENCODING/DECODING MULTI-CODE BOOK FIXED BITRATE CELP SIGNAL BLOCK

203. The said patent has been granted with twenty-five Claims. The four separate Independent Claims of IN'157, Claim Nos. 1, 12, 19, 22 and 25 are set out below for reference:

> *"1. A method of encoding/ decoding multi-code book fixed bitrate CELP signal block, characterised by* ***selecting, for each signal block, a corresponding codebook identification in accordance with a deterministic selection procedure that is independent of signal type****; and encoding/ decoding each signal block by using a codebook having said selected codebook identification.*
>
> *xxx xxx xxx*
>
> *12. A multi-codebook fixed bitrate CELP signal block encoder/decoder, characterised by:*
> ***a codebook selector (22) for selecting, for each signal block, a corresponding codebook identification in accordance with a deterministic selection procedure that is independent of signal type; and means for encoding/ decoding each signal block by using a codebook having said selected codebook identification****.*
>
> *19. A codebook selection method for multi-codebook fixed bitrate CELP signal block encoding/ decoding, characterised by:*
> ***selecting for each signal block, a corresponding codebook identification in accordance with a deterministic selection procedure that is independent of signal type.***

*22. A **codebook selection apparatus** for multi-codebook fixed bitrate CELP signal block encoding/ decoding, characterised by:*
a codebook selector (22) for selecting, for each signal block, a corresponding codebook identification m accordance with a deterministic selection procedure that is independent of signal type.

xxx xxx xxx

*25. An **algebraic multi-codebook structure, characterised by:***
each codebook having separate tracks with· different predetermined allowed pulse positions and excluded pulse positions; and
***each codebook having different excluded pulse positions.**"*

(Emphasis supplied)

204. The application for the said patent was filed in India as the PCT National Phase Application in India, claiming priority from a Swedish patent application.

205. I have perused the Complete Specification of the patent IN 234157 and also the Claims of the said patent.

206. I shall construe the scope and boundaries of the technology presented in IN'157, and the specific method and apparatus described for encoding and decoding speech signals. Before going into the exercise of claim construction, it is necessary to describe what is referred to as 'codebook' in the text of IN'157.

207. In Digital Signal Processing, 'codebook' is referred to as a set of rules or codes used for converting analog signals into digital signals and *vice versa*. This conversion involves processes such as sampling, quantization, and encoding in the digital domain, which allows the signal to be efficiently stored, transmitted, and processed electronically. Thereafter, once processed, these signals can be converted back to their analog form for playback or

further analog processing[22].

208. To simplify the above understanding, it can be explained that a codebook functions similarly to a dictionary that a computer uses to translate speech into digital code and back into speech. In essence, when a user speaks, their voice comprises various sounds. To transmit or store this voice in a digital format, the computer must convert these sounds into a language it understands. This is where the significance of a codebook arises. The codebook contains a list of all possible sounds or their close approximations, along with a unique digital code for each sound. During the encoding process, the computer matches the sounds of the speech to the nearest equivalent in the codebook and uses the corresponding codes. For decoding, the process is reversed, converting the digital codes back into sounds based on the codebook, allowing the user to hear a reproduction of the original speech.

209. Taking into consideration the above general definition of codebooks, in the context of IN'157, a codebook is a set of codes or rules for converting speech into digital signals and *vice versa*. It is serving as a predefined library of digital representations of speech sounds or elements such that each codebook in IN'157 is designed with distinct characteristics, ensuring that they have non-overlapping weaknesses. According to the description of IN'157, this approach enables the optimal selection of codebooks for the encoding and decoding processes. It results in enhanced quality of digital speech communication by efficiently converting speech signals into digital

[22] Oppenheim, A. V., R. W. Schafer, and J. R. Buck. *Discrete-Time Signal Processing*. 2nd ed. Upper Saddle River, NJ: Prentice Hall, 1999. ISBN: 0137549202.

form and back, without the need for redundant data exchange between the encoder and decoder.

9.1. CLAIM CONSTRUCTION

210. With the above clarity in respect of the definition of codebook, I shall move on to construe the Claims of IN'157. From the Complete Specification of IN'157, the position that emerges is that the patent addresses the challenge of maintaining high speech quality in digital communication systems, particularly at low bitrates, which is critical for efficient bandwidth usage and clarity of communication. As highlighted in the Complete Specification, traditional speech encoding/decoding methods struggle to balance quality with bandwidth constraints, often requiring additional data to manage encoding modes, which can compromise efficiency and quality. IN'157 discloses a mechanism to solve these problems by introducing a specific approach that utilises multiple codebooks with unique strengths and strategically switches between them without needing extra mode information. As per the specification, the methods and apparatus described in IN'157 significantly enhances speech quality while managing bandwidth and thereby providing a technical solution to a prevalent issue in digital communication.

211. In my understanding, the implementation of the solution as given in IN'157 specifies that the encoder and decoder do not need to exchange information about which codebook is currently in use, simplifying the process and saving bandwidth. Thereby, this implementation ensures that the encoded speech maintains high quality by judiciously using the best

codebook for each segment of the speech, thus overcoming the limitations of traditional single-codebook systems which were known at the relevant time.

212. From the above assessment and after considering the Claims of IN'157, the clarity that emerges is that the inventive concept of the invention is directly linked to the use of a specified CELP (Code Excited Linear Predictive) encoding and decoding method as also apparatus. This method significantly improves coding quality by utilising several equally-sized, distinct codebooks for encoding or decoding speech blocks at a fixed bitrate. These codebooks are designed to have non-overlapping weaknesses, and the system employs a deterministic selection procedure, independent of the signal type, to switch between them. This approach is stated to enhance speech quality and also obviates the need for the encoder and decoder to exchange information about which codebook is in use, marking a significant advancement in the field of digital communication.

213. Further the Claims of IN'157 elaborate on the method of implementation of the inventive concept, specifying that the deterministic selection process for choosing the appropriate codebook can be executed by either cyclically or randomly stepping through each codebook identification within the provided sets of codebooks. This specific approach identified in the Claims of IN'157 allows for a dynamic and robust encoding or decoding process which is adaptable to varying signal characteristics without pre-established mode information exchange.

214. IN'157 distinguishes between fixed and algebraic codebooks, broadening its applicability to both audio frames and subframes. This versatility underscores the technical advancement of IN'157, presenting a

flexible yet precise mechanism for enhancing digital speech encoding and decoding, indicative of a significant leap over prior art in terms of efficiency, reliability, and quality of digital speech communication.

215. Based on the above analysis and construction of the Claims of IN'157, the key elements or concepts of IN'157 and their contribution to the technical advancement of the invention is summarised in the following table:

Key Element or Concept in IN'157	**Contribution to Technical Advancement**	**Defined in Claim(s)**
Multiple equally-sized, distinct codebooks	Enhances coding quality by offering varied responses to different signal types, thus improving speech quality at fixed bitrates.	1, 2, 3, 12, 13
Deterministic selection procedure	Eliminates the need for transmitting mode information between encoder and decoder, simplifying the process and saving bandwidth.	1, 2, 3, 12, 13, 19, 20, 21
Independence of signal type in selection procedure	Allows the system to adaptively switch codebooks without prior knowledge of the signal's specifics, enhancing efficiency and flexibility.	1, 2, 3, 12, 13, 19, 20, 21
Cyclic and random stepping through codebook identification	Offers a method to dynamically select codebooks, ensuring a diverse application of codebooks to various signal blocks.	7, 8, 20, 21
Fixed and algebraic codebooks	Provides a robust framework for encoding/decoding, catering to different encoding/decoding needs with precision.	17, 18
Encoding/decoding	Enables precise and efficient processing of	10, 11

of audio frames and subframes	speech signals by accommodating both larger frames and smaller subframe segments.	

216. Now, I shall move consider of the grounds raised by Lava to contend that IN'157 ought to be revoked in terms of Section 64(1)(d) of the Patents Act.

9.2. PATENTABILITY

9.2.1. SUBMISSIONS OF THE PARTIES

217. The challenge to the validity of this patent by Lava is premised on the following grounds:

i. The inventive concept of IN'157 is based on mathematical formulae and equations, rather than on a concrete process or apparatus.

ii. The inventive aspect of the patent is characterised as an algorithm, essentially a set of instructions for processing data, derived from mathematical equations, and not intrinsically linked to any novel hardware.

iii. The process of speech encoding, as described in the invention, is algorithmic in nature, and does not extend beyond the realm of abstract ideas.

iv. In accordance with ETSI Standards, speech codecs, akin to those described in the patent, are typically realised through computer programs, which are not patentable.

218. Ericsson has countered the above contentions of Lava by highlighting

that the practical apparatuses and methods described in IN'157, which yield measurable improvements in speech quality underscores the eligibility of IN'157 for patent protection, as the inventive concept of the invention transcends mere abstract ideas or algorithms.

219. Ericsson submits that speech, being a physical phenomenon that is encoded and decoded by these apparatuses, renders the invention, IN'157 to be a practical realisation with tangible outcomes. According to Ericsson, the improved encoder and/or decoder described in IN'157 are embodiments that operate in the physical domain, processing physical speech signals to enhance speech quality, an effect perceptible and measurable by human users. Therefore, IN'157 does not pertain to abstract concepts but physical products. Ericsson also contends that the inventive concept in IN'157 constitutes a technical effect and also technical advancement, as it directly impacts the user experience of mobile devices by delivering clearer and more accurate speech reproduction.

220. Ericsson concludes by asserting that the specific configurations of the encoder and decoder, the codebook selection apparatus, and the method of coding and decoding contribute to significant improvements in digital communication devices, such as mobile handsets/user equipment. These improvements manifest as enhanced efficiency and speech quality, representing a clear technical advancement over prior art. The description of the algorithm within the patent documentation serves to illustrate the functionality of the apparatus, rather than denote the invention as merely algorithmic or devoid of a practical embodiment.

9.2.2. ANALYSIS AND FINDINGS

221. I have taken into consideration the rival submissions made by Ericsson and Lava in respect of the nature of the invention.

222. I have already identified the key elements/concepts that are part of the overall inventive concept of IN'157. Considering that IN'157 is comprising five Independent Claims and also six key elements, in order to come to a conclusion in respect of the nature of the overall patent, I shall first ascertain the nature of each of the elements separately and represent the same in a tabular form, as given below:

Key Element or Concept	**Nature**	**Explanation**
Multiple equally-sized, distinct codebooks	Algorithm in the nature of a process	These represent different sets of rules or algorithms for encoding/decoding speech, designed to complement each other's weaknesses.
Deterministic selection procedure	Purely Algorithm	A specified method or algorithm for selecting among the multiple codebooks based on predetermined criteria, not on random or signal-dependent factors.
Independence of signal type in selection procedure	Process characteristic	The selection of codebooks does not depend on the type of signal being processed, showcasing a process characteristic that is abstracted from specific signal attributes.
Cyclic and random stepping through codebook identification	Algorithm in the nature of a process	This refers to the algorithmic process of selecting codebooks either in a cyclic manner or randomly, adding a layer of variability in the selection process.

Fixed and algebraic codebooks	Hardware or Physical Apparatus	These terms describe both the physical apparatus used for encoding/decoding and the algorithmic processes embedded within them for speech processing.
Encoding/decoding of audio frames and subframes	Hardware or Apparatus and also Process	This relates to the actual hardware that performs the encoding/decoding, affecting both large and small segments of speech data.

223. In light of the above assessment, the clear position that emerges is that the inventive concept of IN'157 is based on the integration of diverse elements and methodologies which lead to a technical advancement. This integration of various elements is essential in achieving the novel solution described by IN'157. Undoubtedly the solution is technical in nature and not merely an abstract concept.

224. The integration of components as delineated by the Claims of IN'157 is of algorithms, processes and hardware components. One of the specific integration steps in IN'157 is the integration of a deterministic selection procedure, with tailored hardware, exemplified by specialised encoders and decoders. In my considered view, this synergy enables the processing of speech signals in novel and innovative ways, enhancing both efficiency and quality.

225. The deterministic selection process, which I have assessed to be primarily an algorithm, is intricately designed to complement the operational capacities of the encoders and decoders, such that it results in optimal codebook selection for superior speech processing. This precise alignment between algorithms, processes and their integration in a specific hardware,

such that the current capabilities of the said hardware are enhanced underscores the contribution of IN'157 in advancing digital speech communication. While, I recognise that the specific algorithm disclosed would not warrant patent protection to itself, in light of Section 3(k) of the Patents Act, in the present case, considering that the scope of protection of the patent would be limited to the achievement of the same functionality of the apparatus defined in the invention, including, codebook selection apparatus, the contention of Lava that IN'157 has no physical component or apparatus has not been supported by specific evidence and thus, consequently, untenable. Hence, no grounds for seeking invalidation of IN'157 have been made out.

9.3. CHALLENGE TO THE NOVELTY OF IN 234157

226. Now, I shall move on to the next contention of Lava, where it has claimed that IN'157 is liable to be revoked on account of lack of novelty, in terms of Section 64 (1)(e) of the Patents Act.

9.3.1. PRIOR ART: G.729

227. It has been claimed by Lava that IN 234157 is liable to be revoked in terms of Section 64(1)(e) of the Patents Act for lacking novelty. For this purpose, Lava has again relied upon the ITU-T Recommendation G.729. As already discussed, the said document is dated 19th March, 1996 and considering that the priority date of IN' 157 is 16th September, 1998, the said prior art is prior to IN' 157 and would qualify to be a prior art document. The claim of lack of novelty has been made in respect of a specific identified extract of the said document in the written statement and counter

claim. Evidence has also been led by Lava to substantiate its claim of lack of novelty.

228. The relevant extract of the ITU-T Recommendation G.729 is set out below:

> *"3.8 Fixed codebook – Structure and search*
>
> *The fixed codebook is based on an algebraic codebook structure using an Interleaved Single-Pulse Permutation (ISPP) design. In this codebook, each codebook vector contains four non zero pulses. Each pulse can have either the amplitudes +1 or -1, and can assume the positions given in Table 7.*
>
> *TABLE 7/G.729*
> *Structure of fixed codebook*

Pulse	Sign	Positions
i_0	s_0: ±1	m_0: 0, 5, 10, 15, 20, 25, 30, 35
i_1	s_1: ±1	m_1: 1, 6, 11, 16, 21, 26, 31, 36
i_2	s_2: ±1	m_2: 2, 7, 12, 17, 22, 27, 32, 37
i_3	s_3: ±1	m_3: 3, 8, 13, 18, 23, 28, 33, 38 4, 9, 14, 19, 24, 29, 34, 39

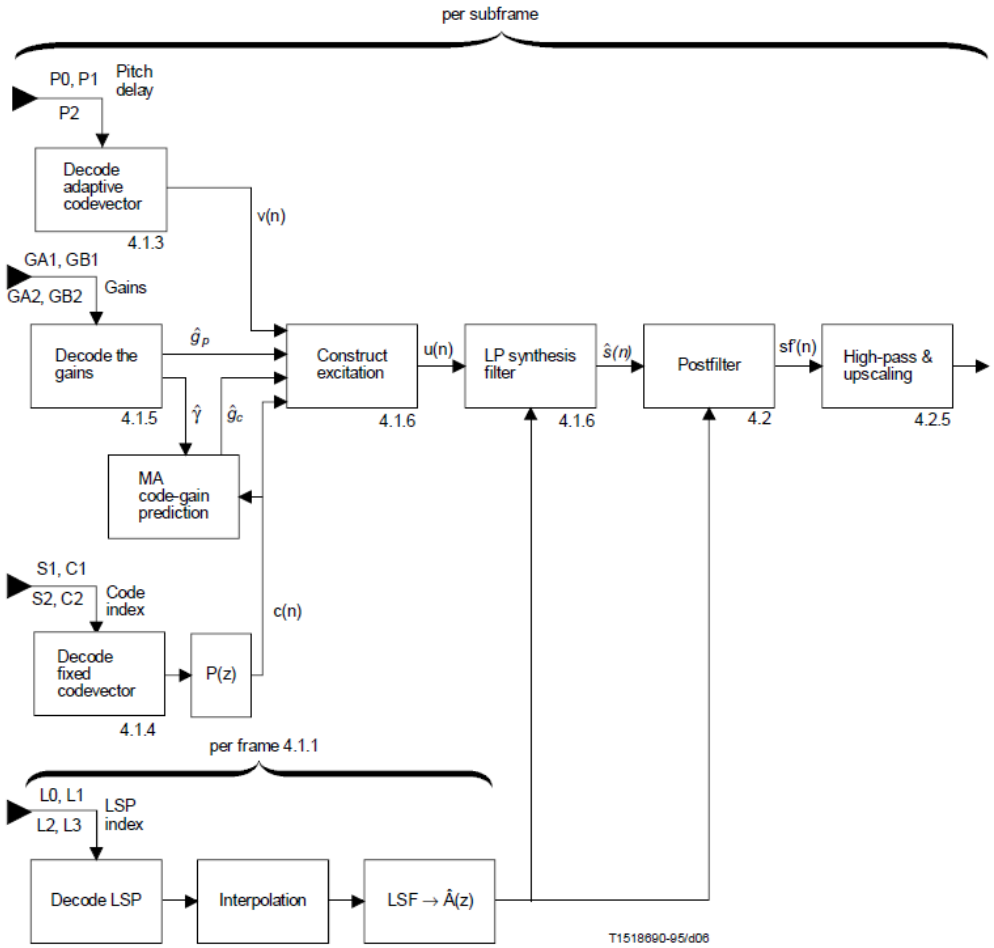

FIGURE 6/G.729

Signal flow at the CS-ACELP decoder

"

229. The above portion of the prior art discusses the structure and search method of a fixed codebook, emphasizing its basis on an algebraic codebook structure with an Interleaved Single-Pulse Permutation (ISPP) design. The key elements of the said portion of the standard, include the codebook vector composition, which consists of four non-zero pulses with amplitudes of either +1 or -1, and the specific positions these pulses can assume, as detailed in a referenced table.

230. Upon a comparison of the cited portion of the standard and the Claims of IN'157, it becomes clear that Claim 25 of IN'157 aligns with the cited portion of the standard. However, Claims 1, 12, 19, and 22 emphasise a deterministic selection procedure for codebook identification, independent of signal type, which is not addressed in the cited prior art. However, the cited portion of the standard provides some technical aspects of a codebook structure, while the Claims of IN'157 encompass broader encoding/decoding methods and apparatuses, with claim 25 specifically relating to the codebook structure.

231. Therefore, in light of the above discussion, the portion of the extract cited by Lava does not directly impact the novelty of Claims of IN' 157.

9.4. CHALLENGE TO THE INVENTIVE STEP IN IN 203034

232. Now I shall move on the assess the challenge to the validity made by Lava on account of lack of inventive step.

9.4.1. PRIOR ART: ANIL UBALE

233. The first document relied upon by Lava to claim that the lack of inventive step in IN'157 is the research paper titled "*Multi-Band CELP Coding of Speech and Music*" authored by Anil Ubale and Allen Gersho *(hereinafter 'Anil Ubale')*, who are both from the Department of Electrical Engineering, University of California at Santa Barbara. The prior art which WAS published in October, 1997 and therefore, prior published to IN'157.

234. The said prior art document discusses a low-delay wideband speech coder called Multi-band CELP (MB-CELP) which is a specific approach for wideband speech coding with a focus on reducing delay. The MB-CELP

technique introduced in this prior art overcomes challenges associated with traditional fullband and split-band CELP coding methods. The research paper suggests that by employing a multi-band bank of off-line filtered excitation codebooks and fullband linear prediction synthesis, the MB-CELP enhances the quality of speech coding across the entire frequency range, while maintaining low delay in the encoding and decoding processes. Lava claims that this document illustrates a similar concept to IN'157, challenging its inventive step.

235. The key concepts of the prior art and the advantages secured by the said elements are summarized in the table below:

Key Concept	Explanation	Technical Advancement
Multi-band Excitation Codebooks	Utilises separate codebooks for different frequency bands to enhance speech quality.	Improves speech quality by addressing frequency-specific characteristics.
Fullband LPC Synthesis	Employs linear predictive coding analysis and synthesis over the entire frequency range.	Achieves accurate speech reproduction across the full frequency spectrum.
Error Minimization	Focuses on minimising the error between original and synthesized signals across all frequencies.	Enhances the overall fidelity of the coded speech.

236. The aforesaid key concepts are stated to be collectively contributing to the development of a low-delay, high-quality wideband speech coder, advancing the field of digital speech processing.

237. From the above assessment of Anil Ubale and IN'157, it is evident that both focus on CELP coding for speech signals and use of multiple

codebooks to enhance speech coding. Further, both documents aim to improve speech quality and efficiency through their respective approaches to CELP coding. However, the implementation of multiple codebooks differs in both the documents.

238. Anil Ubale is suggesting the use of off-line filtered multi-band excitation codebooks for CELP coding, which involves splitting the frequency spectrum into multiple bands and applying filters to enhance speech quality. In contrast, IN’157 is employing multiple equally-sized, distinct codebooks, each designed to address specific aspects of speech signals without overlapping weaknesses. In my assessment, this reflects that each codebook in IN’157 is optimised for different signal characteristics, ensuring comprehensive coverage of speech features. While Anil Ubale focuses on full-band linear prediction synthesis for a wide frequency range, the approach in IN’157 ensures precision in codebook selection, enhancing speech coding efficiency.

239. In light of the above analysis, while both IN’157 and Anil Ubale share a common focus on CELP coding and the use of multiple codebooks, they differ in their specific approaches and implementations. The inventive step of IN’157 lies in its use of multiple equally-sized, distinct codebooks with a deterministic selection procedure, independent of signal type. This is distinct from the prior art's emphasis on off-line filtered multi-band excitation codebooks and full-band linear prediction synthesis. Therefore, the inventive step of IN'157 appears to be sufficiently differentiated from the prior art to maintain its inventive contribution.

9.4.2. PRIOR ART: MCELROY

240. Now, I shall assess the next prior art cited by Lava, which is a research paper titled "*Wideband speech coding using multiple codebooks and glottal pulses*" authored by C. McElroy, B.P. Murray, A.D. Fagan (hereinafter referred to as McElroy), who are three researchers working at the DSP Research Group, Department of Electronic and Electrical Engineering, University College, Dublin, Ireland. The said research paper proposes the use of a coder for near-transparent wideband speech coding, utilising multiple codebooks and synthetic glottal pulses with adaptive bit allocation. In the said research paper, the use of synthetic glottal pulses improves performance without increasing the bitrate, resulting in a coder operating at 16 kb/s and 24 kb/s with comparable speech quality to the G.722 coder at 64 kb/s. In essence, the research paper addresses the need for a more natural-sounding speech in applications like video conferencing and aims to provide a high-quality coder at a lower bitrate than current standards.

241. The following are the key elements and concepts discussed in the prior art document:

i. Use of Multiple Codebooks: The coder uses various codebooks, including a glottal pulse codebook and bandlimited codebooks, to enhance speech quality. These codebooks focus on different frequency ranges, emphasizing perceptually important frequencies.

ii. Synthetic Glottal Pulses: The coder incorporates synthetic glottal pulses consisting of two impulses to improve the excitation model. This approach is more accurate in modelling unvoiced to voiced transitions,

reducing speech distortions.

iii. Adaptive Bit Allocation: The coder dynamically allocates bits to different codebooks based on their contribution to speech quality. This method optimizes bit usage, ensuring high-quality speech coding at lower bit rates.

iv. Excitation Model Improvement: By addressing the onset problem in conventional CELP coders, the proposed coder enhances the excitation model, resulting in more natural and intelligible speech.

242. In my understanding, these elements of the prior art collectively contribute to achieving near-transparent wideband speech coding at lower bit rates, advancing the field of speech coding technology, which is the technical advancement proposed by the research paper cited as prior art.

243. Both the prior art and IN'157 aim to improve speech coding efficiency and quality using multiple codebooks. However, the Claims and the inventive concept of IN'157 focuses on a deterministic selection procedure for codebook identification, which is unique to its approach. On the other hand, the prior art introduces synthetic glottal pulses and adaptive bit allocation for excitation model improvement, which is not a focus in IN'157.

244. Synthetic glottal pulses are used to more accurately model the natural pulses produced by the glottis during speech. These pulses are designed to have multiple impulses, mimicking the shape of real glottal pulses, which improves the excitation model in speech coding. Adaptive bit allocation dynamically assigns bits to different codebooks based on their impact on speech quality. This approach optimizes bit usage, ensuring high-quality

speech coding at lower bit rates. Both techniques contribute to enhancing the excitation model, leading to more natural and intelligible speech.

245. Therefore, in my considered view, while there are similarities in their objectives, the methods and specific technologies employed to achieve these goals differ. Now, I shall move on the highlight the differences between the prior art and IN'157.

246. The key differences between the prior art and IN'157 lie in their implementation and applications. The research paper focuses on using synthetic glottal pulses and adaptive bit allocation for excitation model improvement, aiming to enhance wideband speech coding. IN'157, however, emphasises the use of a deterministic selection procedure for codebook identification, independent of signal type, to optimise speech signal processing. While both documents aim to improve speech coding efficiency and quality, their specific approaches and targeted applications differ, with IN'157 being more suited to applications requiring fixed bitrate encoding/decoding. A table summarising the differences in the key concepts, elements, implementation, and application between the research paper "*Wideband Speech Coding Using Multiple Codebooks and Glottal Pulses*" and IN'157 is set out below:

Aspect	Prior Art	IN'157	Explanation
Key Concepts	Synthetic glottal pulses, adaptive bit allocation	Deterministic selection procedure, multiple codebooks	Research paper focuses on modelling speech production, while IN'157 focuses on efficient codebook selection.

Aspect	Prior Art	IN'157	Explanation
Implementation	Focus on excitation model improvement with glottal pulses	Emphasis on codebook selection independent of signal type	Different approaches to enhancing speech quality; research paper improves excitation, IN'157 optimizes codebook usage.
Application	Wideband speech coding, potentially for video conferencing	General digital speech communication	Research paper targets wideband applications like video conferencing, while IN'157 is more general.

247. In my considered view, the technical advancements claimed in IN'157, as defined by its claims and the inventive concept, are distinct from the disclosures made in the prior art. The focus in IN'157 is on a deterministic selection procedure for codebook identification, independent of signal type, and the use of multiple equally-sized, distinct codebooks for speech signal processing are novel and inventive approaches that are not addressed in the prior art cited by Lava. Further, these advancements contribute to efficient and high-quality speech coding, which would not be obvious to a person skilled in the art, given the unique integration of these elements in IN'157.

9.4.3. PRIOR ART: ETS 300 726

248. Next prior art to be considered is the draft European Telecommunication Standard (ETS) ETS 300 726, which outlines the Enhanced Full Rate (EFR) speech transcoding for the GSM digital cellular telecommunications system. This prior art details the mapping between input blocks of speech samples to encoded blocks and the reverse process,

aiming for a bit rate of 13 kbit/s using Algebraic Code Excited Linear Prediction (ACELP) coding. It specifies the conversion between PCM (Pulse Code Modulation, a method used to digitally represent analog signals) formats[23], principles of the GSM EFR speech encoder and decoder, and the sequence of encoded parameters. The standard document also provides a functional description of the encoder and decoder, including pre-processing, linear prediction analysis, open-loop pitch analysis, impulse response computation, target signal computation, adaptive and algebraic codebook search, and quantization of gains. It also covers post-processing in the decoder, variables and constants used in the C-code, and homing sequences for encoder and decoder initialization. The standard aims to ensure compliance and interoperability within the GSM system for enhanced full-rate speech transmission.

249. The standard document ETS 300 726 cited as a prior art and IN'157 both focus on enhancing speech coding for telecommunications. Both the documents share a common goal of improving speech quality and efficiency. However, ETS 300 726 outlines specific requirements for Enhanced Full Rate (EFR) speech transcoding in the GSM system, while IN'157 presents a specific approach using multiple codebooks and a deterministic selection procedure.

250. Further, IN'157 employs a unique approach using multiple equally-sized, distinct codebooks with a deterministic selection procedure for codebook identification, independent of signal type. This method enhances

[23] In the context of audio, Pulse Code Modulation involves sampling the amplitude of the sound wave at regular intervals and then quantising these samples into a series of numerical values for digital storage or transmission.

speech quality by efficiently converting speech signals into digital form and back. In contrast, ETS 300 726 focuses on the Enhanced Full Rate (EFR) speech transcoding in the GSM system, utilizing Algebraic Code Excited Linear Prediction (ACELP) coding at a bit rate of 13 kbit/s. The Standard outlines specific requirements for speech encoding and decoding to ensure compliance within the GSM system, while IN'157 introduces a unique method for speech signal processing.

251. A table comparing the key elements, concepts, implementation, and application of ETS 300 726 and IN'157 is set out below:

Aspect	ETS 300 726	IN'157	Explanation
Key Elements	Algebraic Code Excited Linear Prediction (ACELP) coding	Multiple equally-sized, distinct codebooks	The Standard focuses on a specific coding technique, while IN'157 uses a variety of codebooks.
Concepts	Enhanced Full Rate speech transcoding for GSM	Deterministic selection procedure independent of signal type	The Standard standardizes speech transcoding for GSM, while IN'157 introduces a specific selection procedure.
Implementation	Specific requirements for speech encoding and decoding in GSM	Novel approach for efficient conversion of speech signals	The Standard ensures compliance within GSM, while IN'157 offers a new method for speech signal processing.
Application	Compliance and interoperability within the GSM system	General digital speech communication	The Standard is tailored for GSM systems, while IN'157 has broader applications in digital speech communication.

252. In my considered view, overall, the technical advancements of IN'157, characterized by its Claims and inventive concept, remain unaffected by the disclosures made in ETS 300 726. IN'157 discloses a unique approach, employing multiple equally-sized, distinct codebooks and a deterministic selection procedure, which is not explicitly addressed in ETS 300 726, where the focus is on Enhanced Full Rate speech transcoding for GSM systems. The non-obviousness of the technical advancements in IN'157 lies in its unique approach to speech coding. Unlike the standardised methods outlined in ETS 300 726, IN'157 introduces a unique combination of multiple equally-sized, distinct codebooks and a deterministic selection procedure. This method is not readily apparent or derivable from existing knowledge in the field or the teachings or suggestions obtained from ETS 300 726, making it a non-obvious contribution to digital speech communication technologies.

9.4.4. PRIOR ART: ZINSER

253. The final prior art cited by Lava to contest the validity of IN'157 on the ground of lack of inventive step is a research paper titled '*CELP coding at 4.0 kb/sec and below: improvements to FS-1016*', which has been authored by Richard L. Zinser and Steven R. Koch, of the GE Corporate Research and Development, Ney York, USA *(hereinafter 'Zinser')*. The research paper proposes enhancements to the standard CELP algorithm to improve speech quality while reducing transmission rates. One specific enhancement mentioned is the use of multi-mode excitation to increase the adaptive codebook's convergence rate, along with a low-complexity spectral

vector quantization algorithm to reduce the coding rate and decrease spectral distortion. As per Zinser, these advancements aim to improve speech quality by reducing perceptual artifacts, making the coder potentially suitable for digital cellular applications.

254. One of the key advancements in Zinser is the introduction of multi-mode excitation, designed to increase the adaptive codebook's convergence rate, leading to improved speech clarity. Additionally, Zinser proposes a low-complexity spectral vector quantization algorithm to reduce the coding rate and decrease spectral distortion, further optimizing the coding process. These enhancements collectively aim to achieve near toll-quality speech coding, making the coder potentially suitable for digital cellular applications.

255. The key elements in Zinser's research paper and IN'157 both focus on enhancing speech coding efficiency and quality. While Zinser proposes multi-mode excitation and low-complexity spectral vector quantization for improving speech quality at lower bit rates, IN'157 emphasizes the use of multiple equally-sized, distinct codebooks with a deterministic selection procedure. This approach ensures optimal codebook selection for various speech signals, enhancing speech coding efficiency and quality without increasing complexity.

256. After considering the Claims of IN'157 and Zinser, it is evident that both the approaches detailed in the respective documents aim to improve speech coding, however, their methods and specific implementations differ. A table comparing the key elements and concepts of Zinser and IN'157 is set out below:

Aspect	Zinser	IN'157
Focus	Enhancing speech coding at low bit rates	Improving speech coding efficiency and quality
Key Elements	Multi-mode excitation, low-complexity spectral vector quantization	Multiple equally-sized, distinct codebooks, deterministic selection procedure
Implementation	Refining coding process for higher speech clarity	Optimal codebook selection for various speech signals
Application	Potentially suitable for digital cellular applications	General digital speech communication

257. After considering the similarities and differences between the Claims and Inventive Concept of IN'157, in my considered view, IN'157 exhibits a technical advancement over Zinser. While Zinser focuses on improving speech coding at low bit rates through multi-mode excitation and spectral vector quantization, IN'157 introduces a novel approach with multiple equally-sized, distinct codebooks and a deterministic selection procedure. This unique method enhances speech coding efficiency and quality by ensuring optimal codebook selection for various speech signals, representing a significant technical advancement in digital speech communication technology. Further, in my considered view, the technical advancement claimed in IN'157 would be non-obvious to a person skilled in the art because it introduces a unique approach to codebook selection and usage that is not addressed in the prior art. The deterministic selection procedure, combined with multiple equally-sized, distinct codebooks, represents a

significant departure from traditional speech coding methods, offering a unique solution to enhance speech coding efficiency and quality. Therefore, this approach would not be readily apparent to someone familiar with existing speech coding techniques, making it a non-obvious advancement in the field.

9.4.5. FINDINGS ON PRIOR ARTS

258. Upon reviewing each of the prior arts cited by Lava, it is evident that none of them directly challenge the technical advancements of IN'157. In my considered view, the unique combination of multiple equally-sized, distinct codebooks and a deterministic selection procedure in IN'157 sets it apart, maintaining its inventive step in the realm of speech coding technologies.

259. Each of the documents relied upon by Lava as prior arts in respect of IN'157 offer unique contributions to CELP coding and speech processing, with varying focuses on wideband speech coding, multiple codebooks, synthetic glottal pulses, and enhancements to existing standards. However, in my considered view, the teachings, suggestions, and motivations of all four cited documents combined do not appear to affect the technical advancement of the claims or inventive concept of IN'157. While each document contributes to the field of CELP coding and speech processing, the specific approach in IN'157 of employing multiple equally-sized, distinct codebooks with a deterministic selection procedure remains distinct and inventive. The combination of these elements in IN'157 represents a unique solution to speech coding that is not directly or indirectly addressed

or anticipated by the prior arts cited, thus maintaining its novelty and technical advancement.

9.5. CONCLUSION

260. Consequently, I hold that IN234157 is a valid Complete Specification of a patent and accordingly direct the issuance of a Certificate of Validity of IN 234157.

10. INVALIDITY OF IN 203686

261. Now, I shall proceed with the analysis on the issue of invalidity for the fourth patent asserted i.e., IN 203686 titled as '*Method and System for Alternating Transmission of Codec Mode Information*'. The Bibliographic details of the said patent are set out in the following table:

Patent Number	203036
Application Number	IN/PCT/2001/00324/MUM
Priority Date	16/09/1998
Type of Application	PCT NATIONAL PHASE APPLICATION
International Filing Date	03/09/1999
Date of Grant	01/11/2006
Date of Recordal	29/12/2006
Appropriate Office	MUMBAI
Title of the Patent (As granted)	METHOD AND SYSTEM FOR ALTERNATING TRANSMISSION OF CODEC MODE INFORMATION

262. The said patent has been filed with forty-eight Claims. The Independent Claims of the said patent are Claim No. 1, 26 and 29. The said

Claims are set out below:

> *"1. A method for transmitting information on a first link and receiving information on a second link in a communication system comprising the steps of:*
>
> *providing at least two different codec modes for processing the information in the system;*
>
> *transmitting, in at least one first frame on the first link, a mode indication identifying one of the at least two different codec modes, which has been used to process the first frame of data; and*
>
> *transmitting, in at least one second frame on the first link different than the first frame, a mode request identifying one of the at least two different codec modes to be used to process information to be transmitted on the second link.*
>
> *xxx xxx xxx*
>
> *26. The communication station having:*
>
> *a processor/for processing mode indication information, mode request information, and payload information; and*
>
> *a receiver for receiving mode indication information, mode request information and payload information on a second communication link, wherein the mode indication information is used by the processor to decode the payload information and the mode request information is used to determine a coding mode for the payload information.*
>
> *xxx xxx xxx*
>
> *28. A system for transmitting information on a first link and receiving information on a second link in a communication system as claimed in claim 1, comprising the steps of:*
>
> *means for providing at least two different codec modes for processing the information in the system;*
>
> *means for transmitting, in at least one first frame on the first link, a mode indication identifying one of the at least two different codec modes, which has been used to process the first frame of data; and means for transmitting, in at least one second frame on the first link different than the first frame, a mode request identifying one of the at least two different codec modes to be used to process information to be transmitted on the second link."*

10.1. CLAIM CONSTRUCTION

263. From a reading of the Complete Specification of IN'686 and the

Claims of the said patent, it is clear that the said invention describes a method and system for transmitting and receiving information in a communication system using at least two different codec modes.

264. Codec modes refer to specific configurations or settings of a codec used for processing audio or even video signals in a communication system. These modes typically define how the codec encodes (compresses) and decodes (decompresses) the data, and can include parameters such as bit rate, compression algorithm, error correction level, and quality settings. The choice of codec mode can affect the quality, bandwidth usage, and robustness of the transmitted signal.

265. In the context of the patent IN'686, codec modes refer to combinations of source coding techniques, which compress the original signal and channel coding techniques, which add redundancy to the signal for error correction. Different codec modes can be used to adapt to varying channel conditions and data requirements, optimising the balance between signal quality, bandwidth usage, and error resilience.

266. The key aspects of the claims include:

i. Transmission of Mode Indication and Request: Information is transmitted on a first link and received on a second link. The transmission includes sending a mode indication in at least one first frame, identifying the codec mode used for processing the data, and a mode request in at least one second frame, identifying the codec mode to be used for processing information on the second link.

ii. Codec Modes: The codec modes identify both source coding and channel coding techniques. The mode request can be channel

measurement information used to determine an appropriate codec mode for the second link.

iii. Frame Transmission: The first and second frames can be consecutively transmitted, and they can be even and odd frames, respectively. The mode indication and request can be transmitted in specific frame patterns based on an incremental frame number and an integer.

iv. Synchronization: The transmission steps can be synchronized to a time frame structure of other information transmitted by the communication system, such as a slow associated control channel (SACCH) structure.

v. Inactivity Handling: If a data source associated with the first link is inactive, the transmission of mode indications can be halted. During inactivity, mode requests can still be transmitted, and various strategies can be employed for resuming transmission after the period of inactivity ends.

vi. Receiver Processing: The receiver can process payload data based on the received mode indication and continue processing additional payload data based on previously received mode indications. The receiver can also transmit information on the second link based on received mode requests.

vii. System Components: The system comprises means for providing codec modes, transmitting mode indications and requests, synchronizing transmission, determining data source inactivity, and processing information based on the codec modes.

267. In IN'686, the Independent Claims outline the following:

i. **Claim 1 (Method Claim):** This is an Independent Claim that outlines a method for transmitting and receiving information in a communication system. The method includes the steps of providing different codec modes, transmitting a mode indication in a first frame on the first link, and transmitting a mode request in a second frame on the first link. This claim sets the foundation for the invention and describes the basic process.

ii. **Claim 26 (Apparatus Claim):** This Independent Claim describes a communication station that is equipped with a processor for processing mode indication information, mode request information, and payload information, as well as a receiver for receiving this information on a second communication link. The processor uses the mode indication information to decode the payload information and the mode request information to determine a coding mode for the payload information. This claim is likely dependent on the method described in Claim 1, as it specifies the hardware components required to implement the method.

iii. **Claim 28 (System Claim):** This Independent Claim extends the invention to a system for transmitting and receiving information, as described in Claim 1. The system includes means for providing different codec modes, transmitting a mode indication in a first frame on the first link, and transmitting a mode request in a second frame on the first link. This claim further elaborates on the implementation of

the method described in Claim 1, specifying the components of the system that enable the transmission and reception of information.

268. From the above assessment, it is clear that the inventive concept in IN'686 lies in the dynamic adaptation of codec modes for transmitting and receiving information in a communication system, based on mode indications and requests transmitted in specific frame patterns. As per the complete specification, this allows for efficient utilisation of communication resources and improved system performance by adapting to varying channel conditions and data source activity.

269. Consequently, the technical advancement in IN'686 is the ability to dynamically adjust the codec modes used for processing information based on real-time channel measurements and data source activity. As per the Complete Specification of IN'686, this leads to optimised communication performance, better resource utilisation, and enhanced system adaptability to changing conditions.

10.2. PATENTABILITY

10.2.1. SUBMISSIONS OF THE PARTIES

270. Lava challenges the validity of IN'686 on the ground that it essentially describes an algorithm, which is not patentable under the Patents Act. Lava contends that the method for transmitting information, specifically in the form of speech signals, as claimed in the patent, is essentially an algorithm. It is the case of Lava that Ericsson has itself acknowledged in the Complete Specification that these are algorithms. Since there are numerous

families of algorithms known in the art for transmitting information in the manner claimed in the impugned patent, Lava argues that all method claims fall under the strict definition of an algorithm, which is not patentable under Section 3(k) read with Section 3(m) of the Patents Act.

271. Lava further submits that Claims 1-25 of IN'686, which describe a method of transmission of information over a communication system, are not patentable under Section 3(k) of Patents Act. Lava argues that the features claimed in the patent do not require any separate apparatus and are implementable in any general-purpose computer. Consequently, no technical effect is achieved by these programs, rendering them non-patentable.

272. *Per Contra*, Ericsson argues that the claimed invention is not merely a mathematical method or an algorithm. Ericsson points out that Claim 29 clearly indicates that the invention is not just about determining a frame number. Instead, the invention focuses on the actual transmission of information in the specified first and second frames, which goes beyond mere algorithmic computation.

273. Ericsson emphasises that the object of the invention is to increase the robustness of the transmission of mode indicators and requests while minimising transmission overhead and reducing the delay associated with processing mode information. Ericsson argues that Lava's witnesses have overlooked the technical problem that the invention aims to solve in the context of digital communication systems. As per Ericsson, IN'686 addresses the challenge of reducing overhead bits without compromising the likelihood of proper decoding of mode indicators and requests; which is a significant technical problem in the field of digital communications.

Ericsson asserts that IN'686 has resulted in a technical effect or technical advancement over what was previously known. By improving the efficacy of not only the User Equipment (UE) but also the spent resources, the invention offers a substantial technical advancement to the field of mobile communication. This, Ericsson argues, clearly demonstrates that the invention is not merely an algorithm or a computer program per se but a solution to a technical problem with practical applications in digital communication systems.

10.2.2. EVIDENCE LED ON BEHALF OF THE PARTIES

274. In his evidence, GS Madhusudan (DW-1) has labelled IN'686 as an 'algorithm' and asserted that the reference to the communication system is extraneous to the algorithm claimed in the patent. He has deposed to say that there is no novel apparatus, hardware, or communication system/mobile station associated with the patent, and that the Claims are very generic in nature, encompassing general-purpose systems used in any wired or wireless networks. Further, he has contended that IN'686 is merely a protocol or an algorithm artifact, which has no physical effect or manifestation. He states that the reference to apparatus or hardware elements in the patent is superfluous and that there is no specific software or hardware implementation mentioned. According to GS Madhusudan (DW-1), the software merely utilises general-purpose hardware for performing its functions at the level of the microprocessor, and there would be no change effected in the hardware.

275. Similarly, in his evidence, Dr. V Kamakoti (DW-2) has also

categorised IN'686 as an algorithm, deposing that the inventive concept lies in a mathematical method for determining the frame numbers. He claims that no apparatus is disclosed in the figures and that the patent does not disclose any communication system. He further goes on to label the Claims of IN'686 as merely an abstract algorithm. He contended that once the algorithm is coded into a computer program, the execution of that program is undertaken on a general-purpose computer without any accompanying technical effect. According to him, this suggests that, IN'686 does not provide any technical contribution beyond the mere implementation of the algorithm on standard computing hardware.

276. In contrast, in his counter deposition, Stefan Bruhn (PW-2) argued that the claimed invention is not merely a mathematical method or an algorithm. In support of this assertion, he refers to Claim 29 which according to him clearly demonstrates that IN'686 is not about the determination of a frame number, but rather about the actual transmission in the specified first and second frames. He further contends that the object of the invention is to enhance the robustness of the transmission of mode indicators and requests, while simultaneously minimizing the transmission overhead and reducing the delay associated with processing mode information. He claims that both Dr. V Kamakoti (DW-2) and GS Madhusudan (DW-1) had completely overlooked the technical problem that the invention aimed to address in the context of digital communication systems. Stefan Bruhn also highlighted that heavy channel coding, which implies higher redundancy, results in more bits being transmitted for the mode indicator and/or request field. This is undesirable as it increases

overhead bits, which should ideally be minimized.

277. According to Stefan Bruhn, the invention provides techniques and systems to increase the likelihood that mode indicators and requests will be properly decoded while minimising the number of overhead bits transmitted with the payload data and reducing the delay associated with processing mode information. He asserted that this results in a technical effect or technical advancement over what was previously known. Stefan Bruhn concluded that the claimed invention not only improves the efficacy of the mobile devices used by consumers but also optimises the use of resources in the said devices and consequently deserve patent protection.

10.2.3. ANALYSIS AND FINDINGS

278. I have considered the rival submissions and evidence presented by both Lava and Ericsson, along with the independent Claims of IN'686 which provides contrasting perspectives on whether IN'686 is merely directed to an algorithm and if the said invention is worthy of patent protection.

279. Lava's contention is that the patent essentially describes an algorithm, particularly focusing on the method for transmitting information, which they argue is not patentable under the Patents Act. On the other hand, Ericsson emphasises that the invention aims to solve a technical problem in digital communication systems and that this results in a technical effect or technical advancement over what was previously known, thus making it deserving of patent protection.

280. In my considered view, the Independent Claims of the invention, particularly Claim 1, which describes a method for transmitting information

using different codec modes, and Claim 26, which describes a communication station with a processor and a receiver for processing mode indication information, support Ericsson's contentions that IN'686 is not merely an algorithm. Claim 28, which describes a system for transmitting information, further reinforces the argument that the invention encompasses more than just an algorithmic method, as it involves enhancing the functionality of hardware components and systems for implementing the method.

281. In light of the evidence presented by both the parties and the independent claims of the invention, I hold that IN'686 is not merely directed to an algorithm. While the method for transmitting information does involve algorithmic elements, the invention as a whole encompasses a system and apparatus for implementing the method, addressing a technical problem in digital communication systems, and resulting in a further technical effect on mobile devices. Therefore, the subject matter of the patent is eligible for patent protection under the Patents Act and not barred by Section 3(k) of the Patents Act.

282. Now I shall move on to assess the contentions of Lava that IN'036 is liable to be revoked on the ground of lack of novelty and inventive step.

10.3. CHALLENGE TO THE NOVELTY OF IN 203686

283. It has been claimed by Lava that IN 203686 is liable to be revoked in terms of Section 64(1)(e) of the Patents Act for lacking novelty. For this purpose, Lava has relied upon three separate prior art documents. As with any assessment of novelty in relation to a patent, it is essential to examine

each of these prior art documents individually to determine their relevance and impact on the novelty of IN'686. In this section, I shall analyse each of the prior art documents separately to assess whether they anticipate the inventive concept claimed in IN' 686 and whether they affect its novelty.

10.3.1. PRIOR ART: MILNOR

284. The first prior art relied upon by Lava, in support of its contention of lack of novelty of IN'686 is the research paper titled "*The Newfoundland-Azores High-speed Duplex Cable*" by J. W. Milnor and G.A. Randall published in the year 1931 in AIEE Transactions, Vol. 50, pp. 389-396 (hereinafter *'Milnor'*).

285. Milnor is a research paper that was published in the year 1931 and describes the Newfoundland-Azores high-speed duplex cable laid by the Western Union Telegraph Company in 1928. The real-world application of this prior art is in transatlantic communications, which significantly increased the message capacity and efficiency of transoceanic communication at the time. The cable described in Milnor was unique in combining non-loaded and loaded sections, with the loaded portions being tapered. As per Milnor this design enabled duplex or two-way operation at a speed of 1400 letters per minute in each direction, significantly higher than previous long cables. Milnor details the general theory of duplex cables, the challenges in balancing loaded cables, and the specific design and testing of the 1928 cable. It also discusses the advantages of simplex versus duplex high-speed cables and acknowledges contributions to the project.

286. Milnor discusses various concepts crucial to the development and

operation of the Newfoundland-Azores high-speed duplex cable. The following key concepts are given in the prior art:

i. Duplex Operation: Simultaneous two-way communication over a single cable.

ii. Loaded and Non-loaded Cable Sections: Combination of sections with and without inductive loading to enhance signal transmission speed and quality.

iii. Tapered Loading: Gradual variation of inductive loading to improve impedance matching and reduce signal reflection.

iv. Artificial Line Equipment: Networks that simulate the cable's impedance for effective duplex operation.

v. Signal Amplification: Use of amplifiers to maintain signal strength over long distances.

vi. Cable Testing: Methods for assessing the cable's electrical characteristics and performance.

vii. Temperature Compensation: Adjustments to account for temperature-induced changes in cable impedance.

viii. Duplex Balancing: Techniques for matching the impedance of the artificial line with that of the cable to ensure efficient duplex operation.

ix. Stability of Balance: Considerations for maintaining balance despite variations in cable impedance due to changing currents.

287. Lava has claimed that the said research paper is specifically anticipating the duplex system using a method of transmitting information on a first link and receiving information on a second link in a

communication system, which destroys the novelty of IN'686.

288. Ericsson has countered the contentions of Lava in respect of Milnor by submitting that Lava's reliance on Milnor to challenge the novelty of IN'686 is misplaced. Ericsson claims that it is crucial to note that the paper in question pertains to the physical and electrical design of a submarine telegraph cable for duplex communication, which is fundamentally different from the subject matter of IN'686. Moreover, Ericsson asserts that Milnor does not deal with the same problem as IN'686, nor does it propose similar solutions and the technical features and innovations described in IN'686. Therefore, Ericsson claims that the reliance on a completely irrelevant document by Lava is an attempt to mislead the Court.

289. The analysis of Milnor has already revealed that the said research paper discusses the high-speed duplex cable, which focuses on the physical and electrical design of a submarine telegraph cable for simultaneous two-way communication. The key concepts discussed in Milnor are the use of loaded and non-loaded cable sections, tapered loading, artificial line equipment for impedance matching, and techniques for signal amplification and duplex balancing. However, the inventive concept of IN'686, covers a method, communication station, and system for transmitting information in a communication system using different codec modes. The Claims focus on the use of mode indications and mode requests to identify and select the appropriate codec modes for processing information on different links. Therefore, the inventive concept of IN'686 addresses different aspects of communication systems than the prior art, Milnor. While Milnor is concerned with the physical and electrical design of a submarine telegraph

cable for duplex communication, IN'686 is focused on the method and system for processing information using different codec modes in a communication system. Therefore, Milnor does not affect the novelty of the inventive concept of IN'686 and in fact has no causal link to IN'686.

10.3.2. PRIOR ART: IEEE 802.11 STANDARD, 1997

290. Now, I shall move on to consider the next prior art relied upon by Lava to Claim that the inventive concept of IN'686 is not novel, which is the standard document for IEEE 802.11 Standard, 1997.

291. Lava contends that the key concepts of Mode Indication, Mode Request, and the use of codec modes to identify a source coding technique, as claimed in IN'686, are not novel. They argue that these techniques have been well-established in the field of communication systems, particularly in transmitters and receivers. Lava asserts that these ideas were already conceived and incorporated into the IEEE 802.11 standard, published in 1997, which forms the basis for wireless network communication and demonstrates the prior existence and application of these key concepts in the industry. Therefore, Lava argues that the claimed features in IN'686 lack novelty and are based on well-known techniques in the field of communication systems.

292. In response to Lava's contention that the IEEE 802.11 standard of 1997 affects the novelty of the inventive concept of IN'686, Ericsson submits that the said standard does not address the same problem as IN'686. Further, Ericsson points out that Lava has failed to provide any details on how, based on the said standard document, a person skilled in the art would

be able to arrive at the claimed invention, i.e., IN'686. According to Ericsson, IN'686 relates to a radiocommunication system and station, along with the method by which mode information, including mode indicators and mode requests, is transmitted within the communication system. In contrast, the IEEE 802.11 standard primarily focuses on the protocols and mechanisms for wireless communication. Moreover, Ericsson highlights that IN'686 uniquely proposes the decimation of the rate of transmission of mode information to reduce bandwidth consumption, a feature not addressed by the IEEE 802.11 standard.

293. Based on my detailed assessment of the inventive concept of IN'686 and the disclosures in the IEEE 802.11 standard, it is evident that there are certain points of similarity between the prior art and IN'686. In my considered view, these similarities include the use of mode indication, the focus on communication systems, and the transmission of information. A short analysis of the similarities and their specific nature is set out below:

i. Use of Mode Indication: Both IN'686 and the IEEE 802.11 standard utilise the concept of mode indication. In IN'686, mode indication is used to transmit mode information within a communication system, while in the IEEE 802.11 standard, it is used to indicate operational modes of devices (such as infrastructure mode or ad-hoc mode).

ii. Communication System Focus: Both IN'686 and the IEEE 802.11 standard are focused on communication systems, albeit in different contexts. IN'686 is concerned with a radiocommunication system and station, whereas the IEEE 802.11 standard deals with wireless network communication protocols.

iii. Transmission of Information: Both IN'686 and the IEEE 802.11 standard involve the transmission of information.

294. To provide a clearer understanding of the distinctions and commonalities between the inventive concept of IN'686 and the prior art IEEE 802.11 standard, a detailed comparison of their key elements is presented in the following table:

Element	**Inventive Concept of IN'686**	**IEEE 802.11 Standard**
Focus	Radiocommunication system and station	Wireless network communication protocols
Mode Indication	Used to transmit mode information within the communication system	Used for device operational modes (e.g., infrastructure mode, ad-hoc mode)
Mode Request	Used to request a specific codec mode for processing information	Not specifically focused on mode requests for codec modes
Codec Modes	Used to identify a source coding technique and a channel coding technique for processing information	Primarily focused on medium access control (MAC) and physical layer (PHY) protocols
Transmission of Mode Information	Proposes decimation of the rate of transmission of mode information to reduce bandwidth consumption	Does not specifically address the transmission of mode information or its rate decimation
Synchronisation	Synchronising the first and second transmitting steps to a time frame structure of other information	Only focuses on synchronisation for accessing the wireless medium

Element	Inventive Concept of IN'686	IEEE 802.11 Standard
	transmitted by the communication system	
Handling Inactivity	Includes steps for handling periods of inactivity, such as halting the transmission of mode indications and using specific codec modes after the period of inactivity	Does not specifically address handling inactivity in the context of mode information transmission
Adaptation Based on Payload	The communication station selectively adapts transmission of mode indication information based on incoming payload information	Adaptation in the IEEE 802.11 standard is generally focused on adjusting parameters for optimal wireless communication, not specifically based on mode indication information
System Components	System comprises means for providing codec modes, transmitting mode indications and requests, and processing information based on received mode requests	System components in the IEEE 802.11 standard are focused on enabling wireless communication, including access points and wireless network adapters

295. Based on the above analysis, while the IEEE 802.11 standard may share some general concepts with IN'686, such as mode indication and mode requests, it does not specifically disclose the aspects of IN'686 related to the transmission of mode information and the decimation of the rate of transmission to reduce bandwidth consumption. Therefore, in my considered

view, the novelty of IN'686 is not compromised by the disclosures made in the IEEE 802.11 standard published in 1997.

10.3.3. PRIOR ART: WO'549

296. The third prior art document relied upon by Lava to claim lack of novelty of IN'686 is the publication of the PCT application bearing publication number WO/1997/041549. The said prior art is a patent application in which Ericsson is the assignee and is titled "*Encoding Mode Control Method and Decoding Mode Determining Apparatus*" (hereinafter '*WO'549*').

297. WO'549 discusses various methods and apparatus for controlling and determining encoding and decoding modes in a communication system. It discloses methods for dynamically allocating speech and channel coder rates depending on local radio conditions on a frame-by-frame basis. WO'549 enables the feature to dynamically adapt the coding rate to prevailing radio conditions and allows the transmission mode decision to be based partially on the mode received on the other link.

298. Further, WO'549 introduces the concept of mode switching based on local radio conditions and synchronising the receiver decoding mode with the transmitter encoding mode. It also discusses utilising the coding gain/loss obtained by mode switching for power adjustments. The Complete Specification of WO'549 also provides insights into the implementation of mode switching and power control in TDMA systems, including GSM. It describes the process of trial decoding all possible speech/channel coding combinations and selecting the most probable one for actual speech

decoding.

299. In addition, WO'549 also describes a method and system for dynamically adjusting the output power of a transmitter based on the coding gain/loss obtained from different encoding modes. The said method and system have been implemented in WO'549 with the aim of optimising speech quality and system performance under varying radio conditions and traffic loads. The following are the key points emanating from the discussion on Power Control in the Complete Specification of WO'549:

i. Coding Gain/Loss Utilisation: The different encoding modes, each with a mix of speech encoder bit rate and data protection bit rate, result in a coding gain or loss. This coding gain or is used to adjust the transmitter's output power.

ii. Output Power Adjustment: Depending on the local radio conditions, if the conditions worsen or the traffic load increases, a mode with higher data protection and lower speech encoder bit rate is selected. Conversely, if the conditions improve or the traffic load decreases, a mode with lower data protection and higher speech encoder bit rate is chosen. The output power of the traffic channel is then adjusted accordingly to maintain an estimated decoded speech quality measure at the receiving end.

iii. Mode Indicator Field: The selected encoding mode is identified in a mode indicator field transmitted along with the encoded bits. This helps the receiving end to determine the corresponding decoding mode.

iv. Technical Advancement: The power control method in WO'549 leads to better system capacity due to reduced interference levels. It also allows fast signalling between the base station and the mobile station without requiring involvement from the base station controller or mobile services switching centre.

10.3.3.1. SUBMISSIONS OF LAVA: WO'549

300. According to Lava, WO'549 specifically describes a scenario involving a base station that transmits speech data to a mobile device over a first radio link, while the mobile device transmits speech data back to the base station over a second radio link. The base station is depicted as monitoring the local radio environment and its influences. Based on these conditions, the base station instructs the speech encoder to switch to the corresponding speech encoding mode and also instructs the channel encoder to switch to the corresponding channel encoding mode. The speech encoder is presumed to be capable of handling different encoding rates. The document further details that, for proper speech decoding at the mobile station, the channel decoder must deliver the appropriate user data to the speech decoder, and the receiver must determine which mode was actually used by the base station.

301. Lava asserts that WO'549 anticipates and discloses a method and system of radio communication wherein the transmission of signals occurs through different modes, similar to the concept claimed in IN'686. Accordingly, Lava contends that the disclosures in WO'549 encompass the key aspects of the inventive concept claimed in IN'686, particularly the

dynamic adaptation of encoding modes based on local radio conditions and the transmission of mode information for synchronisation between the transmitter and receiver. Therefore, Lava argues that the novelty of the inventive concept of IN'686 is compromised to the extent that all the claimed features are already anticipated in WO'549.

10.3.3.2. SUBMISSIONS OF ERICSSON: WO'549

302. *Per Contra*, Ericsson submits that Lava' reliance on WO'549 to challenge the novelty of IN'686 is misplaced. Ericsson asserts that WO'549 neither discloses nor discusses the transmission of mode indicators and mode requests in different frames, nor does it contemplate transmitting them less frequently to save bandwidth. It is their submission that while WO'549, is another patent of Ericsson, the said patent does not disclose an encoding mode control method that dynamically adapts the coding rate to prevailing radio conditions on a frame-by-frame basis and allows at least one party to base its transmission mode decision partially on the mode received on the other link. Ericsson further submits that WO'549 encompasses a decoding mode determining apparatus that synchronises the receiver decoding mode with the transmitter encoding mode in Claim 14, however, it does not encompass the specific features of IN'686.

303. The invention of WO'549 is performed by monitoring the local radio environment around the transmitter and dynamically selecting a speech/channel encoding rate combination suitable for the current radio environment. The receiver then trial decodes all possible speech/channel coding combinations and selects the most probable one for actual speech

coding. Finally, the receiver selects the same encoding mode for the return link to the transmitter. It is crucial to note that in WO'549, there is no 'handshake' being performed between the transmitter and the receiver to share mode information (mode indicators and mode requests). In fact, WO'549 specifically states that "*the mobile station determines the selected mode by trial decoding possible modes to find the most probable mode and uses the same mode for transmission to the base station on the return link.*" Therefore, Ericsson argues that the contentions raised by Lava are baseless, as WO'549 does not disclose the specific features claimed in IN'686 related to the transmission and less frequent sharing of mode indicators and mode requests to achieve bandwidth saving. Consequently, Ericsson submits that the novelty of IN'686 is not compromised by the disclosures in WO'549.

10.3.3.3. ANALYSIS AND FINDINGS: WO'549

304. In assessing the novelty of the inventive concept of IN'686, it is essential to examine the similarities and differences between its scope and the disclosure made in WO'549. By comparing the key aspects of both IN'686 and WO'549, I am identifying the areas of overlap, particularly in the dynamic allocation of codec modes, mode indication and decision-making, synchronisation of encoding and decoding modes, and the utilization of coding gain or loss. These similarities and differences provide a basis for understanding the extent, if any, to which the inventive concept of IN'686 may be anticipated by the disclosures made in the Complete Specification of WO'549.

305. The following are the similarities between the inventive concept of

the Claims in IN'686 and the disclosure in the Complete Specification of WO'549:

i. Dynamic Allocation of Codec Modes: Both patents discuss dynamic allocation of different codec modes based on local radio conditions.

ii. Mode Indication and Decision-Making: Both patents involve the concept of mode indication and making transmission mode decisions based on the mode received on the other link.

iii. Synchronisation of Encoding and Decoding Modes: Both patents describe synchronising the receiver decoding mode with the transmitter encoding mode, which is a crucial aspect for efficient communication in a digital cellular radio system. This synchronisation ensures that the receiver can correctly interpret and decode the information transmitted by the transmitter, even as the encoding mode may change dynamically based on local radio conditions or other factors.

iv. Utilisation of Coding Gain/Loss: WO'549 discusses utilising the coding gain/loss obtained by mode switching for power adjustments, which is related to the dynamic adaptation of codec modes based on radio conditions, a common thread in both patents.

306. Having explored the similarities between WO'549 and IN'686, I shall now move on to examine the differences that set apart the disclosures in WO'549 from the Claims in IN'686, highlighting the unique aspects of each patent. The objective of this exercise is to identify the differences between the two patents, thereby understanding the specific contributions each patent makes to the field of communication systems and assess the novelty of

IN’686 in light of the disclosures in WO’549. The said differences are set out below:

i. Transmission of Mode Indicators and Requests: IN’686 claims the transmission of mode indicators and mode requests in different frames to potentially reduce bandwidth consumption, which is neither explicitly nor implicitly disclosed in WO’549. In contrast, WO’549 aims to decrease interference levels within the communication system, thereby enhancing overall system capacity.

ii. Emphasis on Power Control: WO’549 places significant emphasis on power control methods and systems based on mode switching, which is not a primary focus of IN’686. On the other hand, IN’686 is concerned with the transmission of mode information for efficient processing rather than power control.

iii. Explicit vs. Implicit Mode Synchronisation: IN’686 utilises explicit transmission of mode indicators and requests for synchronising the encoding and decoding modes, ensuring that the receiver can adjust its decoding mode to match the transmitter's encoding mode. In contrast, WO’549 employs a trial decoding process at the receiver to implicitly determine the appropriate encoding mode used by the transmitter, without relying on the explicit transmission of mode indicators or requests. Consequently, the specific implementation detailed in WO’549, such as the process of trial decoding all possible speech/channel coding combinations described in WO'549, are not covered in IN’686.

iv. Method of Synchronising Encoding and Decoding Modes: IN'686 achieves synchronisation by directly communicating the current and desired codec modes between the transmitter and receiver. On the other hand, WO'549 achieves synchronisation through a receiver-centric approach, where the receiver decodes all possible codec combinations to determine the most probable encoding mode used by the transmitter and subsequently uses the same mode for the return link.

307. Based on the above discussion, the novelty of IN'686 over WO'549 is evident in its specific features related to the management and transmission of codec mode information, as well as its approach to synchronisation. Consequently, I have identified the points of novelty of IN'686 over WO'549 through a tabular representation. The said representation of the points of novelty over WO'549 is set out below:

Key Element or Concept	**IN'686**	**WO'549**	**Novelty in IN'686**
Transmission of Mode Indicators and Requests	Explicit transmission in different frames	Not explicitly or implicitly disclosed	Introduction of explicit transmission of mode indicators and requests in separate frames for bandwidth optimization
Emphasis	Focused on mode information transmission	Focused on power control methods and systems	Distinct emphasis on efficient mode information transmission, differing from the power control focus in WO'549

Mode Synchronisation Method	Explicit transmission of mode indicators/requests	Implicit trial decoding process at the receiver	Utilisation of explicit mode indicators and requests for synchronization, as opposed to implicit trial decoding
Synchronisation Implementation	Direct communication of codec modes between transmitter and receiver	Receiver-centric approach via trial decoding	Adoption of a direct communication approach for synchronizing encoding and decoding modes, contrasting with the receiver-centric method in WO'549

308. The points of novelty identified above underscore the inventive contributions of IN'686 and distinguish it from the disclosures made in the prior art, WO'549. Therefore, even after taking into account the similarities in the overall themes of dynamic codec mode allocation and synchronisation, the specific implementations and technical advancements of IN'686 are not anticipated by WO'549. Consequently, the novelty of the inventive concept of IN'686 remains unaffected by the disclosures in WO'549, reaffirming its distinctiveness and patentability in the field of communication systems.

10.4. CHALLENGE TO THE INVENTIVE STEP IN IN 203686

309. In addition, to challenging the novelty of IN'686, Lava has also specifically pleaded that the inventive concept of IN'686 does not involve any inventive step and would be obvious to a person skilled in the art in light of the prior arts highlighted by Lava. The prior arts cited in respect of the

ground of lack of inventive step include:

i. WO'549, which was previously cited for lack of novelty.

ii. The AMR Study Group Report Version 1.0 of 1997 [**Exhibit DW-1/23**].

iii. The article titled "An Adaptive Multi-Rate Speech Codec based on MP-CELP Coding Algorithm for ETSI AMR Standard" by Hironori Ito et al. (1998) [**Exhibit DW-1/25**].

310. Lava contends that the combination of teachings in these documents would make the technical features claimed in IN'686 apparent to a person skilled in the field of communication systems. Consequently, Lava asserts that IN'686 does not meet the requisite inventive step criteria for patentability, as the claimed invention would be considered obvious in view of the existing state of art and prior art.

10.4.1. PRIOR ART: WO'549

10.4.1.1. SUBMISSIONS OF LAVA: WO'549

311. Broadly, in respect of the challenge on the ground of lack of inventive step, Lava has contended that the method claimed in IN'686 is covered by the prior WO'549. Specifically, Lava has asserted that the method in Claim 1 in IN'686, which comprises the steps of providing different codec modes for processing information in a system, transmitting a mode indication on one link identifying one of the different codec modes, and transmitting a mode request on a second link identifying at least two different codec modes to process information to be transmitted on the link, is encompassed by the teachings of WO'549.

312. The above contention has been re-emphasised in evidence by GS Madhusudhan (DW-1), wherein he has deposed to state that IN'686 covers an invention which discloses a scheme of using dynamically varying modes within a certain bitrate to achieve the highest possible perceptual capacity at the receiving end. He deposes to say that the method of Claim 1 in IN'686 is covered by WO'549, which also discloses a method for dynamically allocating speech and channel coder rates based on local radio conditions. The relevant extract from his affidavit in evidence is set out below:

> *"123. The patent also claims an invention in a scheme of using dynamically varying modes within a certain bitrate so as to achieve highest possible perceptual capacity at the receiving end. In other words,* ***the method of claim 1, which comprises the step of providing different codec mode for processing information in a system, transmitting on one link mode indication identifying one of the different codec modes and transmitting in a second link on mode request identifying at least two different codec modes to process information to be transmitted on the link, is covered by said WO 1997/041549*** *(US'766)."* *(Emphasis supplied)*

10.4.1.2. SUBMISSIONS OF ERICSSON: WO'569

313. Ericsson has denied the above contention of Lava that WO'549 covers Claim 1 of IN'686. Ericsson argues that WO'549 does not disclose or discuss the transmission of mode indicators and mode requests in different frames, less frequently, to result in bandwidth saving. Specifically, Ericsson emphasises that there is no 'handshake' being performed between the transmitter and the receiver in WO'549 to share mode information (mode indicators and mode requests). Instead, WO'549 determines the selected mode by trial, decoding possible modes to find the most probable mode and uses the same mode for transmission to the base station on the return link. Ericsson further argues that Figure 4 in WO'549 merely shows transmission

on two radio links between a base station and a mobile station, which is not the subject matter of IN'686. Therefore, Ericsson contends that the inventive concept of IN'686 is not anticipated or rendered obvious by the teachings and motivations of WO'549.

10.4.1.3. ANALYSIS AND FINDINGS: WO'549

314. As I have already discussed, the technical advancement in IN'686 over WO'549 is in the explicit method of transmitting mode indicators and mode requests in different frames, with the result of reduced bandwidth consumption. Further, this approach allows for more efficient processing of information in a communication system by enabling precise control and synchronisation of codec modes between the transmitter and receiver.

315. In contrast, WO'549 focuses on dynamically allocating speech and channel coder rates based on local radio conditions and does not disclose or discuss the explicit transmission of mode indicators and mode requests in different frames. Instead of covering or suggesting the methods and processes given in IN'686, WO'649 employs a trial decoding process at the receiver to determine the appropriate encoding mode used by the transmitter, without the explicit communication of mode information between the transmitter and receiver.

316. As per the various tests for assessing the inventive step and lack of obviousness given in ***Avery Dennison*** (Supra), in my considered view, taking into account the teachings in WO'549, it is not obvious that one would try to explicitly transmit mode indicators and requests in separate frames as claimed in IN'686. This conclusion is supported by the fact that

WO'549 does not suggest or imply this specific approach to managing codec modes and bandwidth optimisation.

317. In conclusion, the application of various tests to assess the inventive step of IN'686 in light of the prior art WO'549, reveals that IN'686 claims a novel and inventive method of explicit transmission for efficient codec mode management and bandwidth optimization. In my considered view, the said advancement is not suggested by WO'549 and there are no teachings in the said prior art that would prompt a skilled person to modify or adapt the teachings in WO'549 to arrive at the explicit transmission method claimed in IN'686. Therefore, the approach in IN'686 is not an obvious modification of WO'549 and the explicit transmission of mode indicators and requests in different frames for bandwidth optimization represents a distinct and non-obvious solution. Consequently, the challenge to the patentability on the basis of WO'549 does not succeed.

10.4.2. PRIOR ART: DW1/23

318. Now, I shall move on to assess the next prior art relied upon by Lava to challenge the inventive step of IN'686, which is the AMR Study Group Report Version 1.0 of 1997 (hereinafter '*DW1/23*').

10.4.2.1. SUBMISSIONS AND EVIDENCE OF LAVA: DW1/23

319. Lava argues that the concept of exchanging codec mode information and codec switching was well-established in the field prior to the filing of IN'686, as demonstrated by the AMR Standards specified in DW1/23 and earlier standards such as the RTP/RTCP Protocol 1996. As per Lava, AMR Standards required the use of in-band signalling for the exchange of codec

mode data, and DW1/23 explicitly mentions the change of the AMR Active Codecs set during a call, in addition to the exchange of codec set information during call setup. Furthermore, Lava highlights that the RTP/RTCP Protocol, as disclosed in RFC 1889, already used the Payload type Field to switch codecs based on network conditions, including both audio and video codecs.

320. Lava contends that the AMR Study Group adopted the known scheme of codec switching, which was actively in use even before the AMR Standard came into existence. Therefore, Lava asserts that all aspects of the claimed invention in IN'686 were known in the art and lack inventive step. Further, Lava submits that the Claims of IN'686, pertaining to the use of two different codecs, is not a technical advancement as the same was already disclosed in prior standards published for Wi-Fi and video telephony. Furthermore, Lava highlights that Hironori had already demonstrated in 1998 that researchers had already begun proposing candidate schemes aimed at adopting the multi-codec requirement specified by the AMR Standard Study commissioned by ETSI. According to Lava, this study indicates that the concept of using multiple codecs was already under consideration by ETSI, before the priority date of IN'686. Therefore, Lava argues against the patentability of IN'686.

321. Further, GS Madhusudhan (DW-1) has led evidence on behalf of Lava in respect of its contention of lack of inventive step in IN'686 in which he has reiterated the contentions raised by Lava while adding specific details in some instances. It is his deposition that DW1/23 as well as earlier ETSI standards such as GSM Standard GSM 08.60 (February 1992), established

the requirement of using in-band signalling for the exchange of codec mode data before the filing of the IN'686 patent and accordingly he asserts that this technique is well-known in the field of mobile communication.

322. In respect of the use of multiple codecs, in conjunction with Lava's pleadings, he has deposed that the concept of using two different codecs is prevalent in earlier mobile telephony systems, Wi-Fi, and video telephony. According to GS Madhusudan (DW-1), the AMR Standard Study commissioned by ETSI in 1997 specified the adoption of the multi-codec requirement, and proposals for candidate schemes involving two different codecs, such as the one by Hironori Ito et al., were published in 1998.

323. It is further deposed by GS Madhusudan (DW-1) that codec switching is a well-known concept, which is not limited to mobile telephony. He cites the RTP/RTCP Protocol 1996 and RFC 1889 which disclose the use of multiple codecs and codec switching for both audio and video codecs. According to him, the AMR Study Group adopted this scheme, which was already in active use before the existence of the AMR Standard. The sender and receiver report mechanism in the RTP/RTCP Protocol allows monitoring of quality issues and modification of transmission parameters, such as codec changes, to counter these issues.

324. In conclusion, he asserts that the Claims in IN'686 regarding the use of the first and second frames for transmitting codec information are a reiteration of well-known conventions. In support of this assertion, he highlights the logical necessity of sending codec information for the first frame in the first frame itself, as sending this information after the first frame would unable the decoder to decode the first frame. The subsequent

part of the Claim of sending a mode request in the second frame to identify the codec for transmitting information on the second frame is viewed by him as a straightforward extension of this principle, lacking technical advancement. The relevant extracts from the affidavit of GS Madhusudhan (DW-1) are set out below:

> *"125. Further, inband signalling is also a well-known technique. The AMR Study Group Report Version 1.0 of 1997 (conducted around 13.10.1997 though the publication was issued in 1998) specifically states that the* ***AMR Standards should use inband signalling for exchange of codec mode data. This requirement was established before the filing of the patent and has also been in the convention adopted by ETSI's own standards, such as the GSM Standard GSM 08.60 dated February, 1992.***
> ***...***
> ***126. The second part of Claim 1 relating to two different codecs is well known in prior art and is used not only in earlier mobile telephony systems but also in wifi and video telephony. In fact, the adoption of the multi codec requirement was specified by the AMR Standard Study commissioned by ETSI in 1997 prior to the priority date of IN '686****. In any event, researchers had already started making proposals for candidate schemes aimed at the AMR Study for instance in "An Adaptive Multi-Rate Speech Codec Based on MP-CELP Coding Algorithm for ETSI AMR Standard" by Hironori Ito et.al. (1998) which involved two different codecs. Thus, the said technique is not novel to IN '686 patent. ...*
> *127. Codecs switching is not restricted to mobile telephony, for e.g. the RTP/RTCP (Real Time Control Protocol) Protocol 1996, uses the Payload type Field to switch codecs taking into account network conditions. RFC 1889 discloses use of multiple codecs, and goes beyond audio codecs and specifies codecs switching of audio and video codecs. The AMR Study Group has simply adopted this scheme. So* ***not only is the concept of codec switching well known but was actively in even before the AMR Standard came into existence****. It may be note that the sender and receiver report mechanism allows both sender receiver to monitor quality issues on the link and modify transmission parameters to counter these issues. They can be changed to a codec with lesser compression or changing modulation. The action to be taken is defined by the implementer but the monitoring mechanism is provided. ...*
> *128.* ***The claims regarding the use of the first and second frame are merely reiteration of well-known conventions****. Considering that a voice sample can only be decoded if the decoder has information about the codec being used for encoding the voice samples contained on the first frame, the*

only logical place to send information about the codec used to encode the first frame is the first frame itself. If this information were sent after the first frame it would render the decoder unable to decode the first frame. This is a simple cause and effect chain and hence there is no innovation or technical means present in this part of the claim.

129. ***The second part relating to sending mode request on the second frame for identifying the codec for transmitting information on the second frame merely follows from the above and states that the encoding technique (codec) used in the channel should be specified in the second frame*** *as above."*

(Emphasis supplied)

10.4.2.2. SUBMISSIONS AND EVIDENCE OF ERICSSON: DW1/23

325. Ericsson contends that Lava's citation of documents indicating the knowledge of multi-coding systems, mode indication, mode request, etc., is an attempt to deliberately misinterpret the scope of IN'686 to challenge its validity. Ericsson has clarified that it is not seeking a monopoly on these general concepts. Instead, the Claims of IN'686 are directed towards a specific implementation and method that goes beyond the mere knowledge of multi-coding systems and mode communication. Therefore, Ericsson contends that Lava's argument does not accurately reflect the inventive concept and technical advancements claimed in IN 686, and accordingly, the patent's validity should not be undermined based on a misinterpretation of the scope of the patent.

326. Further, Ericsson submits that during the cross-examination of GS Madhusudhan, in respect of IN'686, he was specifically asked to specify prior art documents that reveal a mobile station which decimates Mode Indication and Mode Request and alternates their transmission to save valuable bit rate for speech transmission and thus to maximise speech quality. According to Ericsson, the response of GS Madhusudan, relying on

Exhibit DW-1/23, Hironori and **Exhibit DW-1/26** (RTP/RTCP Protocol 1996), fall short on several aspects, including the fact that DW1/23 merely hints at spreading the in-band information across subsequent frames but does so at the expense of delay, without providing any specific details on how Mode Request/Mode Indication (MR/MI) are to be alternated in consecutive subframes. According to Ericsson, this falls short of the technical advancement claimed in IN '686, which involves a specific method of alternating MR/MI transmission to optimize bit rate usage without inducing delay. Further, Ericsson claims that Hironori focuses on adding more protection bits, which is contrary to the objective of IN'686, which aims to save bits while maintaining speech quality and preventing delay in coding/decoding. Thus, Hironori teaches away from the inventive concept of IN'686 and cannot be a valid response to the question posed during cross examination.

327. Finally, Ericsson also contends that in **Exhibit DW-1/26**, the payload type information is transmitted in every frame, with no indication or teaching related to the decimation of such a rate of transmission, which again fails to disclose or enable the specific method claimed in IN'686. Therefore, Ericsson contends that the prior arts cited by GS Madhusudhan do not disclose or render obvious the inventive concept of IN'686, which involves a novel approach to managing MR/MI transmission for optimising speech quality and bit rate usage in a communication system and that GS Madhusudhan has given incorrect or at best insufficient answers to the cross examination on IN'686.

10.4.2.3. ANALYSIS: DW-1/23

328. In the inquiry concerning the validity of IN'686, the cross-examination of GS Madhusudhan (DW1) is critical in evaluating the inventive step of the patent in light of the prior arts presented by Lava. The following excerpts from the cross-examination delve into the specifics of mode indication (MI), mode request (MR) and codec switching techniques as disclosed in the prior art(s). The relevant extracts of the cross examination are set out below:

> *"**Q.182.** I put it to you that none of the prior art documents reveal a mobile station which decimates Mode Indication and Mode Request and alternates their transmission so as to save valuable bit rate for speech transmission and thus to maximize speech quality. Is that correct?*
>
> ***A.** Exhibit DW-1/23 clearly outlines all facets of the patent in question including Mode Indication, Mode Request and alternating encoding them in frames. It is interesting to note that this prior art specifies all aspects of Mode Bit behaviour and reading of the Ericsson patent seems to indicate that the patent simply repeats the scheme mentioned in this prior art. Specifically Section 5.1 paragraph 2 refers to a codec mode bits being transmitted inband or using bit stealing techniques. It also talks about variation in decoding bit rate. Section 6.3.1 Page 997, second paragraph specifically talks about storing the mode bits on different frames to save bandwidth and also points out to the obvious issue of the delay the scheme causes. **Section 5.4.2 titled Codec Mode Adaptation, Page 988 last paragraph clearly shows that the signalling can also be asymmetric in the sense that some channels may use the same frame for Mode Request and Mode Indication and other channels may request different frames for these two. Section 5.2, Page 987, fourth para also refers to the same.** In Exhibit DW-1/25, Page 1060, Section 2.2 clearly shows the various options for protecting information. **To put it simply, more valuable the information, more the protection. The exact bits and CRCs are also specified here. The concept is in fact very obvious.** If VIPs are being guarded a more important VIP will get a Security Guard all to himself, a lesser important VIP may have to share his Security Guard with another VIP. This is the exact principle that is used to decide if 6 bits of CRC should protect two more quantities or one more quantity.*

Going back to even older prior art shown in Exhibit DW-1/26, at Page 1075, Section starting with Payload type shows 7 bits being used in an inband scheme that is mandatory for each packet. Page 1079, first figure shows an extension field which can be used to designate extra information in current or subsequent packet. Unlike the simple AMR scheme which fixes the option only to 3 bits in each frame for each mode indicator or the alternate frame, the RTP scheme allows the payload to determine whether the extra information related to factors like audio codec encoding, video codec encoding can be sent in the same packet, alternate packets or in any arbitrary scheme that helps reduce bandwidth. But leaving aside all prior arts, the scheme is so conceptually simple that a simple example of packing people in a bus suffices. The reasons for putting a certain number of people in the first bus and a certain number of people in the second bus are many. It could be due to lack of space in the first bus. It could be due to more important people to be kept in the second bus when going through IED prevalent areas where typically the first bus tends to get blown up and hence, greater protection needs to be offered to participants of the second bus. It should be amply clear that simple extensions of this logic can hardly be called novel.

***Q.183**. In Exhibit DW-1/26, is payload type transmitted in every RTP packet?*

***A.** The payload type information does not consist only of the payload type packet but also consists of extension packets which may or may not be transmitted in every frame, so there is no mandatory requirement of transmitting all payload related information in every frame. What should be realised here is that the RTP scheme is far more flexible than the AMR scheme and in fact, in the IETF standards AMR is simply one payload type for RTP.*

***Q.184.** I am clarifying that the earlier question is relating to payload type packet transmitted in every RTP packet. Please answer if in Exhibit DW-1/26 is payload type packet transmitted in every RTP packet.*

***A.** The base packet is transmitted in every frame but there are options to coaslesce multiple payload values without headers. In general, it should be pointed out that all protocols have a minimum requirement to send headers at the beginning of a stream. In the RTP scheme, the RTP packet is simply the header packet and the encapsulated data stream can use its own packet format optimization.*

Q.185. <u>Please point out in Exhibits DW-1/23 and DW-1/25 as to where they pertain to transmitting codec Mode Indications and codec Mode Requests alternatingly in consecutive frames.</u>

A. <u>In Exhibit DW-1/23, Page 997 paragraph 2 it clearly states that any information related to codec mode can be sent on any of the subsequent frames, either the next one, one following that or the one after that as long as one is willing to deal with the delay this causes.</u> *For example, if the MI is sent only every five frames, it means the mode cannot be changed before five frames. This is what is meant by latency. I am puzzled as to why a simple decision of which packet to put a particular bit in is being treated as a non-obvious creation. All network protocols are constructed by observing the behaviour of the channel and one simply puts the bits where appropriate.* ***<u>With respect to Exhibit DW-1/25, I have pointed to the scheme of protecting more valuable data with more bits and designating different classes of data according to their importance.</u>"***

(Emphasis supplied)

329. This above extract from the cross examination, which has been relied upon by Ericsson identifies whether the inventive concept of IN'686, particularly the alternation of Mode Indication and Mode Request to optimise bandwidth usage for speech transmission, was indeed novel or rendered obvious by existing technologies and standards.

330. From the above cross examination, it is evident that in respect of the concept of In-Band Signalling and Codec Mode Transmission, GS Madhusudhan cites **Exhibit DW-1/23**, which outlines the use of in-band signalling for codec mode transmission. However, in my considered view, while **Exhibit DW-1/23** hints at spreading information across subsequent frames, it does not provide specific details on alternating Mode Indication (MI) and Mode Request (MR) in consecutive subframes, as specifically claimed in IN'686. Further, it is clearly discernible that GS Madhusudhan references **Exhibit DW-1/25**, which discusses adding protection bits to

valuable information in respect of the context of flexibility of codec protection. However, this concept in differs from the implementation in IN'686, which focuses on saving bits while maintaining speech quality, rather than simply adding more protection.

331. I also observe that in the context of payload type transmission in RTP Packets, GS Madhusudhan's response to Q.183 and Q.184 highlights the flexibility of the RTP scheme in transmitting payload type information, which can include extension packets that may not be transmitted in every frame. However, in my considered view, this flexibility is not directly related to the specific method claimed in IN'686, which involves alternating transmission of MI and MR to save bandwidth.

332. Finally, in reference to the above cross examination, I observe that it is relevant to note that the response to Q.185 indicates that **Exhibit DW-1/23** mentions sending codec mode information on subsequent frames. However, in my view, this disclosure does not explicitly detail alternating MI and MR in consecutive frames as the specific implementation in IN'686 does. Therefore, while the concept of latency and decision-making regarding packet content is acknowledged, the specific implementation in IN'686 is not addressed.

10.4.3. FINDINGS ON PRIOR ARTS

333. In summary, while the prior arts discussed above and referred to in the cross-examination provides some background on codec mode transmission and network protocol design, in my considered view, the prior arts individually and collectively do not directly or implicitly disclose or

render obvious the specific method claimed in IN'686 of alternating MI and MR transmission in consecutive frames to save bandwidth and maintain speech quality.

334. Therefore, the inventive step of IN'686 is not rendered suspect by the prior arts individually or collectively, nor is the specific technical advancement an obvious modification of the prior arts to a person skilled the art.

10.5. CONCLUSION

335. Consequently, I hold that IN 203686 is a valid Complete Specification of a patent and accordingly direct the issuance of a Certificate of Validity for the same.

11. INVALIDITY OF IN 213723

336. Now, I shall proceed with the assessment of the patentability of the fifth patent, i.e., IN 213723 titled as '*Method and apparatus for generating comfort noise in a speech decoder,*' which is the final patent asserted by Ericsson in respect of the AMR standard. The Bibliographic details of the said patent are set out in the following table:

Patent Number	213723
Application Number	IN/PCT/2001/00552/MUM
Priority Date	23/11/1998
Type of Application	PCT NATIONAL PHASE APPLICATION
PCT Application No.	PCT/SE99/02073

International Filing Date	12/11/1999
Date of Grant	10/01/2008
Date of Recordal	01/02/2008
Appropriate Office	MUMBAI
Title of the Patent (As granted)	METHOD AND APPARATUS FOR GENERATING COMFORT NOISE IN A SPEECH DECODER

337. The Independent Claims of the said patent are Claim Nos. 1 and 17. IN'723 has been granted with thirty-one Claims. The said Independent Claims are set out below:

> *"1. A* ***method of generating comfort noise in a speech decoder*** *(93) that receives speech and noise information from a communication channel (95), including* ***providing a plurality of comfort noise parameter values*** *(33) normally used by the speech decoder (93) to generate comfort noise, and characterized by:*
>
> > ***obtaining variability information*** *(31) indicative of variability of a background noise parameter (37);*
> > *in response to the variability information,* ***modifying (30) the comfort noise parameter values (33) to produce modified comfort noise parameter values*** *(35); and*
> > ***using the modified comfort noise parameter values (35) to generate comfort noise*** *(25), wherein the variability information is indicative of how the background noise parameter varies with respect to at least one of time and a mean value of the background noise parameter.*
>
> *xxx xxx xxx*
>
> *17.* ***An apparatus for producing comfort noise parameters (33) for use in generating comfort noise in a speech decoder*** *(93) that receives speech and noise information from a communication channel (95), comprising:*
>
> > *a first input (33) for providing a plurality of comfort noise parameter values (33) normally used by the speech decoder (93) to generate comfort noise, and*
> > *a second input (31) for providing a background noise parameter (37), and characterized by further comprising:*

a modifier (30) coupled to said first (33) and second (31) inputs and responsive to variability characteristics of the background noise parameter (51) for modifying the comfort noise parameter values (33) to produce modified comfort noise parameter values (30); and
an output (35) coupled to said modifier (30) for providing said modified comfort noise parameter values (30) for use in generating comfort noise, wherein the variability characteristics of the background noise parameter are indicative of how the background noise parameter varies with respect to at least one of time and a mean value of the background noise parameter."

(Emphasis supplied)

338. The application for the said patent was filed in India as the PCT National Phase Application, claiming priority from a Swedish patent application. Before going into the exercise of claim construction, it is necessary to describe what is referred to as '*comfort noise*' in the context of IN'723.

339. In the context of mobile communication, comfort noise is a synthetic background noise generated by the inactive voice decoder, during periods when active voice is not detected by the Voice Activity Detector (VAD). The purpose of generating comfort noise is to fill the inactive voice segments with a signal that is perceptually equivalent to the background noise present at the encoder. The generation of comfort noise prevents sudden drops in the signal energy level that can occur when the output is completely muted during inactive voice segments, which can be perceptually unpleasant for the listener. By providing a continuous and natural-sounding background noise, comfort noise enhances the auditory experience and maintains the perception of a consistent communication

channel during silent periods in a mobile communication system[24].

11.1. CLAIM CONSTRUCTION

340. I have perused the Complete Specification of the patent IN'723 and also the Claims of the said patent. From a reading of the Complete Specification of IN 213723 along with the Claims of the said patent, it is clear that the said invention is concerned with improving the quality of artificial background noise in speech codecs, particularly during periods of speech inactivity. For achieving the said improvement in the background noise, the invention modifies conventional comfort noise parameters based on actual background noise properties experienced at the level of the encoder.

341. Overall, the invention has described a method and apparatus for generating comfort noise in a speech decoder. It involves modifying comfort noise parameters based on variability information of background noise parameters, such as spectrum and energy. The system computes deviation values from the mean of background noise parameters, then uses these for generating more natural-sounding comfort noise. The method applies to devices like cellular phones, with the speech decoder obtaining variability information either independently or from a speech encoder. The apparatus includes components for determining mean and time variability of background noise, and an auto-regressive predictor filter for processing the noise parameters.

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[24] Benyassine, Adil, et al. "*ITU-T Recommendation G. 729 Annex B: a silence compression scheme for use with G. 729 optimized for V. 70 digital simultaneous voice and data applications.*" *IEEE Communications Magazine* 35.9 (1997): 64-73.

342. More specifically, Independent Claim 1 of the invention outlines a method for generating comfort noise in a speech decoder by modifying standard comfort noise parameter values based on variability information of background noise. This variability relates to changes over time or deviations from a mean value. Independent Claim 17 is describing an apparatus for producing comfort noise parameters in a speech decoder. It includes inputs for standard comfort noise parameters and background noise parameters, with a modifier that adjusts the comfort noise parameters based on the variability of background noise, leading to more natural-sounding comfort noise generation.

343. The method for producing artificial background noise results in comfort noise that is perceived as less static and more akin to actual background noise. This addresses the issue of static or unnatural background noise in conventional systems. The inventive step appears to lie in the process where variable information, indicative of the background noise parameter, is being used to modify the comfort noise parameter values. The result of the application of this process is that the background noise leads to a more natural sound in various environments, such as street noise.

11.2. PATENTABILITY

344. I shall move on to the assessment of the patentability of the Claims of IN'723 on the basis of the pleadings on record and the evidence presented by both the parties.

11.2.1. SUBMISSIONS OF LAVA

345. Lava has pleaded that the Claims of IN'723 solely relate to an

algorithm and consequently, are not patent-eligible subject matter as per Section 3(k) of the Patents Act. According to Lava, the invention described in IN'723 pertains to a method of generating comfort noise in a speech decoder that receives speech and noise information from a communication channel and that it is a well-established fact in the field of digital signal processing that the generation of comfort noise is effectuated through an algorithm, which is based on specific formulae and parameters. Further, Lava asserts that the state of art is replete with various families of algorithms known for generating synthetic or comfort noise.

346. Lava claims that IN'723 explicitly acknowledges in its Complete Specification that the method of generating comfort noise parameters and testing them is, in fact, an algorithm. As such, all the method claims (Claims 1-16) squarely fall within the definition of 'algorithm' which is expressly excluded from patentability under Section 3(k) of the Patents Act. In addition, Lava plead that Claims 17-31, which are purportedly drawn to an apparatus for producing comfort noise parameters, are essentially a mere reiteration of the algorithm in a different guise. As per Lava, the apparatus, as claimed, does not constitute a physical device or apparatus but is merely an algorithmic process and the Complete Specification of IN'723 further corroborates this by admitting that the apparatus and the parameters are tantamount to mathematical formulae.

347. Overall, Lava claims that IN'723 which covers a method and an apparatus for generating comfort noise, does not constitute patentable eligible subject matter as the scope of the Claims squarely fall under Section 3(k) of the Patents Act. Without prejudice to its other contentions, Lava has

pleaded that the Claims of IN'723 can, at best, be construed as 'computer programs per se,' which are explicitly non-patentable in India and the features claimed in IN'723 do not necessitate any distinct apparatus and are implementable in any general-purpose computer. Lava submits that in view of its understanding of IN'723, no technical effect or technical advancement is achieved by IN'723, and the patent does not describe any specific program or application as such.

11.2.2. SUBMISSIONS OF ERICSSON

348. Ericsson submits that the allegations made by Lava regarding the non-patentability of IN'723 are unfounded and that the Claims of IN'723 relate to patentable subject matter under the Patents Act. To support this contention, Ericsson emphasises that IN'723 relates to a new and inventive method and apparatus for generating comfort noise using modified parameters, which are based on the properties of actual background noise (where the background noise is a physical entity). According to Ericsson, the inventive concept of IN'723 has successfully overcome the drawbacks associated with the prior art, and has resulted in smooth and seamless switching between speech and non-speech modes during mobile telecommunication. Accordingly, Ericsson highlights that the invention, IN'723 is not a mere algorithm but a technical solution to a technical problem.

349. According to Ericsson, the primary objective of IN'723 is to solve the problem of static comfort noise in conventional background noise synthesis systems. This objective is achieved by modifying comfort noise parameters

in response to noise variability information, resulting in comfort noise that is perceived as less static and more similar to the actual background noise at the encoder. Consequently, Ericsson contends that IN'723 has a physical effect on sound generation, creating a better perceptual impression, which is audible and tangible.

350. Finally, Ericsson underscores its submissions that in IN'723 there is an actual physical realisation of apparatus described in the Claims of IN'723. Ericsson states that the claimed apparatus in IN'723 has inputs for comfort noise parameter values and a background noise parameter, both of which are utilised by the decoder. They also have an output for providing modified comfort noise parameter values for use in generating comfort noise by the decoder. Consequently, Ericsson highlights that it its view, the Claims of IN'723 distinctly pertain to a physical realisation of the apparatus claimed in the invention, based on quantifiable values and parameters. Moreover, the method claims ultimately pertain to the generation of a tangible decoded speech signal, with enhanced comfort noise segments during periods of speech inactivity, which is perceptible to a human listener.

351. Therefore, in light of the above contentions, Ericsson requests that the Claims of IN'723 be recognized as patentable eligible subject matter, as it relates to a novel and inventive method and apparatus with practical application and physical effects in the field of telecommunication.

11.2.3. DISCUSSION ON PATENTABILITY OF IN'723

352. It is clear that the Claims of the patent application primarily describe a method and apparatus. There can be no doubt that the method as also the

system claimed in the present invention do utilise a mathematical algorithm. Specifically, the method includes computing deviation values from mean values of background noise parameters and modifying comfort noise parameters based on these calculations. Additionally, the use of an auto-regressive predictor filter for processing noise parameters is also a clear indication that the mathematical models are used within the overall system claimed in the present invention.

353. However, what needs to be considered is that this approach of using these mathematical models/methods has been integrated into the function of a speech decoder, particularly in devices like cellular phones, to improve the quality of generated comfort noise. Therefore, there can be no doubt that mathematical method used in the present invention is applied to improve the technical process of generating comfort noise in speech decoding systems. The question of assessment of patentability would depend on the nature of the Claims, if they Claims apply a mathematical method to a specific technical problem or process, in a physical apparatus, then they will be considered patentable and not liable to be revoked. However, if the mathematical method is an integral part of the novel and inventive process for generating comfort noise in a speech decoder, it shall not be eligible for patent protection in terms of Section 3(k) of the Patents Act as I have already discussed while revoking IN 203034.

11.2.4. EVIDENCE LED ON BEHALF OF THE PARTIES

354. Dr. Kamakoti in his evidence claimed that IN 213723, does not relate to any novel apparatus and only discloses a set of algorithms using

mathematical equations to derive the desired values that are used in the comfort noise generation algorithm. In addition, GS Madhusudhan has claimed that all the claim elements are actually algorithms and even all the elements of the Complete Specification, including the speech decoder; speech encoder; comfort noise parameter values, background noise parameters, auto regressive predictor filter, modifier, variability estimator and filter coefficients are all algorithms and not physical hardware.

355. Ericsson's counter arguments on the said claims of the Defendant have been addressed in the cross examination of PW-2. The relevant portions of the same are set out below:

> " ***Q.206***. *Has the Plaintiff invented any hardware component as part of its patent IN 213723 or according to you the alleged invention also relates to configuration of some components?*
>
> ***A. <u>The Plaintiff has indeed invented apparatus components that provide the claimed improvements of IN'213723</u> and the patent also discloses complete apparatuses to achieve the claimed improvements.***
>
> ***Q.209.*** *Are any of the components that you are referring to in relation to IN213723, called modifier, variability estimator, filter coefficients, auto regressive predictor filter or do the apparatus/ apparatus components have different names?*
>
> ***A***. *Yes,* ***at least one such component is called variability estimator and another is called modifier.*** *(Witness has answered after perusing the specification).*
>
> ***Q.210***. *Can you identify the variability estimator or the modifier that you claim is a physical component from the record of this suit or any of the exhibits produced by you?*
>
> ***A. The variability estimator or modifier in conjunction with all other claim elements pertaining to IN'723 providing the enhancements according to the invention can be identified at***

***least in the mobile phone devices by Lava which is Exhibit PW-2/10A**, Exhibit PW-2/10B, Exhibit PW-2/10C, Exhibit PW-2/10D, Exhibit PW-2/13A, Exhibit PW-2/13B and Exhibit PW-2/13C.*

***Q.211**. Please identify the said components in any one of the said exhibits?*

***A.** We would need to open the phone and look at the inside of the phone.*

***Q.212**. In the highly sophisticated labs available with the Plaintiff, is it possible to have opened any of these exhibits?*

***A.** I don't know if our lab would have the possibility to do this. However, we rely on that the phones by themselves offer AMR speech codec at call setup and based on the knowledge that communication with these phones in a 3GPP voice call is only possible if the AMR codec is fully implemented in these phones according to the relevant specifications without any deviation.*

***Q.213**. Have you ever seen a physical apparatus called variability estimator and a modifier?*

***A.** **I have seen many phones containing these apparatuses**.*

***Q.214.** My question was whether you have seen the physical apparatus itself and not the phone containing the said apparatus?*

***A**. It is as shown with my CV not part of my work to open and dismantle mobile phones.*"

(Emphasis supplied)

11.2.5. ANALYSIS AND FINDINGS

356. Therefore, upon perusing the above cross examination, it is clear that the witness, Stefan Bruhn, representing the Plaintiff, responded to questions about the patent IN 213723, and has testified that the said patent involves specific hardware components. The said witness has asserted that IN'723 is

directed towards an apparatus which includes components that contribute to the claimed improvements in the patent, naming at least two components: a variability estimator and a modifier. It is pertinent to note that upon being asked to identify these components in specific exhibits, the witness referred to various mobile phone devices by Lava, listed as exhibits, where these components could be identified. However, the witness indicated that to confirm the presence of these components, one would need to physically open the phones and examine the insides. The said testimony though placed reliance on the fact that Lava's phones used an AMR speech codec, implying that the codec's implementation in these phones would require the claimed components according to relevant specifications.

357. The Claims demonstrate a technical advancement by incorporating mathematical methods into a specific technical process, addressing the issue of unnatural comfort noise in communication systems. The integration of algorithms within physical components like the variability estimator and modifier, as evidenced in mobile phone implementations, underscores the physical application of the invention. The Claims transcend mere abstract mathematical concepts, providing a tangible technical solution, thereby meeting the essential criteria required for patentability. Therefore, after consideration of all the contentions of the parties and thorough examination of the Claims of the patent in consideration. The method and apparatus for generating comfort noise in speech decoders is held to be eligible for patent protection and the counter claim for revocation on the ground of ineligible subject matter does not succeed.

358. I recognise that inventions based on mathematical methods are

typically non-patentable. However, in this case, the invention pertains not only to a method but also to an apparatus that enhances functionality and generates artificial speech or background noise. This production of artificial noise constitutes a physical entity. Therefore, no grounds for revocation of the patent IN 213723 are made out on the ground that the claims of the said patent are directed towards an algorithm and consequently, ineligible for patent protection.

11.3. CHALLENGE TO THE NOVELTY AND INVENTIVE STEP IN IN 213723

359. Now I shall proceed to evaluate the challenge raised by Lava over the validity of IN'723 on the ground of lack of novelty and inventive step. Lava has cited six different prior art documents in totality, to demonstrate that IN'723 is not satisfying the requirement of inventive step, necessary for patent protection. However, there are only three prior art documents which have been considered for this determination, as it is only these three documents, which were filed with the Counter Claim and for which evidence has been led by Lava. The said three documents are as follows:

Prior Art	**Description of the Prior Art**	**Exhibit No.**
D2	Recommendation GSM 6.31 titled as "*Discontinuous transmission (DTX) for Full Rate Speech Traffic Channels*"	DW1/28
D3	GSM 06.12 '*Comfort Noise aspect for full rate speech traffic channels*' ETS 300 963 (GSM 06.12)	DW1/29
D4	ETS 300 971	DW1/30

11.3.1. PRIOR ART: GSM 06.31

360. The first document is the Recommendation GSM 06.31 titled "*Discontinuous Transmission (DTX) for Full-Rate Speech Traffic Channels.*" provides a detailed description of the general baseband operation of full-rate speech traffic channels in the transmitter and receiver of GSM Mobile Stations and Base Station Systems during Discontinuous Transmission (DTX).

361. Before delving into the comparison between the first prior art document and IN'723, I shall first illustrate the significance and details provided by the said document. In my assessment, the recommendation describes the DTX functions in GSM mobile stations, mandatory for implementation of the GSM standard. It outlines the operation on the air interface and speech decoder output, ensuring compatibility with the GSM system.

362. Considering the said document in describing DTX functions and transmissions, it is imperative to get an understanding of what is a discontinuous transmission. From this prior art document, it is identified that DTX is a mechanism allowing the radio transmitter to be switched off during speech pauses, saving power and reducing interference. It involves a Voice Activity Detector on the transmitter side, evaluation of background acoustic noise, and generation of comfort noise on the receive side during periods when radio transmission is cut.

363. In relation to IN'723, the prior art document references GSM 06.12 "Comfort Noise Aspects" for comfort noise functions. It describes the generation of comfort noise during periods where the radio transmission is

cut, based on characteristic parameters of background noise transmitted from the transmit side to the receive side. Further, the document provides operational details including the definitions of terms, the functions of transmit and receive side DTX handlers, and descriptions of traffic frame processing. It explains how comfort noise parameters are updated based on received information and how the speech and comfort noise are processed in various scenarios.

11.3.1.1. COMPARISON OF PRIOR ART 06.31 WITH PATENT IN 213723

364. IN 213723 is focused on a method and apparatus for generating comfort noise in a speech decoder by modifying comfort noise parameters based on variability information of background noise. This involves obtaining variability information indicative of how the background noise parameter varies and using this information to produce modified comfort noise parameter values. In contrast, GSM 06.31 primarily discusses the general operation of DTX in GSM systems, including comfort noise generation without specific focus on modifying comfort noise parameters based on background noise variability.

365. While both IN 213723 and GSM 06.31 address the generation of comfort noise, the technical details and specific methodologies differ. IN 213723 provides a novel approach of dynamically modifying comfort noise parameters, whereas the present prior art outlines the overall DTX mechanism, including voice activity detection and the transmission of characteristic parameters for comfort noise generation. The differences in technical focus and specific methodologies implies that IN 213723 offers

novelty and incorporates inventive step over the disclosures in the prior art.

366. In summary, while both the prior art document and IN'723 address similar aspects of comfort noise generation in communication systems, they focus on different technical aspects and methodologies, leading to the conclusion that the said prior art does not hit the novelty and inventive step of IN'723.

11.3.2. PRIOR ART: GSM 06.12

367. The next prior art document being considered is the Recommendation GSM 06.12 titled "*Comfort Noise Aspects for Full-Rate Speech Traffic Channels*" dated February 1992. This recommendation provides detailed requirements for the correct operation of background acoustic noise evaluation, noise parameter encoding/decoding, and comfort noise generation in GSM Mobile Stations and Base Station Systems during Discontinuous Transmission (DTX) on full-rate speech traffic channels. In effect, this recommendation outlines the mandatory requirements for implementing comfort noise aspects in all GSM Mobile Stations and Base Station Systems.

368. In relation to the present invention, this recommendation specifies the generation of synthetic noise on the receive side, similar to the transmit side background noise. However, the parameters for this comfort noise as per the recommendation are estimated on the transmit side and transmitted to the receiver side before and after the radio transmission is cut, allowing adaptation to changes in noise. In addition, this prior art document details the comfort noise evaluation algorithm, which uses parameters from the full-

rate speech encoder defined in GSM 06.10. These parameters inform the level and spectrum of background noise. Further, the evaluated parameters are encoded into a Silence Descriptor (SID) frame for transmission.

11.3.2.1. COMPARISON OF GSM 06.12 WITH PATENT IN 213723

369. Both GSM 06.12 and IN 213723 address comfort noise generation in communication systems, however, their technical approaches and specific methodologies differ. GSM 06.12 focuses on the overall operation of DTX, including encoding and decoding of noise parameters and generation of synthetic noise. In contrast, IN 213723 describes a method and apparatus for dynamically modifying comfort noise parameters based on variability information of background noise.

370. It is pertinent to note that there are differences in the method and apparatus adopted by the prior art and IN 213723. The patent IN'723 involves obtaining variability information indicative of background noise parameter variations and using this to produce modified comfort noise parameter values. GSM 06.12, on the other hand, outlines the process of encoding and decoding comfort noise parameters and transmitting these parameters for comfort noise generation.

371. The difference in the technical focus and methodologies suggests that IN 213723 offers a novelty and inventive step over GSM 06.12 which is not anticipated or rendered obvious by GSM 06.12.

11.3.3. COMPARISON WITH D4

372. The third prior art document, D4, is an ETSI Standard document, ETS 300 971 (GSM 06.22 version 5.0.1) titled '*Comfort Noise Aspects for Half-*

Rate Speech Traffic Channels.' The said prior art document is stated to have been published in May, 1997. D4 is standard document specifying the requirements for the operation of comfort noise generation systems during Discontinuous Transmission (DTX) mode in GSM Mobile Stations (MSs) and Base Station Systems (BSSs) for half-rate speech traffic channels.

373. Upon considering the said document, I deem it relevant to first explore as to what is being referred to as '*half-rate speech traffic channels.*' I have come to the understanding that half-rate speech traffic channels are a type of channel that allows voice communication using reduced bandwidth compared to full-rate speech traffic channels. They are designed to increase the capacity of a GSM network by allowing more simultaneous calls within the same amount of radio spectrum. It is understood that speech quality in half-rate channels is lower compared to full-rate channels due to the higher compression rates. However, advancements in encoding algorithms have minimized the quality difference, making it acceptable for most users.

374. On the transmission side, Prior Art D4 discloses a comfort noise evaluation method using specific parameters from the GSM half-rate speech encoder, including unquantized frame energy value R0, unquantized autocorrelation sequence R(i), and quantized energy tweak parameter GS. These parameters provide information on the level and spectrum of the background noise. Two of the evaluated comfort noise parameters (R0 and R(i)) are encoded into a Silence Descriptor (SID) frame for transmission to the RX side, while the GS parameter can be evaluated in both encoder and decoder, so no transmission is necessary. The SID frame also initiates comfort noise generation on the RX side.

375. Additionally, on the receiver side, comfort noise generation can be started or updated whenever a valid SID frame is received. When speech frames are received by the decoder, the GS parameters of the last seven speech frames are stored and averaged. The averaged GS value is then frozen and used for the actual comfort noise insertion period.

11.3.3.1. COMPARISON WITH PATENT IN 213723:

376. Ericsson has claimed that the prior art document D4 does not disclose modification of comfort noise parameters at the decoder end based on the variability information of the actual background noise. I find merit in these submissions as the prior art document D4 addresses aspects of comfort noise generation, including the transmission and processing of comfort noise parameters, however, it does not disclose the specific concept of modifying comfort noise parameters at the decoder end based on the variability information of the actual background noise, as claimed in IN 213723.

377. On a holistic understanding, it is clear that the prior art document D4 does not provide the teaching or motivation necessary for developing the unique method and apparatus described in IN 213723, rather the focus of D4 is on encoding and decoding certain parameters and averaging the GS parameters, rather than dynamically modifying comfort noise parameters based on the variability of actual background noise.

11.3.4. FINDINGS ON PRIOR ART

378. In conclusion, I would also add that the combination of knowledge from the three documents (Prior Art D2, D3, and D4 for 723) does not provide the teaching and motivation necessary for developing the unique

method and apparatus contemplated by the claims of IN 213723. While these documents address various aspects of comfort noise generation in communication systems, they do not disclose or suggest the specific approach of dynamically modifying comfort noise parameters based on the variability of background noise, as claimed in IN 213723. At best, the three prior art documents provide a background in the field of comfort noise generation in GSM systems. However, they do not collectively or individually offer the necessary teaching and motivation for the specific invention claimed in IN 213723, which discloses a novel approach of dynamically modifying comfort noise parameters in response to the variability of background noise.

11.4. CONCLUSION

379. Therefore, no grounds for revocation of the patent IN 213723 are made out and considering that the said patent has overcome a challenge to the validity in a final proceeding, I also direct the issuance of a Certificate of Validity of the Complete Specification of IN 213723 in accordance with Section 113 of the Patents Act.

12. INVALIDITY OF IN 240471

380. I shall proceed with the assessment of the patentability of the next patent, which is claimed to be a Standard Essential Patent, essential for implementing 3G standards i.e., IN 240471 titled '*A Mobile Radio for Use in a Mobile Radio Communications System*'. The Bibliographic details of the patent are set out below:

Patent Number	240471
Application Number	IN/PCT/2001/01411/MUM
Priority Date	19/05/1999
Type of Application	PCT NATIONAL PHASE APPLICATION
PCT International Application Number	PCT/SE00/00914
International Filing Date	09/05/2000
Date of Grant	12/05/2010
Appropriate Office	MUMBAI
Title of the Patent (As granted)	*A MOBILE RADIO FOR USE IN A MOBILE RADIO COMMUNICATIONS SYSTEM*

381. After perusing the complete specification of the patent IN 240471 and also the Claims of the said patent, I have identified that the said patent addresses some of the challenges in cellular radio systems, particularly those in managing handovers and power control. An optimal solution to the said challenge is needed in order to ensure optimal network performance.

382. Considering the term ‘handover’ has been used extensively in the complete specification of IN’471, it may be necessary to define what the said term means in the context of the present patent. In the context of IN’471 ‘handover’ refers to the automated process in cellular radio systems where an active connection of a mobile device is seamlessly transferred from one base station to another as the device moves across different cells within the network. This process is crucial for maintaining uninterrupted communication and ensuring optimal network performance as it enables the

system to adapt to the changing location of the mobile device.

383. The core of the invention involves event-based reporting by mobile stations, i.e., the user equipment of the mobile phones. Therefore, it is evident that at least a part of the invention is implemented in the mobile phone. Further, the invention is characterised by the measurement of radio-related parameters and reporting to the Radio Access Network (RAN) only when specific predetermined conditions or events occur. In the understanding of this invention, the Field of the Invention itself plays an important part and for ready reference, the same is set out below:

> *"FIELD OF THE INVENTION*
> *The field of the invention is wireless communications.* ***The present invention uses a mobile radio station as a measurement tool for a radio access network."***
>
> *(Emphasis supplied)*

384. The said patent has been granted with 31 Claims. The independent claims of the said patent, Claim 1 and Claim 26 are set out below:

> *"1. A mobile radio, for use in a mobile radio communication system Including plural mobile stations communicating with a radio access network having cells, electronically enabled to perform the following operations including: measure a handover-related parameter for plural cells; evaluate the measured handover-related parameter for the plural cells with respect to a predetermined handover condition and determine when the predetermined handover condition is satisfied; and signal to the radi. access network when the predetermined handover condition is satisfied so that the radio access network can initiate a handover-related function in response to the signal.*
>
> *xxx xxx xxx*
>
> *26. A mobile radio, for use in a mobile radio communications system including plural mobile stations communicating with a radio access network having plural cells, electronically enabled to perform the following operations including: measure a radio transmit power-related*

parameter for one or more cells where the power-related parameter varies as the mobile radio moves through one or more cells; evaluate the measured power-related parameter for the one or more cells with respect to a predetermined condition related to power control and determine when the predetermined condition related to power control is satisfied; and signal the radio access network when the predetermined condition related to power control is satisfied so that the radio access network can initiate an operation in response to the signal."

385. As already discussed, the key aspect of the invention is the event-based nature of reporting; however, mobile stations only send reports to the radio access network when predetermined triggers, conditions or events are met. Such specific triggers or conditions include change in signal strength or quality. This approach reduces unnecessary signalling traffic and conserves resources like battery life and bandwidth, while still providing essential information for network management tasks like handover decisions and power control.

386. While the mobile stations are responsible for measuring and reporting based on event triggers, the RAN plays a crucial role in receiving these reports, interpreting the data, and making decisions based on this information. This includes adjusting network parameters, managing handovers, and optimizing overall network performance. RAN's role is also vital in processing and responding to the data provided by the handsets.

12.1. CLAIM CONSTRUCTION

387. Considering the legal position under Section 10(4) of Act that Claims define the scope of the invention, I shall begin to analyse the Claims after gathering the knowledge from the Complete Specification as also, the Abstract and Title of the invention. For this analysis, I will be construing the

Independent Claims.

388. The first Independent Claim, i.e. Claim 1 of the patent pertains to a mobile radio in a cellular system with multiple cells. This radio as given in the Claim is designed to measure handover-related parameters across cells, evaluate these parameters against a set precondition for handover, and communicate with the radio access network once these conditions are met to initiate handover processes.

389. Similarly, Claim 26 describes a mobile radio that measures power-related parameters as it moves through various cells in a mobile radio communication system. The mobile radio evaluates these parameters in relation to a predefined condition associated with power control. Once this condition is met, the mobile radio signals the RAN. This signalling prompts the network to initiate an operation in response, for managing power levels for efficient communication and minimizing interference within the network. Therefore, the overall scope of this invention is a system so developed which enables optimisation of network performance by leveraging event-based reporting from mobile stations, such that the system reduces unnecessary signalling and ensuring timely response to dynamic network conditions.

390. Overall, in the analysis for validity of the patent IN 240471, it is clear that the claims of the patent application detail a method and system for event-based reporting in cellular radio networks. The novelty and inventive step lie in the following features and effects:

i. Mobile device/User equipment measuring radio-related parameters and reporting to the network only upon the occurrence of

predetermined events resulting in reduction of unnecessary network signalling and conservation of resources like bandwidth and battery life.

ii. Use of event-based triggers, instead of continuous or periodic reporting, for network control and optimisation resulting in enhanced efficiency in network management, particularly in handovers, power control, and optimizing network performance.

391. Consequent upon the above analysis, I have identified the key elements of the Claims of IN'471 and their specific nature. The table giving the same is set out below:

Claim Element	Nature
Mobile radio for use in a mobile radio communications system	Apparatus
Measuring handover-related parameters for multiple cells	Process
Evaluating measured parameters against predetermined conditions	Algorithm/Process
Signaling the radio access network for handover-related functions	Process
Receiving measurement control messages	Process
Modifying parameters or conditions based on received messages	Algorithm/Process
Establishing reporting ranges for conditions	Process
Sending reports based on parameter comparison between cells	Process
Adding offsets to measured parameters before evaluation	Algorithm/Process
Evaluating parameters against conditions involving ranges	Algorithm/Process
Preventing signaling under specific conditions	Process

Claim Element	Nature
Considering time-to-trigger in condition satisfaction	Algorithm
Measuring radio transmit power-related parameters	Process
Evaluating power-related parameters against conditions	Algorithm/Process
Signaling the network for power control operations	Process

392. Now, I shall proceed to analyse the claim elements.

393. The claims of IN'471 describe a mobile radio designed for use in a mobile radio communications system, equipped with hardware and software components to execute various processes and algorithms. The primary functions of the mobile radio include measuring handover-related parameters for multiple cells, such as signal strength, interference levels, and traffic volume. These parameters are then evaluated against predetermined conditions to determine whether handover procedures or power control adjustments are necessary. The mobile radio is capable of receiving measurement control messages from the network, which allows it to modify its measurement and evaluation criteria based on network instructions. This includes establishing reporting ranges for conditions and adding offsets to measured parameters before evaluation. The mobile radio compares parameters from different cells and sends reports to the network when specific criteria are met, such as when the parameters of one cell are similar to or better than those of another cell. In addition to handover management, the mobile radio also monitors radio transmit power-related parameters as it moves through different cells. It evaluates these power-related parameters against conditions related to power control and signals the network to

initiate operations such as adjusting the mobile radio's transmit power or changing the bit rate when the conditions are satisfied. The mobile radio is programmed to prevent signaling to the network under certain conditions, even if the predetermined criteria are met. It also incorporates a time-to-trigger parameter to delay the evaluation of conditions, ensuring that transient changes do not trigger unnecessary actions. These key elements work together to ensure efficient management of handover and power control in the mobile communications system, thereby improving network performance and user experience.

394. Now, after a perusal of the complete specification and understanding of the patent IN 240471, I shall proceed with the analysis of the claim of Lava that the said patent is liable to be revoked as per Section 64 of the Patents Act. In the written statement, Lava had raised the following grounds to make a claim for invalidation of his patent. I have perused the grounds taken in the written statement and the same are set out below:

i. Subject matter of Claims is not patentable as per Section 64(1)(k), Section 3(m) and Section 3(k) of the Patents Act.
ii. Lack of Novelty under Section 64(1)(e) of the Patents Act.
    - Research paper titled *'Soft Handover in CDMA Mobile Systems'*, in an IEEE journal in the year 1997
iii. Lack of Inventive Step under Section 64(1)(f)
    - US Patent 5267261
    - GSM Specification as laid down by the 3GPP TS 05.08, version 3.8.0, 1995-01 Standard, published in January 1995

- Research Paper titled '*Handoffs in Cellular wireless Networks: The Daedalus Implementation and Experience*' published in Kluwer Journal on Wireless Personal Communication in January 1997
- GSM Specification as laid down by the 3GPP TS 04.08, version 3.14.0, published in March 1998

iv. Non-Compliance with Section 8 of the Patents Act

12.2. PATENTABILITY

395. In my considered view, the Claims of IN'471 describe a mobile radio with specific functionalities related to measuring, evaluating, signalling, and controlling handover and power control parameters in a mobile radio communications system. These functionalities involve hardware and software components working together to perform complex operations that are beyond the scope of mere mental acts or simple algorithms. While the invention does indeed incorporate algorithms as part of its operation, for instance for evaluating handover conditions or managing power control, the Claims are directed towards an implementation of various processes, including algorithms in a mobile radio system. This integration of measurement, signalling, and control functionalities within the mobile radio hardware and its interaction with the network cannot be deemed to be a mere mental act or an invention merely directed towards an algorithm.

396. Based on the analysis, the Claims and the inventive concept of IN'471 do not appear to relate solely to an algorithm or a mental act. Instead, they describe a technical implementation of these concepts in a mobile radio

system, which is a patentable subject matter.

12.3. CHALLENGE TO THE NOVELTY OF IN 240471

12.3.1. PRIOR ART: DANIEL WONG

397. Lava contends that the research paper by Daniel Wong and Teeng Joon Lim, "*Soft Handoffs in CDMA Mobile Systems*," published in IEEE Personal Communications in 1997 (*hereinafter 'Daniel Wong'*), discloses the invention claimed in IN'471 in its entirety. It is the case of Lava that the said research paper outlines the evaluation of various parameters before a handover operation in CDMA mobile systems, suggesting a comprehensive approach that anticipates the claims of IN'471. According to Lava, this approach is fundamentally similar to the handover mechanism described in IN'471, thereby undermining the novelty of the inventive concept of IN'471. Further, Lava claims that multiple prior 3GPP standards, which are well-known in the field of mobile communications, also disclose the entirety of the inventive concept of IN'471. However, considering

398. In my assessment, Daniel Wong provides an overview of the soft handoff concept in CDMA cellular systems. The key elements and concepts discussed in Daniel Wong include:

i. **Soft Handoff**: The process of maintaining a connection with multiple base stations during a handoff, as opposed to a hard handoff where the connection is switched abruptly from one base station to another.

ii. **Benefits of Soft Handoff**: Includes fade margin improvement and higher uplink capacity, which enhance the quality and efficiency of communication.

iii. **Disadvantages of Soft Handoff**: Increased downlink interference and more complex implementation compared to hard handoff.

iv. **Handoff Parameter Optimisation**: The importance of optimising handoff parameters, such as add and drop thresholds, to achieve a balance between link quality and resource allocation.

v. **Power Control and Soft Handoff**: The relationship between power control and soft handoff in CDMA systems, and how power control is essential for combating the near-far problem in CDMA.

vi. **Active Set**: The set of base stations with which a user is communicating at any given time during a soft handoff.

399. From the above analysis, it is clear that both Daniel Wong and the inventive concept of IN'471 focus on handoff processes in mobile communication systems. In addition, both are underscoring the importance of optimising handoff parameters and the role of power control is emphasised in both. Further, the concept of maintaining a connection with multiple base stations during a handoff is similar to the inventive concept of IN'471 focusing on measuring handover-related parameters for multiple cells. However, in my considered view, the inventive concept of IN'471 specifically claim a mobile radios ability to measure, evaluate, and signal handover-related parameters, which is not explicitly detailed in Daniel Wong. In addition, there are several other differences which I have identified in the following table:

Key Element	Daniel Wong	Claims of IN'471	Difference between Daniel Wong and IN'471
Handoff Process	Soft Handoff	Handover-related parameter measurement and signalling	Daniel Wong focuses on soft handoff concept, IN'471 on specific handover parameter measurement and signalling.
Optimization	Handoff Parameter Optimization	Evaluation of handover-related parameters	Both emphasize optimization, but IN'471 specifies evaluation against predetermined conditions.
Power Control	Power Control and Soft Handoff	Not explicitly mentioned	Prior art discusses power control's role in soft handoff, not directly addressed in IN'471 claims.
Multiple Base Station Connection	Active Set	Measurement for plural cells	Both involve communication with multiple base stations, but IN'471 specifies measurement for multiple cells.

400. Therefore, while Daniel Wong and the inventive concept of IN'471 share similarities in focusing on handoff processes and optimisation in mobile communication systems, IN'471 specifically claims the measurement, evaluation, and signalling of handover-related parameters, which is not explicitly detailed in the prior art. Therefore, it can be concluded that IN'471 possesses novelty in its approach to handover parameter management in mobile communication systems.

12.4. CHALLENGE TO THE INVENTIVE STEP IN IN 240471

12.4.1. PRIOR ART: BLAKENEY

401. In respect of the ground of lack of inventive step for seeking revocation of IN'471, the first prior art relied upon by Lava is a US Patent Application with publication number US 5267261 (Blakeney). This patent is relied upon by Lava to contend that the inventive concept of IN'471 is not novel and that the technical advancements described in IN'471 had already been disclosed in this US patent.

402. The prior art Blakeney discloses a method for directing communications between a mobile station and base stations in a CDMA cellular communication system. The inventive concept of Blakeney involves monitoring signal strength of pilot signals, reporting measured signal strength to a system controller, establishing communication with new base stations upon command, and terminating communication with base stations when signal strength falls below a predetermined level. The method disclosed in Blakeney is stated to be ensuring efficient handoff management by reducing unnecessary signalling traffic and enhancing network performance in CDMA cellular communication systems.

403. Overall Blakeney focuses on soft handoff processes, including monitoring pilot signal strength, reporting to the system controller, and managing communication with multiple base stations to ensure uninterrupted communication during handoffs. The key elements of the said prior art include the following:

i. **Monitoring Signal Strength**: The mobile station monitors the signal strength of pilots and reports the measured signal strength to a system controller via the base station it is communicating with.

ii. **Establishing Communication with New Base Station**: Upon receiving command messages from the system controller, the mobile station establishes communication with a new base station in addition to the current one.

iii. **Terminating Communication**: When the signal strength of a pilot corresponding to a base station falls below a predetermined level, the mobile station reports this to the system controller, which then sends command messages to terminate communication with that base station.

404. From the above analysis, the clear position that emerges is that both Blakeney and IN'471 address the challenge of managing handovers in cellular communication systems, which is a key aspect for ensuring uninterrupted service and optimal network utilisation. Both are disclosing methodologies involving the monitoring of signal strength, a parameter that informs the decision-making process regarding when and where handovers should occur. This monitoring is coupled with reporting mechanisms that relay the signal strength information to a system controller, which then orchestrates the handover process based on this data. The primary goal of these methods is to streamline the process of handover, thereby enhancing overall network performance and minimising unnecessary signalling traffic, which can burden the network and degrade service quality.

405. However, there are some specific differences between the prior art, Blakeney and the inventive concept of IN'471. The said differences include:

i. **Provision of Event-Based Reporting**: IN'471 emphasises event-based reporting of handover-related parameters, which is not explicitly mentioned in Blakeney.

ii. **Predetermined Conditions**: IN'471 specifies the evaluation of parameters against predetermined conditions before signalling the RAN, whereas Blakeney focuses on monitoring and reporting signal strength without such detailed criteria.

406. Therefore, the inventive concept of IN'471 offers a significant technical advancement over the prior art by implementing a specific method for managing handovers in cellular radio systems. The introduction of event-based reporting in IN'471, where the mobile station communicates handover-related parameters to the Radio Access Network (RAN) only upon the occurrence of specific predetermined events, greatly reduces unnecessary signalling traffic. Further, in IN'471, the evaluation of these parameters against predetermined conditions ensures that handovers are executed only, when necessary, thereby optimising network performance and resource allocation. This approach enhances the efficiency of the handover process, leading to improved network stability and user experience.

407. Based on the analysis, it is evident that IN'471 demonstrates a technical advancement over the prior art by introducing a more efficient method for managing handovers in cellular radio systems. The incorporation of event-based reporting and evaluation against predetermined conditions is a novel approach that reduces unnecessary signalling traffic and optimizes

network performance. This technical advancement would not have been obvious to a person skilled in the art, as it represents a significant departure from conventional handover management techniques.

12.4.2. PRIOR ART: SRINIVASAN

408. I move on to the assessment of the inventive step requirement in light of the research paper titled '*Handoffs in Cellular Wireless Networks: The Daedalus Implementation and Experience,*' published in the Kluwer Journal on Wireless Personal Communication in January 1997 (hereinafter *'Srinivasan'*).

409. Srinivasan presents the design, implementation, and performance evaluation of a system that achieves efficient handoff management in wireless data networks, contributing to the enhancement of network performance and reliability. The key focus areas include:

i. **Multicast-based Protocol**: A multicast-based protocol is described to eliminate data loss and incur negligible delays during handoffs by anticipating handoffs using wireless network information.

ii. **Efficient Handoff Management**: Srinivasan aims to design and implement a handoff mechanism that achieves low latencies with little disruption in traffic and minimal data loss.

iii. **Implementation and Performance Evaluation**: The protocol is implemented using IP Multicast and Mobile IP-like routing, with handoffs typically completing between 8 and 15 milli seconds without data loss.

iv. **Impact on Applications and Protocols**: The low latency handoff mechanism ensures consistent performance across handoffs for applications like real-time multimedia and reliable transport protocols like TCP.

410. Both Srinivasan and the inventive concept of IN'471 share similarities in their focus on improving handoff/handover management in cellular wireless networks. The common aim in both Srinivasan and IN'471 is to reduce data loss and latency during handoffs/handovers, enhancing network performance and user experience. While the Srinivasan introduces a multicast-based protocol for efficient handoff management, IN'471 emphasises event-based reporting and evaluation against predetermined conditions. These similarities highlight a common goal of optimising handoff processes in cellular networks, albeit through different technical approaches.

411. One key distinction between the focus areas of Srinivasan and IN'471, is the handover management mechanisms adopted. Srinivasan employs a multicast-based protocol, which facilitates simultaneous data transmission from one source to multiple destinations within a network. This method is designed for efficient data distribution, aiming to minimise delays during handovers. On the other hand, IN'471 adopts an event-based reporting approach, focusing on the measurement and reporting of handover-related parameters when specific predetermined conditions are met. The multicast-based protocol emphasizes network-wide efficiency, while the event-based reporting approach in IN'471 prioritises targeted, condition-specific communication to optimise network performance.

412. Another key difference between Srinivasan and IN’471 lies in the implementation approach for handover management. The implementation approach in Srinivasan involves anticipating handoffs using wireless network information, which enables proactive management of network resources. In contrast, the approach in IN’471 is based on measuring parameters against predetermined conditions, ensuring that handover-related actions are taken only when necessary. This difference in approach leads to varying effects on network performance. The method disclosed in Srinivasan aims for seamless handoffs with minimal data loss, while IN’471 focuses on reducing unnecessary signalling traffic and optimising resource allocation.

413. Based on the above analysis, it is evident that the inventive concept of IN’471 exhibits technical advancement over Srinivasan by introducing a specific event-based reporting approach for handover management, which is more targeted and condition-specific compared to Srinivasan's multicast-based protocol. The technical advancement of IN’471 is amplified by the fact that the approach disclosed in IN’471 ensures that handover-related actions are taken only when necessary, optimizing network performance by reducing unnecessary signalling traffic. In addition, IN’471 focuses on predetermined conditions for handover management providing a more precise and efficient mechanism for resource allocation in cellular networks.

414. While Srinivasan primarily addresses data transmission services, IN’471 encompasses a broader scope, including mobile and voice communication, further highlighting its technical advancement. In my considered view, the event-based reporting approach and evaluation against

predetermined conditions in IN'471 represent a significant departure from handover management techniques, including those given in the prior art, thus, showcasing an innovative method for optimising network performance. In light of these significant departures from the conventional techniques and also considering the knowledge prevalent from the prior arts, the features of IN'471 would not be readily apparent to a person skilled in the art, further emphasising the inventive step in IN'471.

12.4.3. PRIOR ARTS: DW-1/40 AND DW-1/41

415. Now, I shall move on to consider the other two prior arts cited by Lava, to claim that IN'471 ought to be revoked on account of lack of inventive step. Both the two documents are standard specifications issued by ETSI and 3GPP, therefore, I have considered them collectively. The first standard specification is DW-1/40: 3GPP TS 05.08, V3.8.0, published in 1995 and the second standard specification is GSM Specification, DW-1/41: TS 04.08 V3.14.0, published in 1998.

416. According to Lava, the disclosures in the prior arts, provide a clear indication that the claimed features of IN'471 were known or obvious at the time of the patent application, and therefore, the patent should not have been be granted or should be revoked on the grounds of lack of inventive step. Further, Lava has claimed that both these standard specifications are dealing with measurement reporting by mobile stations and DW-1/41 even covers the aspect of measurement reporting to the base station using the mobile station.

417. **Exhibit DW-1/41**, which is the GSM Specification TS 04.08 V3.14.0

published in March 1998, and **Exhibit DW-1/40**, the GSM Specification as laid down by the 3GPP TS 05.08 V3.8.0 published in January 1995, are cited as prior art references in support of the claim of lack of inventive step. These documents disclose standards for mobile station measurement reporting, control of reporting, event-triggered measurement, and radio resource management, which include, *inter alia*, measurement report by the mobile station, handover procedure, handover function, etc., as detailed in Section 3.4.4 of **Exhibit DW-1/41**.

418. Further, it has been claimed that **Exhibit DW-1/40**, teaches the GSM technology standard and discloses every limitation of the invention claimed in Claims 1 and 26 of IN'471. It details a handover process, mobile station measurement procedures, identification of neighbouring base stations (or cells) for handover reporting, measurement reporting, and event-triggered measurement reports, including radio link measurements such as signal strength and signal quality with general and specific ranges of conditions.

419. The prior arts set out the parameters for mobile station reporting and provides a tabular pre-defined format for the same. This format includes the necessary details for handover and power control parameters to be transmitted between the mobile station and the radio access network employed in a GSM communication system.

420. Based on the disclosures in the cited prior art, Lava argues that the claimed invention in IN'471 lacks an inventive step. The features of measuring handover-related parameters, evaluating these parameters against predetermined conditions, signalling the radio access network for handover-related functions, and managing power control are all taught or rendered

obvious by the prior art references. The claimed invention does not provide a technical solution that is sufficiently distinct from what is already known in the field of GSM technology.

421. *Per Contra*, Ericsson has claimed that the prior arts do not disclose a mobile radio station and its use in a mobile radio communication system as claimed in IN'471. As per Ericsson, IN'471 is characterised by its ability to act as a flexible and adaptive measurement tool for radio network control. It provides reporting of radio-related parameters based on satisfying predetermined events or conditions, enabling the radio network to promptly and effectively respond to the changed conditions and perform necessary operations. According to Ericsson, this feature is not disclosed in the cited prior arts. Further, it is submitted that the prior arts merely detail the conventional handover process, which involves mobile station measurement leading to the initiation of the handover process by the network. According to Ericsson, this is fundamentally different from the event-based reporting mechanism disclosed and claimed in IN'471, where the mobile radio station reports based on specific events or conditions being met, rather than on a periodic basis.

422. Ericsson specifically asserts that Lava has deliberately refrained from citing Section 8.4 "Measurement Reporting" of 3GPP TS 05.08 V3.8.0, which specifically discusses the manner of measurement reporting by the mobile station, including the time period of reporting. It is explicitly stated in the document that the mobile station performs periodic measurement reporting, as opposed to the event-based reporting disclosed and claimed in IN'471. Ericsson has also claimed that Lava's submissions regarding TS

04.08 V3.14.0 are misleading as they only extract excerpts from the document without providing a full context. The document primarily details the conventional hard handover procedure, which is different from the inventive concept of IN'471. The document also indicates that measurement result messages are sent regularly by the mobile station, which further emphasises the periodic nature of reporting, as opposed to the event-based reporting in IN'471.

423. In light of the above submissions, Ericsson claims that the event-based reporting mechanism disclosed in IN '471 provides a technical advancement over the conventional periodic reporting systems detailed in the prior arts. Thus, the contentions raised by Lava are unfounded and do not undermine the inventive step of IN'471.

424. In my considered view, there is a technical advancement in IN'471 over the prior arts. The key technical advancement in IN'471 lies in its event-based reporting mechanism, which is a departure from the conventional periodic measurement reporting systems detailed in the prior art documents cited by Lava. In the conventional systems, mobile stations perform periodic measurement reporting, sending measurement reports to the network at regular intervals, regardless of whether there have been significant changes in the radio environment. This leads to unnecessary network load and may not provide timely information for the network to respond to rapid changes in the radio conditions. In contrast, IN'471 introduces a mobile radio station that acts as a flexible and adaptive measurement tool for radio network control. It is designed to provide reporting of radio-related parameters based on satisfying predetermined

events or conditions. This means that the mobile radio station only sends reports to the network when specific events occur or certain conditions are met, such as a significant change in signal strength or quality. This event-based reporting mechanism enables the radio network to promptly and effectively respond to the changed conditions and perform necessary operations, such as handover or power control adjustments, in a timely manner.

425. Therefore, the above technical advancements in IN'471 provides a more efficient and responsive approach to measurement reporting in mobile radio communication systems, reducing unnecessary network traffic and improving the network's ability to manage radio resources effectively. Thus, IN'471 complies with the inventive step requirements.

426. Therefore, the inventive step of IN'471 is not rendered suspect by the prior arts individually or collectively, nor is the specific technical advancement an obvious modification of the prior arts to a person skilled the art.

12.5. CONCLUSION

427. Consequently, I hold that IN 240471 is a valid Complete Specification of a patent and accordingly direct the issuance of a Certificate of Validity for the same.

13. INVALIDITY OF IN 229632

428. Now, I shall proceed with the assessment of the patentability of the sixth suit patent asserted by Ericsson i.e., IN 229632 titled as '*Multi-Service*

Handling by a Single Mobile Station'. The said patent is stated to be essential to the 3G standard. The Bibliographic details of the said patent are set out below:

Patent Number	229632
Application Number	2818/DEL/1998
Priority Date	24/09/1997
Type of Application	CONVENTION APPLICATION
Date of Patent	18/09/1998
Date of Grant	19/02/2009
Date of Recordal	25/02/2009
Appropriate Office	DELHI
Title of the Patent (As granted)	MULTI-SERVICE HANDLING BY A SINGLE MOBILE STATION

429. For the identification of the inventive concept in the invention, I shall proceed with first reading the Description of the invention and then the Claims of the invention.

13.1. CLAIM CONSTRUCTION

430. The Technical Field of the invention as given in the Complete Specification of IN'632 states that the present invention focuses on enhancing mobile stations to support multiple data transmission services simultaneously, thereby improving the functionality and service handling capabilities of mobile stations. The said Technical Field of the invention is extracted below for reference:

> *"The present invention relates to mobile stations, and more particularly, to the ability of mobile stations to concurrently support multiple data transmission services."*

431. From the Complete Specification, it is clear that overall, this patent is directed towards addressing the challenge of providing different services with varying requirements from a single mobile station. Pertinently, the term '*mobile station*' refers to the user equipment or the mobile phone being used by the users, as is evident from the from the frequent mention of interactions between the mobile station (MS) and a base station (BS) in the Complete Specification. Such interactions are fundamental in cellular networks, where mobile phones (or similar devices) communicate with base stations to access network services.

432. Based on the Complete Specification, it is clear that the ability of mobile stations to support multiple data transmission services is becoming increasingly important. However, this advancement also introduces a range of technical challenges. According to the '*Description of Related Art*' section in the Complete Specification, the identified problems that need to be addressed are as follows:

i. Different services have varying requirements (e.g., bit error rate, service delay), making it challenging to support them simultaneously.
ii. Creating a new physical channel for each service can be complex and inefficient.
iii. Multiplexing services onto the same channel can result in either spectrum inefficiency or service degradation, due to differing error rate requirements.
iv. Mapping variable rate data services onto a single physical channel can exceed transmission limits.

433. The above overview of problems identified to be solved by the invention highlights the key issues encountered when attempting to provide diverse services through a single mobile station. These challenges as identified, create technological hurdles in efficient wireless communication, underscoring the need for solutions that manage data services with distinct requirements. Furthermore, in light of these problems, it is evident that the patent addresses or at least attempts to address technical problems in the field of telecommunications.

434. Upon identification of the problems identified in the present patent, it is imperative to determine the solutions proposed by the invention to address these technical problems. It is clear that the following four solutions have been identified in the present patent:

i. The patent proposes combining services with similar Quality of Service requirements into a single logical channel, efficiently managing different service demands.

ii. Instead of creating new physical channels for each service, the invention uses a single logical channel to process multiple services, simplifying the system.

iii. The invention includes a method for efficient multiplexing of services onto the same channel, addressing the issue of spectrum inefficiency and service degradation.

iv. The patent provides solutions for scheduling transmission blocks and mapping logical channels onto physical channels to ensure that transmission rates remain within limits and do not exceed power constraints.

435. The relevant extracts from which the above four solutions have been identified are set out below for reference:

> *"[0010] The present invention overcomes the foregoing and other problems with the method, communications protocol, mobile station and communications device for processing multiple data services over a communications link between a mobile station and a base station. Initially, a RLC/MAC protocol layer of the communications link processes a plurality of radio bearer services. The data within the radio bearers is separated into a plurality of data blocks.* ***The separated data blocks are combined with other data blocks from services having substantially similar Quality of Service requirements into a transmission block for transmission on a single logical channel****. The number of data blocks per transmission block is variable. The generated transmission blocks are then transmitted over a single logical channel.*
> *[0011] The data blocks within the transmission blocks may be prioritized such that high priority data blocks are transmitted prior to lower priority data blocks. This allows the transmission of certain types of data blocks at a higher transmission rate without actually altering the transmission rate of the single logical channel. Furthermore, the transmission of transmission blocks may be scheduled such that the output power and/or transmission rate of the transceiver generating the transmission blocks remains below a selected predetermined level."*
>
> *(Emphasis supplied)*

436. From the Complete Specification, it is evident that multiplexing multiple services onto the same channel using a single code is normally inefficient and a drawback of using the said process, particularly when services have varying bit error rate requirements. The Complete Specification suggests that multiplexing multiple services onto the same channel leads to either spectrum inefficiency or significant service degradation. The said problem of spectrum inefficiency and service degradation has been highlighted in the following portion of the Complete Specification:

> *"[0006] Another solution involves **multiplexing each of the services together onto the same channel and utilizing a single code on the channel**. However, this solution is quite inefficient. In a situation where two services have greatly differing bit error rate requirements, the coding, interleaving and power control for the two services must be performed in such a way that the service requiring the strongest requirements is supported. Thus, when time multiplexing a first service onto the same channel with the second service having substantially higher requirements, a Quality of Service (QoS) in terms of the bit error rate for the first service is unduly high resulting **in lost spectrum efficiency for the mobile station**. On the other hand, if the coding, interleaving and power control are performed in accordance with the needs of the lower requirement service, the Quality of Service required for the higher requirement service will never be achieved, resulting in **major service degradation**."*
>
> *(Emphasis supplied)*

437. As has already been highlighted, the Claims of the Complete Specification define the scope of the invention. Therefore, I deem it appropriate that to extract all the Claims of IN 229632. The said Claims are extracted below:

> *"1. A mobile station (2) **for processing multiple data services over a communications link (4) to a base station** (3), characterized in that said mobile station comprising:*
>
> ***means (125) for receiving a plurality of radio bearer services,** each of the plurality of radio bearer services supporting at least one service (6); and*
>
> *means (33) for processing the plurality of radio bearer services such that the **radio bearer services having substantially similar quality of service requirements are combined into a single logical channel** (40a; 40b).*
>
> *2. The mobile station as claimed in claim 1, wherein the means (33) for processing the plurality of radio bearer services comprises:*
>
> *means (35) for **separating data within the radio bearer services into a plurality of portions (165);***
>
> *means (45) for **mu1tiplexing portions from radio bearer services having substantially similar Quality of Service requirements into transmission blocks (145) of the single logical channel** (40a; 40b), wherein a number of the portions (169) per transmission block (145) is variable.*
>
> *3. The mobile station as claimed in claim 2 including:*

means (33) for ***prioritising the portions from different radio bearer services such that high priority portions (165) are transmitted prior to lower priority portions (165) without altering a transmission rate of the single logical channel*** *(40a; 40b).*
4. The mobile station as claimed in any of claims 2 or 3 wherein the ***plurality of portions (165) comprise radio link control/ medium access control protocol data units****.*
5. The mobile station as claimed in any one of claims 2 to 4 including:
means (25) for scheduling the transmission transmission blocks (145) such that an ***output power of transceiver (5) remains below the predetermined level****.*
6. The mobile station as claimed in claim 5 wherein the predetermined level may vary in time.
7. The mobile station as claimed in any one of claims 1 to 6 comprising ***a means for mapping the logical channels (40) onto physical channels*** *(55).*
8. The mobile station as claimed in any one of claims 1 to 7 comprising ***a means (25) for scheduling the transmission rates of different logical channels (40) such that an output rate of a transceiver (5) remains below a predetermined level****.*
9. A Mobile Station substantially as herein described with reference to the accompanying drawings.

(Emphasis supplied)

438. From a reading of the said Claims and Description, it is clear that the inventive concept of the patent, revolves around a mobile station designed to efficiently process multiple data services for transmission to a base station. The key elements of the patent include the following:

i. Receiving more than one radio bearer services and processing them in a manner that combines services with similar Quality of Service requirements into a single logical channel.

ii. Separating data within these radio bearer services into portions and multiplexing these portions into transmission blocks of the single logical channel, with a variable number of portions per block.

iii. Prioritising portions from different services to ensure higher priority data is transmitted first without changing the channel's transmission rate.

iv. Mapping these logical channels onto physical channels and scheduling transmission rates to maintain the output rate of a transceiver below a predetermined level.

13.2. PATENTABILITY

439. Now, I shall move on to assess the grounds for revocation taken by Lava and the counter arguments presented by Ericsson.

13.2.1. SUBMISSIONS AND EVIDENCE OF THE PARTIES

440. On behalf of Lava, it is contended by GS Madhusudan (DW-1) that the patent merely outlines a network protocol scheme. He argues that the invention essentially involves a mathematical scheme for processing and multiplexing data services, which falls under the exclusion of Section 3(k) of the Patents Act, as it can be interpreted as a computer programme or algorithm. Further, Lava claims that the patent does not disclose any novel apparatus or device, particularly a novel transceiver, which is essential for patent eligibility. DW-1 emphasises that the patent primarily describes a method and system without specifying any unique hardware components that go beyond standard mobile station equipment. This, according to Lava, further aligns the invention with the exclusions under Section 3(k) of the Patents Act, as the patent does not claim a specific apparatus or hardware but rather a method or scheme that could be implemented in standard

hardware. In relation to multiplexing services into a single logical channel, DW-1 contends that the said function is typically performed by general-purpose computers and standard hardware.

441. Dr. V. Kamakoti, (DW-2) has stated that the invention is characterized only as a 'communication protocol', not amounting to a patentable invention under the Patents Act, as it lacks the requisite technical character. DW-2 also claims that the invention is merely a scheme or algorithm that combines different radio bearer services onto a logical channel. Such characterization aligns it with non-patentable subject matter under Section 3(k) of the Patents Act, as it can be interpreted as a computer program or mathematical method. He further claims that the patent fails to provide specific implementation guidelines, indicating that it is more of an abstract idea or theoretical concept rather than a concrete technical solution or invention. Finally, Dr. V. Kamakoti (DW-2) also asserts that implementing the claimed invention using a specially coded computer program on general-purpose computers suggests that the invention does not have a technical effect or depend on any specific associated hardware/device/apparatus.

442. To counter these submissions, Ericsson has led evidence of Stefan Bruhn (PW-2) emphasising that the claimed invention addresses a very relevant and specific technical problem in the field of wireless telecommunications. PW-2 claims that the solution proposed in the invention is not merely a communication protocol or mathematical scheme, but a solution to real-world challenges in data transmission. Further, Ericsson has claimed that the invention provides a clear technical effect by

enabling the multiplexing of multiple services over simultaneously transmitted logical channels. They go on to state that this technical effect goes beyond mere software or algorithmic functionality and contributes to the improved performance and efficiency of mobile stations, i.e. the mobile phones that users are using.

443. With regard to the submission of Lava that the ability to multiplex services over logical channels is a routine function that can be performed by a general-purpose computer, Ericsson asserts that the present invention provides a unique approach that integrates with the hardware and system architecture of mobile stations. Finally, Ericsson concludes by stating that, while the patent does not disclose a novel apparatus in terms of physical hardware, the novelty and inventive step in the invention lies in the method and system for processing and multiplexing data services, which according to them is a technical advancement over the existing prior art and non-obvious in the context of existing technologies on the priority date of the patent.

444. I have considered the submissions of both Ericsson and Lava in respect of the patentability of IN'632.

13.2.2. ANALYSIS AND FINDINGS

445. The Claims of IN'632 provide describe a mobile station with various components and functionalities for processing multiple data services over a communications link to a base station. It is crucial to note that the Claims detail specific means and methods for receiving, processing, separating, multiplexing, prioritising, scheduling, and mapping data services and logical

channels to enhance the quality of service and efficiency of the mobile station.

446. In my considered view, while the Claims of IN'632 do describe a sequence of operations or instructions that the mobile station should perform, they are not limited to just being a sequence of instructions. Instead, they define a combination of hardware and software components that work together to achieve the described functionalities. The Claims of IN'632 specifically mention 'means for receiving,' 'means for processing,' 'means for separating,' and so on, which implies that a combination of hardware and software components have been designed to perform these specific tasks.

447. Therefore, in respect to the submission regarding IN'632 only being a sequence of instructions, I have come to the assessment that IN'632 is not directed solely towards a sequence of instructions. While the Claims of IN'632 do involve certain procedural steps, these steps are integrated within a technical solution that includes specific hardware components and methods for processing and managing data services in a mobile station. Therefore, the Claims and the Complete Specification outline various means and methods that are part of a comprehensive system, going beyond just a sequence of instructions. Thus, the contention of Lava that IN'632 should be revoked on the ground that the patent is only directed towards a sequence of instructions and not a technical solution, does not succeed.

448. In respect of the submission that IN'632 is solely directed towards an algorithm, I have come to the assessment that IN'632 does not solely focus on an algorithm. While I acknowledge that IN'632 does indeed includes

algorithmic aspects for processing data services, the invention encompasses a broader system and method that involve specific hardware components, including transceivers and logical channels, as well as specific techniques for managing and multiplexing data services. The Complete Specification details a technical solution for a mobile station that includes both hardware and algorithmic elements. Therefore, the patent protection granted is for the features that enable the hardware to perform the desired function, indicating that the patent extends beyond just an algorithmic concept. Consequently, it cannot be said that the Claims of IN'632 are merely algorithmic in nature.

449. In conclusion, the assessment of IN’632 demonstrates that the incorporation of a computer program or algorithm in an invention does not automatically disqualify it from patent eligibility. The key factor is whether the inventive concept is solely focused on an algorithm or computer program. In this case, IN’632 extends beyond just an algorithm, encompassing a broader system and method with specific hardware components and techniques for data service management in mobile stations. This aligns with the 2017 CRI Guidelines issued by the Controller General of Patents, which indicate that a novel hardware component is not a prerequisite for patent protection. I recognise that in the present case, the invention is giving a solution which results in the transformation of existing hardware, i.e. a mobile device, through a method, system, or a combination thereof can render an inventive concept patentable.

13.3. CHALLENGE TO THE NOVELTY OF IN 229632

13.3.1. PRIOR ART: MOBIWARE

450. In the written statement cum counter claim filed by Lava, it has been claimed by Lava that IN'632 is liable to be revoked in terms of Section 64(1)(f) of the Patents Act for lacking novelty. For this purpose, Lava has relied upon the document '*Mobiware: QoS aware middleware for mobile multimedia communications*' authored by Andrew T. Campbell published in the IFIP Conference Proceedings held between 28th April – 2nd May, 1997 [*hereinafter 'Mobiware'*]. While Ericsson has claimed that the said prior art has not relied upon in evidence by the witnesses of Lava, the fact that Lava has cited this prior art in their written statement and counter-claim for lack of novelty is significant. The claim of lack of novelty of IN'632 has been made on the basis of Mobiware and the relevant portion has been identified and extracted in the written statement cum counter claim. Therefore, even in the absence of evidence from witnesses corroborating the claim of lack of novelty, I have deemed it appropriate that it is a justiciable requirement to examine the lack of novelty claim based solely on the specific text identified and documented.

451. I shall proceed to consider the prior art document cited by Lava as the document that impinges on the novelty of IN'632. The relevant text from Mobiware as identified by Lava is set out below:

> *"3.2 Setup Phase Once the signalling channel has been successfully created the mobile device initiates a forward handoff to the new base station. It does so by issuing a (3) reservation message (for details on the res message see section 5) which includes connection group route state information and desired QOS required. The handoff management algorithm located at the new base station uses this state information to establish a new branch (between the crossover switch and new base station) to the existing connection group tree with the desired QOS. Mobile devices express desired QOS in terms of the semantics of the adaptive service and connection groups. Connection group QOS*

requirements are specified in terms of connection group base layer requirements and enhancement layer requirements, respectively. Admission control located at the new base station first determines whether sufficient resources are available to support the requested handoff.

xxx xxx xxx

4 ADAPTIVE AND ACTIVE TRANSPORT SYSTEM A fundamental aspect of our work is the development of an adaptive and active transport that incorporates a QOS-based API and a full range of transport algorithms to support the delivery of continuous media over mobile networks. The mobiware transport operates in two modes:

- *adaptive mode, which provides a set of STOs (viz. playout control, flow control, flow scheduling and shaping, flow monitor and adaptation manager) that best assists multimedia applications when adapting to minor QOS fluctuations as a consequence of cell/packet loss and delay variation; and*
- *active mode, which provides a set of ATOs (viz. mobile filters [17], mobile error control [19] modules and mobile snoop [15] modules) that can be dynamically dispatched to mobile devices, base stations or mobile-capable ATM switches to provide value-added QOS during conditions of persistent QOS fluctuation that may emerge during handoff.*

In the active mode, local adaptation manager monitor the loss available bandwidth characteristics of flows and interact with ATO control to select, dispatch, bootstrap, configure and tune the appropriate ATO to the requesting target node.

The adaptive transport API assumes a client-server model where servers interact with service control to create QOS groups specifying their QOS profile (i.e., QOS requirements: traffic class, delay and bandwidth) for each multi-resolution of the flow and flow adaptation policy (i.e., the type of coding and prioritizing of the various resolutions used, and flow-spec for each flow) of the source media. The traffic class and delay bounds are common for each resolution of the scalable flow. The user can prioritize corrections so that during handoff certain corrections receive preferential treatment over others in light of reduced bandwidth (e.g., drop the video corrections before the audio). The bandwidth for each resolution is specified in a flow-spec [13] by the clients and servers. Clients join QOS groups, inspect the QOS profile of the source and then select the appropriate resolutions by matching their capability to consume source media.

For full details on the adaptive algorithms and API see [13].

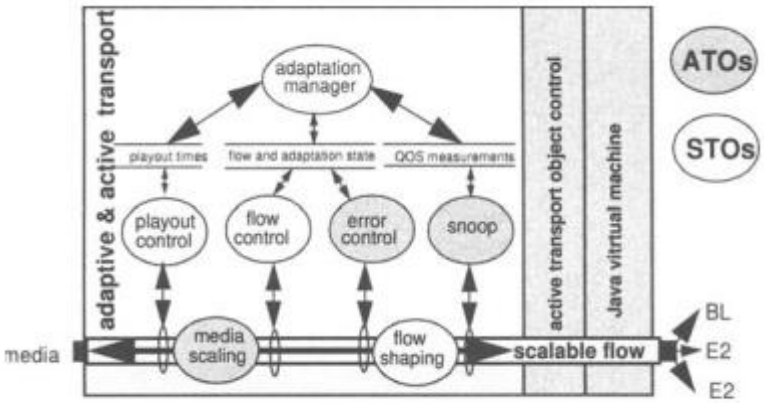


Figure 4: Adaptive and Active Transport System ”

452. After perusing the above text, which has been extracted from the prior art Mobiware, it is evident that there are several points of similarities between Mobiware and IN’632. Both IN’632 and Mobiware are focused on enhancing mobile network performance and efficiency, specifically in the mechanism of how mobile devices communicate with base stations. Significantly, it must be highlighted that Quality of Service (QoS) is a central theme in both the patent and Mobiware, with both texts discussing mechanisms to ensure service quality, even in conditions of varying network conditions and also during handoff processes. The importance of managing handoffs to maintain continuous service quality is highlighted in both texts. However, it is of particular relevance to note that the mechanism to achieve this differs in IN’632 and the prior art Mobiware. Mobiware describes the use of adaptive and active transport systems within mobile networks, focusing on the use of an adaptive transport API, QoS requirements, and how mobile devices adapt to QoS fluctuations, while IN’632 presents a comprehensive system and method for handling multiple services within a

W-CDMA system, through the use of different protocols for managing multiple services, thereby enabling the ability of mobile stations to support multiple data transmission services concurrently.

453. Upon considering the similarities and differences identified above, it is clear that IN'632 is focused on demonstrating a specific technique for processing multiple data services over a communication link, which includes the handling of data blocks, prioritisation, and scheduling to maintain QoS for multiple services simultaneously. This method of managing multiple services with variable QoS requirements and efficiently utilising the transmission spectrum and power control is distinct from the general discussion of adaptive transport and handoff management in Mobiware. Therefore, neither is the novelty of the Claims of IN'632 affected by the specific text highlighted by Lava, nor is the novelty of the specific solution proposed in IN'632 affected by the logical deduction of the prior art highlighted by Lava. While both texts address improvements in mobile networks' efficiency and QoS, they approach the problem from different angles. Overall, the prior art identified by Lava, Mobiware though broader in scope, covering adaptive transport mechanisms, does not impinge upon the novelty of IN'632 as it is focused on a specific method of multiplexing services for ensuring efficient service delivery. The specific technical solutions and implementations proposed in IN'632, specifically including the use of an RLC/MAC protocol layer for processing multiple radio bearer services and prioritizing data blocks for transmission is not detailed in Mobiware.

454. In light of the above analysis, the specific solution proposed in

IN'632, characterized by its approach to multiplexing services and ensuring efficient service delivery within a W-CDMA system, stands as novel over Mobiware. Lava's claim regarding the lack of novelty of IN'632, based on the prior art presented by Mobiware, does not hold.

13.4. CHALLENGE TO THE INVENTIVE STEP IN IN 229632

455. The prior arts which have been cited by Lava in their Written Statement cum Counter Claim and for which evidence has been led are:

(i) **DW-1/35**: Internet RFC 2212 published in September 1997 titled "Specification of guarantee quality of service" [D1]

(ii) **DW-1/36**: ETSI Technical Report Ver 2.1.0 (1995) [D2]

13.4.1. PRIOR ART: D1

456. Upon a perusal of the prior art labelled as D1, it is clear that the said prior art outlines the specification for Guaranteed Quality of Service (QoS) in the Internet. It details the network element behaviour required to deliver a service guaranteeing both delay and bandwidth, based on a service specification template. Further, this prior art also provides a mechanism for handling data flows using a token bucket model to compute service parameters, ensuring bounded end-to-end datagram queueing delays. The document emphasises a flexible approach to reservation setup and flow identification, aiming to provide clear benefits for QoS even when partially deployed.

457. While both D1 and IN'632 are giving emphasis on managing QoS in communication systems and also, proposing solutions with a view to

optimize data transmission efficiency and quality, it is clear that the points of dissimilarity between prior art D1 and IN'632 are significant and far outweigh the similarities to have an impact on the non-obvious technical advancements in IN'632. In strength of this conclusion, I would highlight that D1 discusses the internet's guaranteed QoS using token buckets and attempts to link the same wireless telecommunication systems, which does not align or relate to the field of wireless telecommunication and therefore, does not teach or enables the solutions given in IN'632. Further, IN'632 details a mobile-specific implementation, including logical and physical channel mapping, which is not at all covered in D1. Finally, it is highlighted that Internet communications use a broader approach to QoS, much different from mobile communications.

458. I also hold that there is merit in the submission of Ericsson that D1 teaches that the network element behaviour required to deliver a guaranteed service that is guaranteed maximum delay and bandwidth usage in the Internet and that the same is much different from the problem solved by the present invention, where the inventive step lies in multiplexing portions from radio bearer services having similar QoS requirements on a single logical channel.

459. Therefore, prior art D1, focusing on internet communication QoS guarantees, diverges fundamentally from the mobile station-centric approach of IN 632, which integrates multiple data services for mobile networks. Prio Art D1's emphasis on the use of a token bucket model for service specification does not address the specific challenges of mobile communication, such as handoff management and the dynamic adaptation to

mobile network conditions. Thus, the prior art's focus on generalised internet QoS solutions teaches away from the mobile-specific solutions proposed by IN'632, underscoring a distinct path in addressing QoS challenges. Therefore, neither does D1 affect the patentability of IN'632, nor can the said document be combined with any other reference point or document to affect the inventiveness of IN'632.

460. In conclusion, after careful examination, it is found that the inventive step and novelty of IN'632 are clearly distinguishable. The approach presented in IN'632 for integrating multiple data services for mobile networks, prioritizing data based on QoS requirements, and efficiently managing logical and physical channel mappings demonstrates distinct and non-obvious technical advancement.

13.4.2. PRIOR ART: D2

461. Upon a perusal of the prior art labelled as D2, it is noted that the same is a report providing a detailed description of the UMTS radio interface, which is stated to be an important component of the UMTS network architecture. As per the said report, the radio interface is responsible for the communication between the mobile device and the network's base station. The said prior art is outlining the environment in which the radio interface functions, including the physical and logical channels, modulation schemes, and other technical specifications. The report also provides an outline structure of the radio interface protocol stack, which includes layers such as the physical layer, data link layer, and network layer.

462. D2 specifically describes the scheme of multiple radio bearer services,

which are used to carry different types of traffic (e.g., voice, data, and signalling) over the radio interface. Radio bearer services are essential for ensuring that different types of traffic are handled appropriately according to their requirements. Further, D2 describes the classification of radio bearers based on attributes such as maximum bit rate, maximum acceptable Bit Error Rate (BER), and acceptable delay for each bearer class. It appears that this classification is essential for ensuring that different services are provided with the necessary quality of service (QoS) parameters to meet their specific requirements.

463. Lava contents that this prior art, i.e., D2 provides a comprehensive overview of the UMTS radio interface, including its structure, functioning environment, and the classification of radio bearers based on various attributes. Further, Lava also claims that information provided in D2 is critical for understanding the technical specifications and requirements of the UMTS radio interface and in light of the same, D2 through its broad scope is sufficiently teaching and motivating the invention claimed in IN'632 by Ericsson.

464. *Per Contra*, Ericsson contends that the invention disclosed in IN'632, pertains to the separation of data belonging to a plurality of services into data blocks, the recombination of those blocks based on similar Quality of Service (QoS) requirements, and transmission in a single logical channel, and the said invention is not rendered obvious by the ETSI Technical Report Ver. 2.1.0 (1995). Further, as per Ericsson the concept of prioritizing data blocks within transmission blocks, as mentioned in the ETSI report, does not equate to or suggest the inventive feature claimed in IN'632. Ericsson

specifically asserts that prioritization of data blocks based on importance is a different concept from recombining data blocks based on similar QoS requirements for transmission. It has been highlighted that while the former relates to the order of transmission, while the latter relates to the organization and aggregation of data for transmission. Consequently, Ericsson submits that there is a significant difference between the general description of the radio interface in the ETSI report and the specific technical solution provided by IN'632.

465. I have considered the rival stands in respect to prior art D2 and its effect on the patentability of IN'632.

466. As I have already identified, the invention disclosed in IN'632 involves the separation of data belonging to a plurality of services into data blocks, recombination of those blocks based on similar QoS requirements, and transmission in a single logical channel. D2 provides a comprehensive overview of the UMTS radio interface and the report in D2 outlines the structure and functioning environment of the radio interface. However, in my considered view, Ericsson's contention that the concept of prioritizing data blocks within transmission blocks, as described in D2 is different from the concept of recombining data blocks based on similar QoS requirements, as specifically claimed in IN'632 is valid. I would highlight the technical advancement in IN'632 over D2 by recognising that prioritization of data blocks relates to the order in which they are transmitted, while recombination of data blocks based on QoS requirements involves organizing and aggregating data for transmission in a more efficient manner. Further, D2 does not delve into the specific method of data separation,

recombination, and transmission as described in IN'632, not does it give any teachings or motivations to do so.

467. In my overall assessment, the general description of the radio interface as given in D2 is significantly different from the specific technical solution provided and enabled by the Complete Specification of IN'632. The inventive step in IN'632 involves a novel approach to handling data transmission that is not addressed or even suggested by the prior art D2.

13.5. CONCLUSION

468. Consequently, I am of the view that none of the prior arts individually or jointly are able to teach, motivate or suggest the invention claimed in IN'632. Therefore, upon the finding of novelty and inventive step after a full trial, I deem it is imperative to direct issuance of a Certificate of validity of the Complete Specification of IN'632.

14. INVALIDITY OF IN 241747

469. Now, I shall proceed with the assessment of the patentability of the next patent, which is claimed to be a Standard Essential Patent, essential for implementing EDGE standards i.e., IN 241747 titled '*A transcieving omit unit for block automatic retransmission request*'. The Bibliographic details of the said patent are set out in the following table:

Patent Number	241747
Application Number	2490/DEL/1998
Priority Date	29/08/1997

Type of Application	CONVENTION APPLICATION
Date of Patent	24/08/1999
Date of Grant	22/07/2010
Date of Recordal	22/07/2010
Appropriate Office	DELHI
Title of the Patent (As granted)	A TRANSCEIVING UNIT FOR BLOCK AUTOMATIC RETRANSMISSION REQUEST

470. The said patent has been granted with eight Claims. The claims of the said patent are set out below:

> *"1. A transceiving unit for block automatic retransmission request comprising:*
> *a receiving means (12) for receiving a negative acknowledgement signal indicating that a block was erroneously received;*
> *a dividing means (22) for selectively dividing said block into at least two blocks in response to said negative acknowledgement signal; and*
> *a retransmitting means (20) for retransmitting said at least two blocks. characterized in that said block was originally transmitted using a first modulation/FEC coding scheme and only said at least two blocks are retransmitted using a second modulation/FEC coding scheme different from said first modulation/FEC coding scheme.*
> *2. The transceiving unit as claimed in claim 1, wherein the receiving means is a mobile station or a radio base station.*
> *3. The transceiving unit as claimed in claims 1 and 2, wherein the dividing means is a radio base station.*
> *4. The transceiving unit as claimed in claims 1 to 3, wherein the retransmitting means is a base transceiver station or a radio base station.*
> *5. The transceiving unit as claimed in claim 1 wherein the*

first and second types of coding are the same.
6. The transceiving unit as claimed in claim 1, wherein the first and second types of modulation are the same.
7. The transceiving unit as claimed in claim 1, wherein second type of modulation uses a subset of the amplitude coefficients of said first type of modulation.
8. A transceiving unit substantially as herein described with reference to the accompanying drawings."

471. The application for the said patent was filed in India as a Convention application. I have perused the Complete Specification of the patent IN 241747 and also the Claims of the said patent. I have noted that in India, the said patent has been filed with only 8 Claims, whereas both the corresponding Convention application in US and the application before EPO have been filed with 29 Claims. I have carefully considered the fundamental principle in Indian patent law that Claims define the scope of the invention and shall proceed with construing the said Claims as granted in India.

14.1. CLAIM CONSTRUCTION

472. Before beginning the claim construction analysis of IN'747, it's important to clarify two technical concepts: Automatic Repeat ReQuest (ARQ) and the Forward Error Correction (FEC) coding scheme. The patent application's Complete Specification provides the necessary clarity on these topics. Therefore, after referring to the complete specification, the following understanding has been arrived at:

i. Automatic Retransmission ReQuest (ARQ)

ARQ in communication system is a protocol for error control in data transmission. When the sender transmits data and the receiver checks

it for errors, at the receiver end, the ARQ protocol is activated. If errors are detected, the receiver requests the sender to retransmit the affected data. ARQ ensures data integrity by only accepting error-free data, making it essential for reliable communication over networks where errors are likely. Overall, the ARQ protocol enhances data accuracy, however, it may reduce throughput (rate at which data is successfully transmitted over a network in a given amount of time) due to the possibility of retransmission.

ii. Forward Error Correction (FEC)

FEC is a coding scheme used in data transmission to enhance communication reliability. It involves adding redundant data (error-correcting code) to the original message at the transmitter end. This extra data helps the receiver detect and correct certain types of errors without needing retransmission of the original message. This process reduces the need for retransmissions due to errors, which can indirectly benefit throughput. However, the added redundancy also increases the bandwidth requirement, which can potentially offset throughput gains. FEC is particularly useful in scenarios where retransmissions are costly or impossible. Overall, by correcting errors at the receiver's end, FEC improves data integrity and overall transmission efficiency.

473. In my considered view, the inventive concept in the present invention lies in the feature of dynamic adaptation of the modulation/FEC coding scheme for retransmitted blocks being implemented in a mobile device. Further, the technical advancement in the present invention lies in the

selective division of blocks for retransmission, enhancing error correction contributing to enhanced performance of a mobile device. Therefore, this technology is capable of being used in mobile and radio base stations for the purpose of improving the reliability and efficiency of digital communication systems. In addition, the present invention is providing a practical solution to increase system capacity and reduce interference, meeting the growing demands for high-quality digital communication services.

474. Based on my assessment of the Claims and the Complete Specification of the invention, the present invention can be classified as a product patent. The patent primarily focuses on the design and functionalities of a transceiving unit used in communication systems for block ARQ. This unit includes mechanisms for receiving signals indicating erroneous reception, dividing the erroneous blocks, and retransmitting them using a different modulation/FEC coding scheme. The invention's emphasis is on the specific configuration and capabilities of the transceiving unit, indicates that the invention is centered on a tangible product or device with defined structural and functional characteristics. Therefore, the present invention aligns with the characteristics of a product patent.

475. In the context of patents, there is often a debate if 'means' claims can be patented. In the context of the present patent, i.e., IN'747, I am of the view that when 'means' claims are part of an invention that includes a novel and non-obvious method or system and when the 'means' refer to components or elements of an invention that perform a specific function, they can be patentable. In conclusion, 'means' can be patented when claimed in the format of 'means plus function'. To be patentable, these

'means' must be part of an invention that meets the standard criteria of novelty, inventive step, and industrial applicability. The patentability also depends on how these 'means' are integrated into the overall invention and contribute to its unique functionality.

476. Taking into consideration the present invention, in the 'means plus function' approach, Independent Claim 1 specifies a function to be performed, which includes receiving a negative acknowledgement signal, dividing a block and retransmitting blocks. Therefore, the term 'means' in the present invention refers to the components or elements that perform these functions. This approach focuses on the functionality of the components rather than their specific physical structure or design details.

477. Before moving on with the analysis of validity of the patents, I would also maintain that 'means plus function' claims can exist in a product patent as well. In the context of product patents, 'means plus function' claims define a component or part of the product in terms of the function it performs, rather than its specific structure or design. In my considered view, the language of 'means plus function' claims language allows for a relatively broader scope of protection, covering various implementations of the function, provided they are equivalent to the described means. However, I would caution that for 'means plus function' claims to be valid, the Complete Specification must sufficiently disclose the structure that performs the claimed function, ensuring clarity and enforceability.

478. With the above clarity, I shall start my analysis of the grounds for invalidity of the said patent raised by Lava.

479. It is Lava's contention that IN'747 is a simple scheme or algorithm

for a communication protocol. An assessment of the evidence placed on record by Lava reveals that specific evidence has been led by Lava, to support their contention that IN'747 is directed towards an algorithm.

14.2. PATENTABILITY

14.2.1. EVIDENCE OF LAVA

480. In his deposition, Dr. V. Kamakoti deposed that IN'747 merely proposes the use of different modulation schemes for retransmission without specifying which schemes to use. His critique extends to the implementation of IN'747, stating that any skilled person could program the inventive concept on general-purpose computers without specialised hardware, implying that the inventive concept is a basic algorithm with no technical effect or dependency on specific hardware. The relevant extracts from the said affidavit are set out below:

> *"74. The claimed invention pertains to error handling in the field of communication systems and specifically, error handling using automatic retransmission requests (ARQ) that support multiple Forward Error Correction (FEC)coding and/or modulation schemes. The claims specify a link adaptation scheme / flexible communication scheme also which involves a use of both Automatic Retransmission Request (ARQ) and Forward Error Correction (FEC) techniques allowing a switch to a different modulation scheme in response to a negative acknowledgment.* ***It is evident that the patent is basically a simple scheme or algorithm for segmenting the data with different methods of modulation to optimize communications for different network conditions. The scheme is nothing but an algorithm for a communication· protocol between transmitter and***

receiver.

75. In fact, the patent does nothing more than suggest a concept that a different modulation or coding scheme should be used for retransmission. The patent nowhere discloses the appropriate modulation schemes that should be used and the proper pairing of modulation schemes. ***Any person skilled in the art implementing this concept, would require to suitably re-program the program executed on the processor of a mobile phone such that the processor, on receiving a negative acknowledgement, would select a different modulation scheme for the re-transmission.*** *In fact* ***the modulation scheme itself is only an algorithm operating on a digital bit stream****.*

76. I say that ***once coded into a computer program by use of skill and imagination by a person skilled in the art, the algorithm may be performed on general Purpose computers*** *and would not require any specialised hardware/device/ apparatus. Further, such a computer program would be transparent to the underlying hardware and would not bring about any change in the hardware itself. Such a computer program would not have any technical effect and would not be dependent on any specific associated hardware/device/apparatus for being performed."*

481. Further, in his affidavit in evidence, G.S. Madhusudan (DW1) has deposed that IN'747 primarily introduces an algorithm rather than a novel transceiving unit. According to him, IN'747 is not employing any hardware components but is actually directed towards a conceptual algorithm for altering transmission methods based on error feedback. The relevant extract from the said affidavit are set out below:

176. After analysing the patent claim and specification, I find that the patent does not disclose any novel, or inventive transceiving unit. Even from reading the specification it is

made clear that even as per the specification itself there have existed means for receiving negative acknowledgement signal indicating that a block was erroneously received and for retransmission of erroneous blocks. ***The patent specification makes clear that the invention claimed in substance is not the transceiver itself, but an algorithm/scheme whereby it is proposed that the re-transmission of a block erroneously received should be by a different modulation/FEC coding scheme****. The patent also does not specify the modulation/coding schemes but only suggests that a different scheme should be used for re-transmitting an erroneously transmitted block.*

14.2.2. EVIDENCE OF ERICSSON

482. *Per Contra*, on behalf of Ericsson, Mats Sagfors (PW-3) has deposed to say that Lava's witnesses have merely labelled IN'747 as an algorithm without substantial evidence, overlooking the patent's complexity and its solution to a specific problem in cellular systems involving fading links. According to him, Lava's analysis misses the significance of the hardware components and the patent's contribution towards enhancing mobile device efficiency in varying cellular conditions. He claims that IN'747 enables handsets to operate more effectively, thereby addressing a crucial link-adaptation issue in cellular communications. The relevant extract of the affidavit of Mats Sagfors (PW-3) is set out below:

"29. ***In his analysis of IN '747, Kamakoti's allegation that IN '747 is merely an "algorithm" is very vague. In fact, he fails to establish any argument why the claim should be regarded as an algorithm****. He simply states that "It is evident that the patent is basically a simple scheme or algorithm for segmenting the data with different methods of modulation to optimize communications for different network conditions" without*

providing any reference or evidence to support his contention that "This basic technique has existed since the early 1970s when it was developed for use in various Internet protocols". Similarly, Madhusudan simply avers that IN '747 is a scheme or an algorithm which does not require any specified hardware "or its operation and that "the transceiving unit and radio base station have been used as examples to describe one possible operating scenario for the algorithm" and that they are "superfluous hardware components" without providing any supporting evidence or reference.

30) Both Kamakoti and Madhusudan, fail to take into consideration the claims as a whole. In particular, ***they fail to identify and analyze the particularities that occur in a cellular system, when the modulation or coding needs to be changed over a fading link****. The fading link may not be able to carry as many information bits for the concerned re- transmissions, and the solution for re-segmenting as claimed is therefore solving a very important link-adaptation problem. Thus, they ignore the context in which the problem arises, and the specifics of the solution as claimed that is limited by the claim elements.* ***Kamakoti and Madhusudan have attempted to generalize the scope of the claim so as to find it known & have ignored the fact that the claims includes several hardware components, including a transceiver with receiving means, dividing means, and re-transmitting means****. Further, in their analysis of IN '747, Kamakoti and Madhusudan ignore that the claimed invention provides at least,*

- *More efficient handset with the claimed transceiver, since with the claimed solution, the handset can operate much more efficiently in varying cellular radio conditions;*
- *the technical contribution results in the handset being operated in a new way;*
- *the claimed technical contribution makes the handset a better handset in that it is running more efficiently;"*

14.2.3. ANALYSIS AND FINDINGS

483. From the above evidence which has been extracted in respect of IN'747, the contrasting positions of Lava and Ericsson emerge in respect of the nature of the claims of the said patent. Lava's witnesses argue the patent merely suggests using different modulation schemes for retransmission, a concept they deem basic and executable on general-purpose computers without specialised hardware, implying it is an algorithmic approach lacking technical effect or dependency on specific hardware. Ericsson counters the same by emphasising the patent's complexity and its hardware-specific solution to a link-adaptation problem in cellular systems, underscoring the claimed invention's role in enhancing handset efficiency under varying conditions.

484. I have considered the relevant evidence in respect of IN'747 with regards to the nature of the claim. In my considered view, the claims of IN'747 detail the components and functionalities of a transceiving unit for handling error correction in communication systems, particularly through the use of adaptive modulation and FEC coding schemes. While the description of IN'747 outlines a method involving decision-making based on received signals, suggesting an algorithmic process, however, in my view, the Claims of IN'747 are directed toward the physical embodiment of this method in hardware components (receiving, dividing, and retransmitting means).

485. In view of the complexity of IN'747, I have deemed it appropriate to tabulate a representation of the nature of various elements of the Claims of the said patent. The tabular representation of the nature of various elements

of IN'747 is set out below:

Element/Concept	Type
Receiving, dividing, and retransmitting means	Product
Dynamic adjustment of FEC coding and modulation based on error feedback	Algorithm
System supporting multiple modulation schemes and FEC coding for original transmissions and selective retransmissions	System

486. Given the evidence and the nature of the claims in IN'747, which detail the components and functionalities of a transceiving unit with adaptive modulation and FEC coding schemes, the patent is focused on the physical embodiment of these methods in hardware components. I am of the view that the essence of IN'747 is embodied in tangible hardware solutions for error correction. Therefore, in my considered view IN'747 is directed towards the enhanced functionality of a transceiving unit in a mobile device, highlighting improvements in communication systems. The focus on the Claims of IN'747 towards a physical embodiment, rather than any algorithm, underscoring the focus of IN'747 on improvement of the functionality of the transceiving unit.

14.3. CHALLENGE TO THE NOVELTY OF IN 241747

487. Further, Lava has claimed that the present patent is liable to be revoked on the basis of Section 64(1)(e) of the Patents Act, as the claims of IN'747 are not novel in light of the prior art document, EP 0054118, a patent which was granted in 1985. Lava has also placed on record the relevant extract of the said patent to claim that IN'747 has been anticipated by the

said prior art.

488. Ericsson has claimed during final arguments that although Lava had cited EP 0054118 in their counterclaim, Lava did not rely on it in their evidence. This, according to Ericsson, suggests that Lava made a deliberate decision to abandon the contention of lack of novelty. Further, as per Ericsson, considering Lava has refrained from providing any supporting evidence for the claim of novelty, this ground should be disregarded.

489. I have considered the objection of Ericsson in relation to the ground of lack of novelty. In my considered view, considering that Lava has specifically cited the relevant extract from EP 0054118 to argue the lack of novelty in IN'747, I find it necessary to examine the ground of lack of novelty based on that specific extract pleaded in the counter claim. Additionally, as discussed above, it is necessary to consider what is implicitly specified in the extract from EP 0054118. Therefore, it is pertinent to delve into the details of the cited prior art and its implications on the novelty of IN'747.

490. From the extract cited by Lava, it is evident that the same describes a process within a communication system for handling errors in received data blocks. According to the said extract, when any error is detected in a data block, the receiver saves the erroneous block and requests a retransmission. However, instead of retransmitting the original block, a parity block is sent. This parity block, composed of parity digits derived from the original data and additional parity checks, utilises specific coding schemes to ensure accurate error correction and data integrity in the communication process.

491. After analysing the elements of the cited extract and also the elements

of the Claims of IN'747, for the purposes of ascertaining the novelty of IN'747, I have considered it appropriate to identify the similarities and differences of the cited extract and IN'747. In my considered view, both IN'747 and the cited extract of the prior art involve handling of errors in received data blocks and each employ a mechanism for responding to errors detected. However, there is a difference in the specific mechanism adopted for responding to detection of errors. The prior art utilises a retransmission request in response to error detection, whereas IN'747 adopts a negative acknowledgment signal to handle error detection. Therefore, the cited prior art and the claims of IN'747, both address error handling in communication systems, *albeit* through different approaches.

492. The prior art delves into creating parity blocks for retransmission and stresses specific coding schemes, C1 and C0, tailored for error correction. Conversely, the Claims of IN'747 outline a transceiving unit equipped with hardware for receiving, dividing, and retransmitting data blocks. IN'747 particularly emphasises the employment of varied modulation/FEC coding schemes for retransmission, a specific detail neither explicitly mentioned in the prior art extract, nor implicitly derivable marking a distinctive approach to managing transmission errors in IN'747.

493. To effectively elucidate the similarities and differences between the cited prior art extract and the claims of IN'747, I have deemed it essential to present a comparative analysis of their elements in the form of a table. The said table is set out below:

Aspect	Prior Art Extract	Patent Claims
Error Handling	Focus on detection and retransmission using parity blocks.	Involves receiving negative acknowledgements and dividing/retransmitting blocks.
Mechanism for Error Response	Retransmission request upon error detection.	Negative acknowledgement signal triggers block division and retransmission.
Methodology	Generation of parity blocks using specific coding schemes (C1 and CO).	Use of different modulation/FEC coding schemes for retransmitted blocks, without specific coding scheme details.
Focus	Specific error correction methodology involving coding schemes for parity blocks.	Structural and operational aspects of a transceiving unit, including hardware components for error correction.

494. In my considered view, the extract pleaded by Lava as a novelty destroying prior art describes a specific error correction process involving the retransmission of data blocks using parity blocks and coding schemes. However, the said function and implementation of the said extract in the prior art is different from the claims of IN'747. The Claims of IN'747 focus on a transceiving unit employing a method of dividing erroneously received blocks and retransmitting them using different modulation/FEC coding schemes. Therefore, the novelty of IN'747 is not affected by the cited prior art extract.

14.4. CHALLENGE TO THE INVENTIVE STEP OF IN 241747

495. In addition to the claim of lack of novelty, Lava has also claimed that IN'747 is lacking inventive step and consequently should be revoked on the

ground of lack of inventive step. The said assertion has been made by Lava on the basis of the following prior art references:

i. **Exhibit DW-1/47** Abdul Aziz Al-Zoman et al., "*Automatic Retransmission Rather Than Automatic Repeat Request*", published in IEEE in 1994.

ii. **Exhibit DW-1/48** Joel Morris, "*Throughput Performance of Data-Communication J. Systems Using Automatic Repeat-Request (ARQ) Error Control Schemes.*" 1977

iii. **Exhibit DW-1/49** Kousa, "*An adaptive error control system using ARQ schemes (1991)*"

iv. **Exhibit DW-1/50** US 5559810.

496. Some other prior arts were also cited by Lava, however, the same were not cited in the Counter Claim, therefore, I shall not be considering the same.

14.4.1. PRIOR ART: AL-ZOMAN

497. I shall start by considering the first document cited by Lava to claim revocation of IN'747 on the ground of lack of inventive step. The said document is a research paper published as part of the Proceedings of ICNP - 1994 International Conference on Network Protocols, which was held from 25-28th October, 1994 (hereinafter '*Al-Zoman*'). The said research paper focuses on the use of automatic retransmission instead of automatic repeat request in data communication systems. Specifically, the research paper proposes one means to addresses the inefficiencies in standard High-Level Data Link Control (HDLC) family protocols, in environments with high bit error rates

(BERs).

498. In this regard, HDLC is a bit-oriented protocol for communication over point-to-point and multipoint links. HDLC is widely implemented in various communication standards and networks, ensuring data integrity and orderly delivery between network devices. Further, it was one of the data link layer protocols defined in the ISO network architecture and used for providing reliable data transmission. HDLC was achieved through mechanisms such as framing, flow control, and error detection[25].

499. The key issues discussed in Al-Zoman includes addressing the limitations of conventional ARQ protocols, which lead to low throughput due to frequent timeout recoveries. The said prior art document proposes a new retransmission scheme that relies on the transmitter to automatically initiate retransmissions. The objective of using this mechanism is to potentially enhance throughput[26] efficiency by reducing the reliance on timeout recoveries. This approach is evaluated against the backdrop of cellular radio networks, where error rates can significantly impact data transmission reliability and efficiency. In Al-Zoman this approach is evaluated against the backdrop of cellular radio networks, where error rates can significantly impact data transmission reliability and efficiency.

500. Based on the assessment of the research paper of Al-Zoman and the Claims of IN'747, I have deemed it appropriate and also necessary to

[25] Tanenbaum, Andrew S., and David J. Wetherall. Computer Networks. 5th ed., Prentice Hall, 2011.

[26] Throughput refers to the rate at which data is successfully transmitted from one point to another within a network over a given period of time. It is a measure of how much data can be processed or transferred from source to destination effectively. It is a crucial performance metric in networking, affecting how efficiently network resources are utilized and the quality of experience for users. Perahia, Eldad, and Robert Stacey. *Next Generation Wireless LANs: Throughput, Robustness, and Reliability in 802.11n*. Cambridge University Press, 2008

compare the various aspects of both the prior art and the Claims of IN'747 in a tabular form, to effectively consider the similarities and differences between both of them. The comparative table outlining the key elements of each and their intersections or differences regarding the inventive step assessment are set out below:

Aspect	Prior Art Research Paper	Patent Claims	Comparative Analysis
Objective	Focuses on enhancing the efficiency of block automatic retransmission request (BAR) mechanisms in wireless communication systems.	Aims to improve reliability and efficiency of BAR mechanisms in transceiving units by introducing a method to handle erroneous block receptions.	Both aim at enhancing BAR mechanisms, but the approach and specific solutions differ.
Key Features	1. Utilization of FEC coding schemes for error correction. 2. Adaptive modulation techniques based on channel conditions. 3. Error detection mechanisms without specific mention of block division for retransmission.	1. Reception of a negative acknowledgment signal for erroneous block. 2. Division of the erroneous block into at least two blocks for retransmission. 3. Use of different modulation/FEC coding schemes for retransmitting divided blocks.	The patent claims to introduce specific methods (block division and retransmission with different modulation/FEC schemes) not explicitly detailed in the prior art, indicating the presence of an inventive step over the cited document.
Error Handling	Implicitly deals with error correction through FEC and possibly adaptive modulation but does not detail strategies	Explicitly addresses the handling of blocks received with errors by dividing them and retransmitting with	The patent's approach to error handling through block division and

	for handling blocks received with errors, especially regarding their division and retransmission.	different modulation/FEC coding schemes, suggesting a novel approach to error handling.	adaptive retransmission schemes appears novel and non-obvious when compared to the general error correction techniques discussed in the prior art.
Modulation /FEC Coding Schemes	Mentions the use of adaptive modulation and FEC coding schemes based on channel conditions but lacks specificity regarding their application to retransmitted blocks after error detection.	Specifies the application of different modulation/FEC coding schemes for retransmitting divided blocks, which is a direct response to error detection and negative acknowledgment signals.	The patent claims provide a detailed application of modulation/FEC coding schemes for retransmitted blocks, which is not explicitly covered in the prior art, indicating a unique and inventive aspect.
Division of Erroneous Blocks	Does not mention or suggest the division of erroneous blocks received as a strategy for retransmission.	Introduces the division of erroneous blocks into at least two blocks in response to negative acknowledgment signals, followed by retransmission using different modulation/FEC coding schemes.	This specific strategy of dividing erroneous blocks for retransmission with different modulation/FEC coding schemes is not suggested or disclosed in the prior art, highlighting

			the presence of an inventive step in the patent claims.
Application and Implementation Specifics	General discussion on enhancing BAR mechanisms with adaptive techniques but lacks detailed implementation strategies for handling specific types of errors or erroneous block retransmissions.	Provides a specific implementation strategy for handling erroneous block receptions, including the steps of receiving negative acknowledgments, dividing blocks, and retransmitting with different schemes.	The detailed implementation strategy for erroneous block handling in the patent claims suggests a novel approach not covered in the prior art, thereby fulfilling the criteria for an inventive step.

501. The above comparative analysis highlights that the Claims of IN'747 introduce specific, novel strategies for handling erroneous blocks in BAR mechanisms that are not explicitly disclosed or suggested in the prior art research paper. These strategies include the division of erroneous blocks and their retransmission using different modulation/FEC coding schemes, which in my considered view involve an inventive step over Al-Zoman. Therefore, Al-Zoman individually does not affect the novelty or inventive step of the Claims of IN'747.

14.4.2. PRIOR ART: JOEL MORRIS

502. Now, I shall proceed to the analysis of inventive step of the Claims of IN'747 in respect of the next prior art cited by Lava, i.e. the Report titled '*Throughput Performance of Data-Communication J. Systems Using Automatic Repeat-Request (ARQ) Error Control Schemes*', 1977, which is authored by Joel Morris and issued by the Naval Research Laboratory, Washington D.C., USA (hereinafter '*Joel Morris*'). The said prior art document evaluates the throughput performance of various ARQ schemes. Specifically, Joel Morris aims to provide data-communication design engineers with information to assist in choosing error-control techniques or assessing the performance of their proposed ARQ or hybrid designs. In my understanding, the following are the key elements and concepts that emanate from Joel Morris:

- Basic stop-and-wait ARQ scheme and its variations.
- Continuous-ARQ schemes including Go-Back-N and Selective-Repeat.
- Hybrid ARQ schemes that combine the best properties of ARQ and Forward Error Correction (FEC) techniques.
- Derivation of equations for computing throughput efficiency or optimal block length, primarily for random-error channel models, with some consideration of burst-error conditions.

503. Further, the report explores optimal transmission rates and block lengths to maximise throughput in bits per second.

504. From a reading and analysis of Joel Morris and comparing the same with the inventive concept and Claims of IN'747, there appear to be some areas of overlap. By exploring stop-and-wait, Go-Back-N, Selective-Repeat, and hybrid ARQ schemes, Joel Morris focuses on throughput efficiency and

the optimal block lengths for enhancing data transmission reliability and efficiency. Therefore, both Joel Morris and IN'747 do relate to enhancing data transmission efficiency and reliability in communication systems and address the importance of error control in improving system performance. However, it is pertinent to note that while Joel Morris conducts a theoretical analysis of various ARQ strategies, highlighting their efficiency and throughput in data communication systems, the Claims of IN'747 propose a tangible method that incorporates the selective segmentation of erroneously received data blocks and their subsequent adaptive retransmission using distinct modulation/FEC coding techniques. This specific approach mentioned in IN'747 characterised by its practical application and adaptability, lacks any direct mention, implication, or discernible incentive within the scope of the Report of Joel Morris.

505. In conclusion, the advancement in handling transmission errors through selective block division and modulation scheme adaptation marks a significant evolution, which in my considered view constitutes a technical advancement, beyond the theoretical exploration of ARQ schemes' efficiency. Further, I hold that considering the significant time gap between the prior art document and IN'747, in view of the principles delineated in ***Avery Dennison*** (supra), it suggests that this gap signifies a 'long-felt need' within the field. Consequently, this implies that the inventive concept of IN'747 is not rendered obvious by Joel Morris. In my considered view, in light of the above analysis carried out, the technical advancements in IN'747 over Joel Morris were neither obvious to try, nor were there any teachings, suggestions or motivations to affect the inventive step in IN'747. Therefore,

in the present case, the inventive concept of IN'747 would not be hit by obviousness in light of Joel Morris.

14.4.3. PRIOR ART: US 5559810

506. Next, I shall move to on consider the patent document cited as prior art, i.e., DW-1/50 US 5559810. The Claims of the above patent, i.e. US 5559810 describe a method for optimizing data transmission in communication systems by dynamically selecting modulation techniques based on historical performance data. This method as described in US'810 entails the storage of historical reception data for each modulation technique, noting the success or failure of received data blocks. Based on this historical data, the system selects the most suitable modulation technique for future transmissions. The process includes transmitting data, receiving feedback on reception success, and updating the historical data accordingly. This continuous cycle of feedback and adjustment allows for the refinement of modulation technique selection to optimize transmission quality and reliability. The detailed historical data, including metrics like error rates over specified periods, enables the system to adapt to changing transmission conditions, offering a targeted approach to improve communication system performance across various platforms, such as two-way radios and cellular networks.

507. There are several points of similarities between both the sets of Complete Specifications. For instance, both IN'747 and US'810 share a common goal of improving the efficiency and reliability of data transmissions in communication systems. However, the means for achieving

the same are different. Both the patents involve a process where feedback—either in the form of reception history or negative acknowledgments—plays a crucial role in decision-making. US'810 uses historical reception data to select modulation techniques, while IN'747 uses negative acknowledgments to decide on dividing and retransmitting data blocks with different modulation/FEC coding scheme.

508. As is evident form the Claims of both IN'747 and US'810, the key distinction lies in the specific focus and methodology of each set of claims: the first on selecting modulation techniques based on historical data, and the second on modifying transmission strategies in response to reception failures. Therefore, IN'747 maintains its novelty as it proposes a specific hardware configuration and process for handling negative acknowledgments through block division and retransmission using different modulation/FEC coding schemes. Critically, US'810 does not mention the use of hardware components or the process of dividing blocks and changing modulation schemes upon receiving negative acknowledgments. Consequently, IN'747 demonstrates an inventive step by introducing a unique approach for improving transmission reliability through selective block division and adaptive modulation/FEC coding changes in response to errors and this inventive concept is not anticipated or suggested by US'810.

509. The only question that needs to be assessed now is if the improvement and technical advancements as given in IN'747 are such advances which would not be obvious to a person skilled in the art.

510. IN' 747 details a specialized hardware setup and procedural method for responding to negative acknowledgments by dividing the erroneously

received block into smaller blocks and retransmitting these using a different modulation/FEC coding scheme. This precise combination of hardware and process for error handling represents a departure from standard practices that did not involve such targeted and adaptive responses to transmission errors. Further, the method of adjusting the modulation or FEC coding scheme specifically in response to errors, as outlined in IN'747, introduces a level of adaptability and responsiveness to transmission conditions that was not straightforward or predictable from prior techniques. This adaptability ensures that the system can dynamically optimize for the best possible transmission quality under varying conditions, a concept that may not be inherently obvious without this specific disclosure.

511. The approach of selectively dividing a block into smaller blocks upon receiving a negative acknowledgment for retransmission is a specialised strategy that targets efficient use of bandwidth and improvement in error correction. This strategy does not appear to be an obvious solution to a person skilled in the art, as it involves a detailed understanding of how block size and modulation/FEC coding scheme adjustments can impact transmission reliability and efficiency. The integration of selective block division with adaptive modulation/FEC coding changes, within a specific hardware framework, constitutes a comprehensive solution to enhancing transmission reliability. This integrated approach might not be readily deducible by a person skilled in the art, as it combines several concepts in a novel way to address the problem of transmission errors.

512. In conclusion, considering the detailed explanation and rationale provided, the technical advancements detailed in IN'747 embody a level of

innovation and specificity that clearly sets them apart from existing standards and practices in the field of data transmission.

14.4.4. PRIOR ART: KOUSA

513. Now, I shall proceed to assess the prior art, DW-1/49 Kousa, "An adaptive error control system using ARQ schemes (1991) (hereinafter '*Kousa'*).

514. From a reading of the above prior art document Kousa, it is evident that the same describes a communication system designed to improve reliability and throughput in data communication systems, particularly over time-varying channels. Kousa aims to address it by using an adaptive error control strategy focusing on the use of cascaded Hamming codes[27] for error correction in data communication systems, specifically under the context of GH-ARQ[28] systems.

515. In my considered view, the system described in Kousa aims at adaptively matching the error-correcting code rate to the prevailing channel conditions to enhance reliability and throughput, with an emphasis on maintaining system simplicity and minimizing complexity through the use

[27] Cascaded Hamming codes are also known as concatenated coding schemes and involve layering multiple error-correcting codes to enhance the error detection and correction capabilities beyond what single-layer coding can achieve. In Hamming codes, cascading could involve using multiple Hamming codes in sequence or combining Hamming codes with other types of codes to enhance overall performance.

[28] Generalized Hybrid Automatic Repeat reQuest (GH-ARQ) systems are a type of error control mechanism used in digital communication systems to improve data transmission reliability. These systems combine the features of both Automatic Repeat reQuest (ARQ) and Forward Error Correction (FEC) techniques. The GH-ARQ scheme is an adaptive system as it adjusts its error correction capabilities based on the condition of the communication channel. A GH-ARQ system typically works by first attempting to correct any errors in the received data using FEC. If the FEC is insufficient to correct all errors, the system then requests a retransmission of the erroneous data blocks. This approach utilizes redundant information available from successive retransmissions in an efficient manner, allowing for high throughput even under poor channel conditions.

of a single type of decoder for multiple error-correction levels. This approach offers a gradual adaptation of the error-correcting rate, as opposed to the more drastic changes in traditional GH-ARQ systems, and introduces certain system complexities related to the management of interleaving processes and the handling of unequal block lengths.

516. In contrast, the claims of IN'747 detail the transceiving unit for block automatic retransmission request (ARQ), detailing a specific mechanism within a communication system that addresses the handling and retransmission of erroneously received blocks. This mechanism involves the selective division of a block upon receiving a negative acknowledgment and the adaptive retransmission of the divided blocks using different modulation and forward error correction (FEC) coding schemes.

517. In my considered view, the claims of IN'747 introduce a specific technical solution where the adaptation involves not just the error-correcting code rates but also the modulation and FEC coding schemes between the original transmission and retransmissions. This dual-level adaptation is tailored to respond more precisely to the conditions that led to the erroneous reception, offering better bandwidth efficiency and reliability than the adaptation strategy focused solely on error correction codes as discussed in Kousa. While Kousa emphasises the theoretical advantages in throughput and reliability through adaptive error correction coding, the Claims of IN'747 provide a detailed implementation strategy that could be directly applied in practical communication systems, including mobile and base stations. This bridges the gap between theoretical error correction strategies and practical error handling mechanisms in communication networks.

518. Accordingly, upon considering the above analysis, I hold that the transition from a theoretical framework of using cascaded Hamming codes for adaptive error correction to a practical error handling mechanism involving selective block division and the use of different modulation/FEC coding schemes for retransmission represents a significant leap from the prior art Kousa. A person skilled in the art will not readily derive the specific procedural steps and components described in the claims from the broad strategies discussed in Kousa. The combination of the specific mechanisms given in IN'747 to enhance communication reliability and efficiency, particularly the selective division and adaptive retransmission strategy using different modulation/FEC schemes, provides a technical advancement that is not obvious from the prior art's focus on error correction code rate adaptation.

519. In summary, the Claims of IN'747 describing the transceiving unit for block ARQ provide a detailed and specific solution for improving data communication reliability and efficiency that incorporates and extends beyond the adaptive error correction strategies discussed in Kousa. Therefore, in my considered view, IN'747 includes novel procedural steps and system components that would not have been obvious to a person skilled in the art based on the disclosure in Kousa.

14.4.5. FINDINGS ON THE PRIOR ARTS

520. In light of the above analysis, the clear position that emerges is that none of the prior arts cited by Lava are able to dislodge the novelty or inventive step of the inventive concept and Claims of IN'747. Consequently,

I shall now move on the assess inventive step of IN'747 against a collective backdrop of all the prior arts cited by Lava.

521. I deem it necessary to tabulate the differences between the key elements and concepts of IN'747 against the combination of all the prior arts cited by Lava. The said table is set out below:

Key Elements	**IN'747**	**Combined Prior Arts**	**Differences**
Error Handling	Selective division of blocks & adaptive retransmission with varied schemes	General error correction strategies	IN'747 introduces a dynamic approach to error handling not suggested by even the combination of all prior arts.
Modulation and FEC Schemes	Use of different schemes for retransmission	General or no specific mention of adaptive modulation/FEC schemes	IN'747 gives detailed application of modulation and FEC changes post-error detection is a novel element not even suggested by even the combination of all prior arts.
Implementation Strategy	Specific hardware setup for handling errors	Broad theoretical discussions or lack of hardware-specific strategies	IN'747 proposes a concrete, hardware-based solution for error correction, which is not present, even in the combination of all prior arts.

522. In light of the detailed comparison and the distinctive elements introduced by IN'747, there are no grounds to challenge the patentability of

IN’747 based on cited prior arts and IN’747 fulfils the criteria of novelty and inventive step. Further, in my considered view, even the amalgamation of the knowledge, suggestions and motivations of the combination of prior arts cited fails to present a convincing case that would negate the patentability of IN’747, in light of the unique method of handling transmission errors through selective division and adaptive modulation/FEC retransmission strategies.

523. Therefore, in light of the above analysis, compliance of IN’747 with the requirements of inventive step are met.

14.5. CONCLUSION

524. Consequently, as per Section 113 of the Patents Act, 1970, it is deemed appropriate to direct the issuance of a Certificate of Validity for the Complete Specification of IN’747.

15. INFRINGEMENT

Issue no.2: Whether the defendant is infringing the abovesaid suit patents?

Onus of proof on Ericsson

15.1. BACKGROUND

525. In the present suit, this issue is the fulcrum of the dispute between the parties. The question of infringement not only requires analysis of the legal boundaries accrued by the grant of the suit patents but also delves into the assessment of how and why the suit patents are infringed. The determination of infringement of the suit patents is a mixed question of fact and law, which

involves a multi-faceted approach requiring examination of the suit patents, an understanding of Lava's products and applying the governing legal principles. However, the crux of this issue lies in discerning whether Lava's products are violative of the exclusive rights conferred by the suit patents.

526. Ericsson has sought to prove infringement of the suit patents by Lava through a two-step test for infringement, which according to Ericsson is prevalent in SEP cases. Ericsson also relies on admissions made by Lava in its 'written statement and counter claim' and in the Noida Suit. Ericsson also claims that the arguments advanced during the stage of final arguments also point to several admissions, which are relevant for the adjudication of the present suits.

15.2. SUBMISSIONS ON BEHALF OF ERICSSON

527. Ericsson has made the following submissions in this regard:

I. In the correspondences exchanged between Lava and Ericsson, Lava admitted that it was satisfied with the technical information provided by Ericsson, which contained details relating to how Lava's devices were infringing the suit patents. Lava did not dispute the essentiality of Ericsson's SEPs including suit patents and the fact that Lava devices were standard compliant, including the optional standards like AMR and EDGE. Further, Ericsson asserts that Lava did not raise any counter arguments on merits.

II. Lava also did not dispute in its 'written statement and counter claim' that the devices tested by Ericsson used AMR technology in 2G and 3G mode or that the same were EDGE enabled, thereby admitting that

its devices are standard compliant in nature.

III. In paragraph 7 of the 'written statement and counter claim', Lava admitted that Ericsson's claim mapping charts provided one possible means to achieve the standard. This fact was also admitted by Lava in its final written note of arguments.

IV. It is sufficient to show that when a patent maps onto a concerned standard, it proves the essentiality of the patent. Reliance is placed on the claim mapping charts filed along with the affidavit of technical experts [**Exhibit PW-2/4, Exhibit PW-2/5, Exhibit PW-2/6, Exhibit PW-2/7, Exhibit PW-2/8, Exhibit PW-3/3, Exhibit PW-3/4** and **Exhibit PW-3/5**].

V. Lava did not provide details of any alternate technology being used by it to implement the standards, nor did it counter Ericsson's claim charts on merits or provide its own claim charts to rebut the claim charts provided by Ericsson. Therefore, Lava has admitted to the essentiality of Ericsson's patents. Reliance in this regard is placed on the judgment of the Division Bench of this Court in ***Intex Technologies (India) Ltd. v. TLM Ericsson (Publ)***[29].

VI. Lava's expert witness, G.S. Madhusudan (DW-1), only analysed the claim charts from the perspective of obviousness and no essentiality analysis was performed by him. Lava's other expert witness, Dr. V. Kamakoti (DW-2), also did not conduct essentiality analysis.

VII. As Ericsson was claiming essentiality to the portions of the standards, it duly performed testing of Lava's devices to show that the same use

[29] *Intex Technologies (India) Ltd. v. TLM Ericsson*, 2023 SCC OnLine Del 1845.

AMR Codecs in GSM Mode [**Exhibit PW-2/9A**], AMR Codec in 3G mode [**Exhibit PW-2/9B**] and also EDGE functionality in 2G mode [**Exhibit PW-3/7**].

VIII. Ericsson in its plaint has stated that its AMR patents in 2G mode and its EDGE patent correspond to the standards, which are adopted at the option of the implementer. However, once optional standards are adopted, an implementer has no option but to implement all patents corresponding to the said standards.

IX. For optional standards, the judgment of the US Court of Appeals in ***Fujitsu* v. *Netgear***[30], specifies that the infringement can be established by testing of the infringing device and showing conformance either directly with the claims of the patent or by even showing conformance with the relevant standard.

15.3. SUBMISSIONS ON BEHALF OF LAVA

528. On behalf of Lava, following submissions have been made:

I. Lava has not made any admissions with regard to essentiality of Ericsson's patents or infringement thereof. Therefore, it is wrong on the part of Ericsson to allege that Lava has made admissions with regard to essentiality or infringement of the suit patents.

II. The judgment of the Division Bench in ***Intex*** (supra) is not applicable to the facts of the present case as in the said case, Intex had made specific admissions while filing an application before the Competition Commission of India, which is not the case in the present suits.

[30] *Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321 (Fed. Cir. 2010).

III. Ericsson has failed to establish that the suit patents were incorporated into ETSI technical specifications, as required by the ETSI Policy. The detailed submissions made by Lava in this regard have been discussed later.

IV. No independent expert evidence has been led by Ericsson to establish that the suit patents are SEPs. Ericsson cannot submit only on the basis of the claim charts that the suit patents are SEPs. The claim charts filed by Ericsson are not sufficient as the same do not establish that no other patent maps onto the standard.

V. A large number of patents asserted to be SEPs by Ericsson do not have the corresponding 2G/3G declaration in the ETSI database. By failing to make requisite declaration in terms of the ETSI IPR Policy, Ericsson has waived its right to assert that the suit patents are SEPs. Hence, it cannot be said that Ericsson's patents are essential.

VI. Ericsson has failed to prove that the tested devices of Lava implement the ETSI technical specifications in relation to which the suit patents are claimed to be essential. The 'Test Reports' filed by Ericsson have no probative value.

529. Before delving into the substantive analysis of the patent infringement alleged by Ericsson, it is imperative to address the preliminary objections raised by Lava specifically regarding their declarations made by Ericsson to the ETSI in respect of essentiality of the suit patents. The examination of these preliminary objections is essential, as it sets the groundwork for understanding the context and applicability of the contentions made by both the parties in the ensuing infringement analysis.

530. Therefore, first, I propose to deal with the objections raised by Lava in respect of the declarations filed by Ericsson before ETSI.

15.4. WHETHER DECLARATIONS FILED BY ERICSSON BEFORE ETSI WERE PROPER.

15.4.1. ETSI IPR POLICY

531. The ETSI IPR Policy casts a duty upon the proprietor of the SEPs to make a declaration to an SSO such as ETSI, expressing its willingness to license its SEPs on fair, reasonable and non-discriminatory (hereinafter referred to as 'FRAND') terms. The purpose of the aforesaid declaration is to ensure that the patented technology, which according to the patentee is essential to the standard, is offered to all implementers on FRAND terms. The relevant clauses from the ETSI IPR Policy are set out below:

> "***4.1*** *Subject to Clause 4.2 below,* ***each MEMBER shall use its reasonable endeavours, in particular during the development of a STANDARD or TECHNICAL SPECIFICATION where it participates, to inform ETSI of ESSENTIAL IPRs in a timely fashion.*** *In particular, a MEMBER submitting a technical proposal for a STANDARD or TECHNICAL SPECIFICATION shall, on a bona fide basis, draw the attention of ETSI to any of that MEMBER's IPR which might be ESSENTIAL if that proposal is adopted.*
>
> ***4.2*** *The obligations pursuant to Clause 4.1 above do however not imply any obligation on MEMBERS to conduct IPR searches.*
>
> ***4.3 The obligations pursuant to Clause 4.1 above are deemed to be fulfilled in respect of all existing and future members of a PATENT FAMILY if ETSI has been informed of a member of this PATENT FAMILY in a timely fashion. Information on other members of this PATENT FAMILY, if any, may be voluntarily provided.***
>
> *xxx* *xxx* *xxx*
>
> ***6.1*** *When an ESSENTIAL IPR relating to a particular STANDARD or*

TECHNICAL SPECIFICATION is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory ("FRAND") terms and conditions under such IPR to at least the following extent:

- MANUFACTURE, including the right to make or have made customized components and sub-systems to the licensee's own design for use in MANUFACTURE;

- sell, lease, or otherwise dispose of EQUIPMENT so MANUFACUTRED;

- repair, use, or operate EQUIPMENT; and

- use METHODS.

The above undertaking may be made subject to the condition that those who seek licenses agree to reciprocate.

6.2 An undertaking pursuant to Clause 6.1 with regard to a specified member of a PATENT FAMILY shall apply to all existing and future ESSENTIAL IPRs of that PATENT FAMILY unless there is an explicit written exclusion of specified IPRs at the time the undertaking is made. The extent of any such exclusion shall be limited to those explicitly specified IPRs.

6 bis Use of the IPR Licensing Declaration Forms

MEMBERS shall use one of the ETSI IPR Licensing Declaration forms at the Appendix to this ETSI IPR Policy to make their IPR licensing declarations."

(Emphasis supplied)

532. The ETSI Guide on IPRs for implementation of the ETSI IPR Policy, defines the terms used in the ETSI IPR Policy. The relevant clauses of the ETSI Guide on IPRs are set out below:

"***2.1 <u>Members Duties</u>***

2.1.1 Responding to Calls for IPRs performed in Technical Body meetings

……

Members are encouraged to make general IPR undertakings/licensing declarations that they will make licenses available for all their IPRs under FRAND terms and conditions related to a specific standardization area and then, as soon as feasible, provide (or refine) detailed disclosures. *This process reduces the risk of the standards making process being blocked due to IPR constraints.*

……

2.1.3 Use the ETSI IPR Licensing Declaration forms

The ETSI IPR Licensing Declaration forms consist of the (i) the IPR information statement and licensing declaration form, including its annexes, and (ii) the General IPR licensing declaration form*:*

- The IPR information statement and licensing declaration shall be submitted with the IPR information statement annex and, where applicable, together with the IPR licensing declaration annex to identify the specific IPRs which are applicable.

- The General IPR licensing declaration shall be used to give an undertaking to grant licenses under any IPR that are ***or become essential in respect of the identified STANDARD(S), TECHNICAL SPECIFICATION(S), or ETSI Project(s).*** *It is submitted without the IPR information statement Annex but, in accordance with Clause 4.1 of the ETSI IPR Policy, members should provide updates in a timely fashion via the IPR information statement and licensing declaration and the IPR information statement Annex.*"

(Emphasis supplied)

533. The ETSI IPR Policy provides that the ETSI IPR Licensing Form given in the appendix to the Policy shall be used for filing of declarations by the patent owner.

15.4.2. SUBMISSIONS ON BEHALF OF LAVA

534. It is submitted on behalf of Lava that Ericsson failed to make declarations as per the ETSI IPR Policy in respect of its SEPs. In this regard

Lava has made the following submissions:

I. Out of the SEPs claimed by Ericsson to be standard-essential, a large number of patents do not have corresponding 2G/3G declarations in the ETSI database.

II. In the General Declarations filed by Ericsson, no details regarding any suit patents or technical specifications required by the ETSI IPR Policy were provided by Ericsson.

III. Specific Declarations, known as IPR Information Statement and Licensing Declaration (hereinafter referred to as 'ISLD'), filed by Ericsson are either improper or incomplete. Therefore, Ericsson has failed to establish essentiality of the suit patents.

IV. Ericsson has not filed the ISLDs in a timely manner as they were filed after finalization and publication of the relevant ETSI standards.

V. The declarations filed by Ericsson in the present proceedings are not admissible as the same were filed without the leave of the court.

15.4.3. SUBMISSIONS ON BEHALF OF ERICSSON

535. *Per contra,* Ericsson has made the following submissions:

I. It is Lava's own case that mere filing of declarations with the ETSI is not enough to make the patent essential. However, during final arguments, Lava argued that the declarations are an imperative arm of the essentiality analysis and therefore, Lava ought not to be permitted to approbate and reprobate at the same time.

II. Ericsson had duly filed General Declarations during development of the concerned standard. As per the format provided for General

Declaration in the ETSI IPR Policy, a member is not required to provide any patent application details or details of technical specifications. A member is free to declare either at the project level or standard level or technical specification level or for all applicable standards, without giving any details.

III. As per the format provided for filing of ISLD in the ETSI IPR Policy, a member is required to provide details for one member of the family, which is applicable to all other members.

IV. ETSI does not have any strict timeline requirements as long as members are committing to licensing on FRAND terms. Reliance in this regard is placed on the judgment of the Patents Court of England and Wales in ***Optis Cellular Technology LLC & Ors.* v. *Apple Retail UK Limited***[31].

V. ISLDs are not additional documents as they were filed along with the plaint and in fact, Lava has conducted admission and denial in respect of the said documents. Therefore, Lava cannot raise objections regarding admissibility of the ISLDs.

VI. Sunil Bhalla (DW-3) had himself relied on the screenshots from the ETSI website showing General Declarations filed by Ericsson (**Mark Q4**) in his cross-examination.

VII. Both General Declarations (**Mark Q4**) and ISLDs [**Exhibit PW-1/9 (Colly)**] are publicly available documents, the existence and contents of which cannot be denied. Reliance in this regard is placed on the judgment in ***Burger King Corporation* v. *Techchand Shewakramani***

[31] *Optis Cellular Technology LLC & Ors. v. Apple Retail UK Limited*, [2021] EWHC 1739 (Pat).

& Ors.[32].

15.4.4. LEGAL POSITION: NATURE OF DECLARATIONS

536. A reading of the ETSI IPR Policy discloses that the purpose and intent in seeking such declarations is to ensure that the patent owners agree to be bound by the FRAND commitment, i.e., to offer a license for its SEPs on FRAND terms to any third party who seeks such license. The object being that a party should not hold or prevent dissemination of the essential technology necessarily required for maintaining inter-operability.

537. The Division Bench of this Court in ***Intex* v. *Ericsson*** (supra) has also observed that the SEP owner's contractual commitment emanates from the voluntary declarations made to an SSO at the time of development of the concerned standard. The SSO's main objective is to ensure that a patent owner is adequately rewarded at FRAND rates for its contribution/innovation while ensuring that the latest state of the art technology is available to the implementers world over. The relevant observations from the judgement in ***Intex* v. *Ericsson*** (supra) are set out below:

> "***56.*** *Any product claiming to be compliant with the technology prescribed under a standard would necessarily incorporate all elements of it, including the patented part of the standard. Accordingly, concerns regarding standards being held to ransom by an individual patent owner were addressed by developing the concept of FRAND commitment, which is made by a patentee by way of a voluntary declaration. Thus, Standard Essential Patent owner's contractual commitment emanates from the voluntary declarations (known as FRAND declarations) made to an SSO/SDO at the time of development of the concerned standard ...*

[32] *Burger King Corporation v. Techchand Shewakramani & Ors.*, 2018 SCC OnLine Del 10881.

> ***57.*** *If a patentee refuses to provide such voluntary declarations, the SSOs/SDOs take conscious steps to exclude such technology from the standard.*
>
> *xxx* *xxx* *xxx*
>
> ***59.*** *Accordingly, the* ***SSO's main objective is to ensure that a patent owner is adequately rewarded at FRAND rates for its contribution/innovation while ensuring that the latest state of the art technology is available to the implementers world over irrespective of the fact that such implementers are not involved in research and development at all.***"
>
> *(Emphasis supplied)*

538. Lava in its '*written statement and counter claim*' has stated that the patents cannot be regarded as essential by mere filing of declaration by a patentee with the SSO. It is trite that the essentiality has to be independently proved through claim charts showing how claims of the asserted patents map onto the standards. Therefore, the submission made by Lava at the time of final arguments that the suit patents cannot be taken to be essential on account of deficiencies in the declarations or on account of delay in filing declarations, is contradictory to its earlier stand taken in the '*written statement and counter claim*' and is otherwise also, untenable.

539. Nevertheless, I proceed to deal with the submission of Lava with regard to deficiency/delay in filing declaration forms by Ericsson.

15.4.5. ADMISSIBILITY OF ETSI DECLARATIONS FILED BY ERICSSON

540. The General Declarations were filed by Ericsson before ETSI on (i) 13th December, 1996 in respect of GPRS, (ii) 3rd December, 1997 in respect of UMTS and (iii) 27th May, 1998 in respect of GSM and UMTS, while the said standards were being developed.

541. In respect of each of its SEPs including the suit patents, Ericsson has

also filed ISLDs before ETSI identifying the patents and the standards to which they are essential. The aforesaid declarations contain FRAND commitment given by Ericsson in respect of all its SEPs relating to 2G and 3G technology, which include eight suit patents.

542. Lava has objected to the admissibility of the General Declarations and ISLD (Specific Declarations) being taken on record on the ground that they were filed in these proceedings without the leave of the court.

543. In this regard, it is relevant to note that during cross-examination, Sunil Bhalla (DW-3) was duly confronted with the General Declarations and the same were marked as **Mark Q4**. Sunil Bhalla did not deny their existence. It cannot be disputed that in terms of Order VII Rule 14 of the CPC, a document can be produced during cross-examination by confronting the witness with the said document.[33] In fact, he stated that he did not deliberately consider the General Declarations in view of the ISLDs filed by Ericsson. Further, he himself referred to the contents of the General Declarations filed by Ericsson in his cross-examination.

544. The relevant extracts from the cross-examination of Sunil Bhalla (DW-3) are set out below:

> "***Q.123. Please see the general declarations filed by Ericsson for GSM, GPRS and UMTS, which you also mention in paragraph 35 (v)****. I put it to you that the Plaintiff has made a FRAND commitment for all its patents essential to GSM, GPRS and UMTS to license these patents on FRAND terms? (**The documents are collectively marked as Mark Q4**.)*

[33] **Order VII**
Plaint
[14. Production of document on which plaintiff sues or relies. —
(3) A document which ought to be produced in Court by the plaintiff when the plaint is presented, or to be entered in the list to be added or annexed to the plaint but is not produced or entered accordingly, shall not, without the leave of the Court, be received in evidence on his behalf at the hearing of the suit.
(4) Nothing in this rule shall apply to document produced for the cross-examination of the plaintiffs witnesses, or handed over to a witness merely to refresh his memory.

A. *Patents are required to be declared as essential to a standard and not just to a project like GSM, GPRS etc. The same has been elaborated by me in paragraph 35(v) of my affidavit.*

Q.124. *You claim to have downloaded Qualcomm's declarations as Exhibit DW-3/4 with your affidavit. Did you not see Ericsson's general declarations either during the process of negotiations or prior to the filing of this affidavit while researching on ETSI's website?*

A. ***To my understanding once the standards are made patent holders file ISLD (Information Statement and Licensing Declaration) to specify which standards their patents are essential to. General declarations are filed before the formulation of the standard. We have not seen Ericsson's general declarations for this reason.***"
(Emphasis supplied)

545. Therefore, in my considered view, the objection taken by Lava as to the admissibility of the General Declarations is unfounded.

546. As regards the ISLDs (Specific Declarations), the same were duly filed by Ericsson along with the plaint on 19th March, 2015. The admission and denial of the said documents was conducted by Lava on 15th January, 2016, wherein Lava denied their existence. Accordingly, the same were exhibited by John Han (PW-1) as **Exhibit PW-1/9 (colly)**.

547. This Court in ***Burger King*** (supra) held that the publicly available documents ought not to be permitted to be denied. The relevant observations are set out below:

"*32. A large number of documents belonging to the parties have been denied indiscriminately.* ***Documents which are available publicly and are verifiable such as trademark certificates, copyright certificates from India and other countries, as also documents issued by governmental authorities ought not to be permitted to be denied. Such denials are completely bereft of merit and tend to prolong the trial in a suit****. The purpose of admission/denial is to deny only those documents whose existence, genuinity or authenticity is disputed and not to merely harass the opposite side into proving each and every document with certified*

> *copies/original.* ***Especially in commercial matters, the process of admission/denial deserves to be cut short where the dispute between the parties is very narrow. Documents such as e-mail correspondences, legal notices, replies, internet printouts, etc. ought not to be permitted to be denied. The practice adopted by parties to deny in general all the documents of the opposite side has been the bane of adjudication of civil suits.*** *It is with this purpose that the provisions of the Commercial Courts Act as also the recent amendments by the Delhi High Court in the Original Sides Rules has been carried out. Admission/denial affidavits ought to be fair, bona fide and not with an intention to prolong trials. Keeping these provisions in mind, parties are given another opportunity to file their affidavits of admission/denial so that triable issues can be easily identified and struck. Any unjustified denial would be liable to be dealt with as per the provisions of the Commercial Courts Act and Delhi High Court (Original Side) Rules, 2018.*"
>
> *(Emphasis supplied)*

548. Therefore, Lava cannot be permitted to deny the General Declarations as well as the ISLDs filed by Ericsson, being publicly available documents on the ETSI website. Consequently, I do not find merit in the submission of Lava that the General Declarations and ISLDs are inadmissible in evidence.

15.4.6. LEGAL POSITION: TIME LINE FOR DECLARATIONS

549. The High Court of England and Wales in ***Optis*** (supra) has held that IPR declarations to ETSI can be made either in respect of the specified patents or patent families or by a general licensing declaration for a specific standard or for all ETSI standards. It was also observed that there is no definite time limit provided in ETSI IPR Policy for filing of declaration if the members commit to licensing essential IPRs on FRAND terms. The relevant observations are set out below:

> "*437.* ***IPR declarations to ETSI could be made either in respect of specified patents or patent families, or by a general licensing declaration with respect to one or more specific standards or technical specifications, or even for all ETSI standards or technical specifications.***

438. ***Until April 2002 it was compulsory to declare on paper. In April 2002 ETSI provided an 'IPR Statement and Licensing Declaration' form ('ISLD' form), but it was not obligatory until November 2008****.*

440. Many of the fields on the ISLD and online form were not mandatory. A lot of the detail does not matter, but it is relevant for me to have in mind how often the 'illustrative specific part' field was completed, because that information was part of what Mr Rodermund said could be used to match a TDoc to a patent application if someone wanted to do that. Mr Carpenter's analysis was that it was only in about 20% of cases that the field was completed.

517. In my view, the historical context and development of the ETSI IPR Policy, taken with the behaviour of declarants, is very important. They show a move away from the relatively hard edged rule in the 1993 Interim IPR Policy to a more flexible standard in the 1994 Interim IPR Policy, as reviewed in 2005.

518. In 2005, ETSI gave thought to the specific obligation I am now considering, and declined to make the full changes sought by DG Comp; but it did make some change. ***At the time and for some years before, the vast majority of declarations had been after the freeze date. But ETSI clearly did not regard that as a problem in itself, as long as there was a functioning mechanism for making sure FRAND declarations were given and respected.***

522. A further important factor, clear from the historical development and surrounding discussions, is ETSI's general policy goals in relation to clause 4.1. ***Its recognition that "late" declaration was not a problem so long as the FRAND regime worked militates against a hard-edged requirement of the kind that Apple asserts, and the goal of declarations being made for the purposes of licensing negotiations, which clearly was important, also did not require a hard-edged rule.***

524. ***Optis also relied on the fact that many declarants made their declarations in batches, from time to time. I think this is also a factor, but a minor one. It was really for their own convenience. But it was a known approach, not objected to by ETSI, and that supports its reasonableness.***

527. ***I reject Apple's contentions as to the meaning of Clause 4.1, and therefore its case that Ericsson was in breach, which depended on there***

being a definite time limit for each sentence of the Clause. I have also rejected Apple's approach to Clause 4.1 generally."

(Emphasis supplied)

550. I am in respectful agreement with the aforesaid view taken in ***Optis*** (supra) that the delay in filing the declaration ought not be regarded as a problem as long as SEP owners are declaring that the essential IPRs will be licensed on FRAND terms. This is in consonance with the view that I have taken above that the real purpose of the declarations is to grant license on FRAND terms and not to establish essentiality of the patents.

15.4.7. EVIDENCE LED BY THE PARTIES

551. Sunil Bhalla (DW-3) has deposed in his affidavit that the declarations filed by Ericsson before ETSI are insufficient as they do not identify either the technical specification or the relevant standard. The relevant extracts from his affidavit are set out below:

"*39. I say that under my instruction and supervision my team researched the ETSI website and database to assess the declarations made by Plaintiff to ETSI, a representation to which effect was made by the Plaintiff in its Plaint.* ***On accessing the records as available on ETSI website, the Defendant found that the Plaintiff had not identified either the Technical Specification or Standard, lest identifying the relevant part of the standard for which the IPR was claimed and declared as essential vide the ISLD declaration forms filed by the Plaintiff. The Defendant was therefore surprised to find that the ETSI declarations filed by the Plaintiff along with the suit were improper and incomplete and did not mention the ETSI Standards referred in the table in the plaint at page 24 to 28****.*

xxx *xxx* *xxx*

*41. I also say that from a perusal of Screenshots from ETSI website placed on record by the Plaintiff along with its Replication-cum-Written Statement, that while searching the ETSI database****, the terms 'GSM', 'UMTS' and 'GPRS' are entered into in the form field having name 'ETSI Projects' and not 'ETSI Work Item/Technical Specification/ Standard', which were left blank by the Plaintiff.***"

(Emphasis supplied)

552. *Per contra,* John Han (PW-1) has questioned Lava's understanding of the terms 'standard name', 'standard number' and 'technical specification'. He has deposed that Ericsson has declared suit patents to the concerned standards and that the nomenclature of a standard reflects the technology covered by it. The extract from his affidavit is set out below:

> "*30.* ***Ericsson has declared the suit patents to the concerned standards and Lava, while challenging Ericsson's declarations, is confusing between "standard name", "standard number" and "technical specification".*** *Further, ETSI requires patent owners to make such declarations so as to commit to license their declared patents consistent with Section 6.1 of the ETSI IPR Policy. Further, such declarations indicate the belief of a patent owner that the concerned patent is, or may become, essential for a particular standard.* ***A standard is named after the technology it defines, as a result, UMTS standard relates to 3G technology and EDGE standard relates to EDGE technology. Exemplary declarations indicating the above as downloaded by me from ETSI website are being exhibited herewith as EXHIBIT PW1/l0 (colly).*** *The fact that Ericsson has licensed these patents to a large number of entities is evidence of the strength of the SEP portfolio of Ericsson."*
>
> *(Emphasis supplied)*

553. John Han (PW-1) was specifically cross-examined on this aspect. The relevant extracts from his cross-examination are set out below:

> "***Q.238.*** *Any alleged patent holder undertakes to ETSI that it shall give license of the said alleged patent on FRAND terms. Is this correct?*
>
> ***A.*** *A patent holder who believes it has or may have standard essential patents may choose to make FRAND undertaking. Such FRAND undertaking makes a commitment that the patent holder is willing to license out its patents under Fair, Reasonable and Non-Discriminatory terms.* ***As I testified last week there are various ways of making this FRAND commitment. One can declare at the standard level (such as GSM), project level and at a working group level. Also since ETSI recommends blanket declarations, companies such as Ericsson have made blanket declarations***

stating it will license out any and all GSM, GPRS, EDGE and WCDMA patents on FRAND terms.

Q.245. *It would also be correct to say that an alleged patent holder is required to make FRAND declaration with respect to one or more standards covered by the said project?*

A. ***The purpose of a FRAND declaration is to ensure access to the standardized technology by implementers under FRAND terms. Accordingly, because there are many standards which has many projects and many working groups, ETSI again encourages blanket declarations to avoid the need for each and every individual declaration. Accordingly, if a company like Ericsson has made blanket declaration, it has met its FRAND declaration requirements.***

Q.347. *The ETSI policy contemplates two kinds of declarations, one is general declaration and another one post the standard being published by ETSI. The alleged patent holder who claims that his patent is essential makes a declaration in reference to the standard so published with its IPR statement annexed thereto. Is this correct?*

A. *No, I believe some clarifications are needed. It is true a company can make a general declaration and ETSI encourages it.* ***With respect to individual declaration there is a form that ETSI recommends for such declarations and that form allows a patent holder to declare a patent or patent application that the patent holder believes essential or may become essential to a standard or to a project or to a particular section or part of a standard.*** *Because patent application takes few years to get granted, I do not agree that there is a particular timing associated with such disclosure obligations.*

Q.348. *The 11 standards mentioned at pages 24 to 28 of the plaint were already published by ETSI when the declarations are claimed to have been filed by the Plaintiff?*

A. *No, I disagree. If you search the ETSI website it is very clear Ericsson has made a blanket general declaration in December of 1996, December of 1997 and May of 1998 with respect to GSM, GPRS, WCDMA etc. Accordingly, even though there is no timing requirement, in order to assure the technology implementers,* ***Ericsson has undertaken general FRAND commitment with***

respect to any and all 2G and 3G standard essential patents (SEPs) which obviously includes the 8 patents in suit."
(Emphasis supplied)

15.4.8. ANALYSIS AND FINDINGS

554. I have carefully analysed the evidence led on behalf of the parties and I am of the view that the declarations can be made either in respect of a project or a standard or technical specification. There is no mandatory requirement to make a declaration in relation to a specific ETSI standard or a technical specification or for all applicable standards. In the present case, Ericsson made declarations before ETSI at the 'project level', which include GSM/UMTS projects. Moreover, as per clause 6.2 of the ETSI IPR policy, the parties are required to make a declaration only with respect to one member of the patent family, which shall then be applicable to the entire family.

555. Illustratively, one ISLD submitted by Ericsson to the ETSI in respect of each of the standards asserted by Ericsson in the present suit is extracted with the relevant information, including the specific ETSI Standard Development Project and patents highlighted.

EUROPEAN TELECOMMUNICATION STANDARDS INSTITUTE

ANNEX 1

IPR INFORMATION STATEMENT AND LICENSING DECLARATION

IPR Holder/Organisation

Legal Name: Telefonaktiebolaget LM Ericsson

Reçu le 25 FEV. 2002

Signatory

Name: Björn Troili

Position: Corporate Director Regulations

Department: Corporate Public and Regulatory Affairs

Address: Telefonvägen 30

126 25 Stockholm, Sweden

Tel.: +46 8 7190906

Fax: +46 8 71 93242

E-mail: Bjorn.Troili@lme.ericsson.se

IPR information statement

In accordance with the ETSI IPR Policy, Article 4.1, I hereby inform ETSI that,

with reference to ETSI GSM Standards

it is my belief that the IPRs listed in Annex 2 are, or are likely to become, Essential IPRs in relation to those Standards.

IPR licensing declaration

The SIGNATORY has notified ETSI that it is the proprietor of the IPRs listed in Annex 2 and has informed ETSI that it believes that the IPRs may be considered ESSENTIAL to the Standards listed above.

The SIGNATORY and/or its AFFILIATES hereby declare that they are prepared to grant irrevocable licenses under the IPRs on terms and conditions which are in accordance with Clause 6.1 of the ETSI IPR Policy, in respect of the STANDARD, to the extent that the IPRs remain ESSENTIAL.

The construction, validity and performance of this DECLARATION shall be governed by the laws of France.

Place, Date:

Stockholm, 2002-02-22

Signature:

Björn Troili

(Signed for and on behalf of the SIGNATORY)

Please return this form duly signed to:
ETSI Director General - Karl Heinz Rosenbrock

ETSI - 650, route des Lucioles - F-06921 Sophia Antipolis Cedex - FRANCE
Fax. +33 (0) 4 93 65 47 16

ETSI

EUROPEAN TELECOMMUNICATION STANDARDS INSTITUTE

ANNEX 2

Project (e. g. GSM, DECT...)	Company	Patent title	Country of registration	ETSI Standard No. (e.g. TS XXX XXX V0.0.0)	Application No.	Patent No.	Countries applicable
GSM	Ericsson	An adaptive criterion for speech coding	AR		990104361		
GSM	Ericsson	An adaptive criterion for speech coding	AU		PCT/SE99/01350		
GSM	Ericsson	An adaptive criterion for speech coding	BR		PI9913292/3		
GSM	Ericsson	An adaptive criterion for speech coding	CA		2342353		
GSM	Ericsson	An adaptive criterion for speech coding	CN		99812785/X		
GSM	Ericsson	An adaptive criterion for speech coding	EP		1114414		DE, FI, FR, GB, IT
GSM	Ericsson	An adaptive criterion for speech coding	JP		2000/568079		
GSM	Ericsson	An adaptive criterion for speech coding	KR		10/2001/7002609		
GSM	Ericsson	An adaptive criterion for speech coding	MX		PCT/SE99/01350		
GSM	Ericsson	An adaptive criterion for speech coding	MY		9903552		
GSM	Ericsson	An adaptive criterion for speech coding	RU		2001108584		
GSM	Ericsson	An adaptive criterion for speech coding	SG		200101215/2		
GSM	Ericsson	An adaptive criterion for speech coding	TW		88113965		
GSM	Ericsson	An adaptive criterion for speech coding	US			6192335	
GSM	Ericsson	An adaptive criterion for speech coding	ZA		20011666		
GSM	Ericsson	A Method for Achieving Optimal	US			5757813	

Please return this form duly signed to: ETSI Director General - Karl Heinz Rosenbrock

ETSI - 650, route des Lucioles - F-06921 Sophia Antipolis Cedex - France / Fax. +33 (0)4 93 65 47 16

EUROPEAN TELECOMMUNICATION STANDARDS INSTITUTE

ANNEX 1

IPR INFORMATION STATEMENT AND LICENSING DECLARATION

IPR Holder/Organisation

Legal Name: Telefonaktiebolaget LM Ericsson

Signatory

Name: Björn Troili

Position: Corporate Director Regulations

Department: Corporate Public and Regulatory Affairs

Address: Telefonvägen 30
126 25 Stockholm, Sweden

Tel.: +46 8 7190906

Fax: +46 8 71 93242

E-mail: Bjorn.Troili@lme.ericsson.se

IPR information statement

In accordance with the ETSI IPR Policy, Article 4.1, I hereby inform ETSI that,

with reference to ETSI UMTS Standards

it is my belief that the IPRs listed in Annex 2 are, or are likely to become, Essential IPRs in relation to those Standards.

IPR licensing declaration

The SIGNATORY has notified ETSI that it is the proprietor of the IPRs listed in Annex 2 and has informed ETSI that it believes that the IPRs may be considered ESSENTIAL to the Standards listed above.

The SIGNATORY and/or its AFFILIATES hereby declare that they are prepared to grant irrevocable licenses under the IPRs on terms and conditions which are in accordance with Clause 6.1 of the ETSI IPR Policy, in respect of the STANDARD, to the extent that the IPRs remain ESSENTIAL.

The construction, validity and performance of this DECLARATION shall be governed by the laws of France.

Place, Date:

Stockholm, 2002-05-24

Signature:

Björn Troili

(Signed for and on behalf of the SIGNATORY)

Please return this form duly signed to:
ETSI Director General - Karl Heinz Rosenbrock

ETSI - 650, route des Lucioles - F-06921 Sophia Antipolis Cedex - FRANCE
Fax. +33 (0) 4 93 65 47 16

Project	Company	Patent title	Country of registration	Application no.	Patent no.	Countries applicable
						Taiwan / United Kingdom / United States
UMTS	Ericsson	Channelization code allocation for radio communication system	US	WO 99/03224	US-6108369	Argentina / Australia / Brazil / Canada / China / Finland / France / Germany / India / Italy / Japan / Korea / Malaysia / Mexico / Philippines / Russian Federation / Singapore / South Africa / Taiwan / Thailand / United Kingdom / United States
UMTS	Ericsson	Low-delay rate detection for variable rate communication systems	US	WO 99/03225	US-6222875	Australia / Brazil / Canada / China / Finland / France / Germany / Italy / Japan / Korea / Malaysia / Mexico / Russian Federation / Singapore / Taiwan / Thailand / United Kingdom / United States
UMTS	Ericsson	Packet data communications scheduling in a spread spectrum communication system	US	WO 99/13600	US-6236646	Argentina / Australia / Brazil / Canada / France / Germany / India / Japan / Malaysia / Mexico / South Africa / Taiwan / United Kingdom / United States
UMTS	Ericsson	Multi-service handling by a single mobile station	US	WO 99/16264	US-6363058	Argentina / Australia / Canada / China / Germany / India / Italy / Japan / Korea / Malaysia / South Africa / Taiwan / United Kingdom / United States
UMTS	Ericsson	System and method for mobile assisted admission control	US	WO 99/17582	US-6028851	Australia / Brazil / Canada / China / Finland / France / Germany / India / Italy / Japan / Korea / Mexico / Russian Federation / Singapore / South Africa / United Kingdom / United States
UMTS	Ericsson	Multistage diversity handling for CDMA mobile telecommunications	US	WO 99/27740	US-6246878	Argentina / Australia / Brazil / Canada / China / Finland / France / Germany / Italy / Japan / Korea / Mexico / Russian Federation / Singapore / Sweden / Taiwan / United Kingdom / United States
UMTS	Ericsson	Efficient transport of internet protocol packets using asynchronous transfer mode adaptation layer two	US	WO 99/16284	US-6041054	Australia / Brazil / Canada / China / Finland / France / Germany / Italy / Japan / Korea / Mexico / Russian Federation / Singapore / Sweden / United Kingdom / United States
UMTS	Ericsson	Modified downlink power control during	US	WO 98/56200	US-6085108	Argentina / Australia / Brazil / Canada /

Please return this form duly signed to: ETSI Director General - Karl Heinz Rosenbrock

ETSI - 650, route des Lucioles - F-06921 Sophia Antipolis Cedex – France / Fax. +33 (0) 4 93 65 47 16

EUROPEAN TELECOMMUNICATION STANDARDS INSTITUTE

ANNEX 1

IPR INFORMATION STATEMENT AND LICENSING DECLARATION

IPR Holder/Organisation

Legal Name: Telefonaktiebolaget LM Ericsson

Signatory

Name: Jonas Sundborg
Position: Manager of Standardization and Regulation
Department: Standardization and Regulation
Address: Kistavägen 25
164 80 Stockholm, Sweden
Tel.: +46 8 40 48035
Fax: +46 8 508 77300
E-mail: jonas.sundborg@ericsson.com

IPR information statement

In accordance with the ETSI IPR Policy, Article 4.1, I hereby inform ETSI that,

with reference to ETSI GPRS Standards

it is my belief that the IPRs listed in Annex 2 are, or are likely to become, Essential IPRs in relation to those Standards.

IPR licensing declaration

The SIGNATORY has notified ETSI that it is the proprietor of the IPRs listed in Annex 2 and has informed ETSI that it believes that the IPRs may be considered ESSENTIAL to the Standards listed above.

The SIGNATORY and/or its AFFILIATES hereby declare that they are prepared to grant irrevocable licenses under the IPRs on terms and conditions which are in accordance with Clause 6.1 of the ETSI IPR Policy, in respect of the STANDARD, to the extent that the IPRs remain ESSENTIAL.

The construction, validity and performance of this DECLARATION shall be governed by the laws of France.

Place, Date:

Stockholm, 2004-07-16

Signature:

Jonas Sundborg

(Signed for and on behalf of the SIGNATORY)

EUROPEAN TELECOMMUNICATION STANDARDS INSTITUTE

Project	Company	Patent title	Country of registration	ETSI Standard Nos. (e.g. TS XXX XXX V0.0.0)	Application No.	Patent No.	Countries applicable
		with reselection of FEC coding and/or modulation				X	
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	EP		98941974.2		DE, ES, GB, IT
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	HK		01104151/6		
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	IN		2490/Del/98		
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	KR		10-2000-7002137		
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	MX		2000002093		
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	MY		9803831		
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	TH		045746		
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	TW		87113526	115401	
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	US		08/921147	6208663	
GPRS	Ericsson	Method and system for block ARQ with reselection of FEC coding and/or modulation	WO		PCT/SE98/01516		
GPRS	Ericsson	Arrangement, a system and a method relating to a packet data communication	AU		28643/99	756339	

Please return this form duly signed to: ETSI Director General - Karl Heinz Rosenbrock

ETSI - 650, route des Lucioles - F-06921 Sophia Antipolis Cedex – France / Fax. +33 (0) 4 93 65 47 16

556. The information given in the aforesaid ISLDs aligns with the ETSI's flexible framework for declarations, allowing for a focus on projects or specific standards. The extraction of such ISLDs underlines Ericsson's compliance with requirements of the ETSI's IPR policy and provides clarity on the connection between the declared patents and the relevant GSM/UMTS projects or specific standards.

557. Consequently, these declarations can be regarded as adhering to the fundamental stipulations of the ETSI IPR Policy.

558. It is important to note that the issues pertaining to the timing of filing the declarations or the details regarding technical specifications in the

declarations, primarily concerns the relationship between Ericsson and ETSI, which is contractual in nature. As such, the locus of Lava to object to these aspects of the declarations is very limited at best. It is for ETSI to object if the declarations are deficient or do not have the requisite amount of details or have been filed in a belated manner.

15.4.9. IMPLIED WAIVER

559. Next, Lava has argued that since the declarations were delayed and insufficient, Ericsson has waived its right to assert the suit patents as SEPs. In this regard, Lava has placed reliance on the judgment of the United States Court of Appeals in ***Core Wireless Licensing SARL* v. *Apple Inc***[34]**.** and the judgment of US District Court in ***Conversant Wireless Licensing SARL* v. *Apple Inc***.[35], to submit that the failure to duly disclose essential IPR amounts to implied waiver of the patentee to assert its patents as SEPs.

560. At the outset, it is relevant to note that 'unenforceability' on account of implied waiver, is recognized as a statutory defence under the US patent laws. The (Indian) Patents Act does not recognize unenforceability as a defence. Therefore, the judgments relied upon by Lava would have limited application in the present case.

561. In any event, in ***Core Wireless*** (supra), the US Court of Appeals rejected defendant's (Apple) argument that the patent was unenforceable because of implied waiver. It was observed that since the implied waiver would render an entire patent unenforceable, the doctrine of implied waiver, like the doctrine of inequitable conduct, should only be applied in cases

[34] *Core Wireless Licensing SARL v. Apple Inc.*, 899 F.3d 1356 (Fed. Cir. 2018)
[35] *Conversant Wireless Licensing SARL* v. *Apple Inc*.,No. 15-cv-05008-NC, 2019

where the patentee's misconduct results in an unfair benefit. In ***Conversant Wireless*** (supra), the US District Court followed the judgment in ***Core Wireless*** (supra) to hold that the defendant would have to show that the plaintiff's conduct was sufficiently egregious to justify a finding of implied waiver.

562. Nothing has been placed on record by Lava to show that Ericsson obtained any unfair benefit on account of delay in filing the declarations before ETSI. Lava has only raised an unsubstantiated challenge of implied waiver, without adequately pleading the essential components of implied waiver. Therefore, Lava has failed to make out a case for implied waiver.

15.5. ESSENTIALITY OF THE SUIT PATENTS

15.5.1. RELEVANT CLAUSES OF THE ETSI IPR POLICY

563. Based on the rival submissions, it would have to be determined whether the suit patents qualify as being SEPs in terms of the ETSI IPR Policy. In this regard, a reference may be made to the relevant provisions of the ETSI IPR Policy [**Exhibit D-11**]. The term 'essential' has been defined in Article 15(6) of the ETSI IPR Policy, which is set out below:

> "***ESSENTIAL" as applied to IPR means that it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, to make, sell, lease, otherwise dispose of, repair, use or operate EQUIPMENT or METHODS which comply with a STANDARD without infringing that IPR.*** *For the avoidance of doubt in exceptional cases where a STANDARD can only be implemented by technical solutions, all of which are infringements of IPRs, all such IPRs shall be considered ESSENTIAL.*"
>
> *(Emphasis supplied)*

564. The term 'standard' has been defined in Article 15(11) of the aforesaid ETSI IPR Policy, which is set out below:

> "***STANDARD"*** *shall mean any standard adopted by ETSI including options therein or amended versions and shall include European Standards (ENs), ETSI Standards (ESs), Common Technical Regulations (CTRs) which are taken from Ens and including drafts of any of the foregoing, and documents made under the previous nomenclature, including ETSs, I-ETSs, parts of NETs and TBRs, the technical specifications of which are available to all MEMBERS, but not including any standards, or parts thereof, not made by ETSI.*
> *The date on which a STANDARD Is considered to be adopted by ETSI for the purposes of this POLICY shall be the date on which the technical content of that STANDARD was available to all MEMBERS.*"

15.5.2. JUDICIAL PRECEDENTS

565. The aforesaid clauses of the ETSI IPR Policy were also the subject matter of consideration before the Division Bench of this Court in ***Intex* v. *Ericsson*** (supra) and the relevant observations of the Division Bench are set out below:

> "*60. Keeping in view the aforesaid as well as the fact that TRAI has directed telecommunication companies to comply with ETSI standards, this Court is of the view that* ***the term 'Essential' in the facts of the present case means that a patent is essential to a standard i.e. it is not possible on technical grounds to comply with the standard without infringing the patent.*** *This Court is of the opinion that this simple definition is adequate in many circumstances like the present one but not all. Consequently,* ***a Standard Essential Patent is "a patent claiming technology that is essential to an industry standard's use.***"
> *(Emphasis supplied)*

566. In ***Intex v. Ericsson*** (supra), the Division Bench observed that to show that the patent maps onto the standard, the courts take into consideration 'claim charts', which show that the claims of a patent are also present in the technical features of a standard. The relevant paragraphs are

set out below:

> "***95.*** *To show that the patent maps on to the standard (A=B), courts take into consideration "claim charts", which show that the claims of a patent are also present in the technical features of a standard.*
>
> ***96.*** *To show that the implementer's device conforms to the standard (B=C), courts can either consider authentic sources like test reports which show that the device conforms to the standard. However, this is not a necessary requirement, as most devices declare their compliance with a given standard. For instance, all mobile phones declare that they are 3G/4G/5G compliant.*"

15.5.3. CORRESPONDENCE EXCHANGED BETWEEN THE PARTIES

567. To show that Lava never disputed the essentiality of the suit patents, Ericsson has placed reliance on the correspondence exchanged between Ericsson and Lava. It would be apposite to refer to some of the emails exchanged between the parties.

568. Ericsson, *via* email dated 14th July, 2014, provided to Lava the claim charts in respect of the eight suit patents. The relevant extracts from the said email are set out below:

"[redacted]"

(Emphasis supplied)

569. Lava acknowledged the receipt of the aforesaid information *vide* email dated 25th July, 2014 and sought time to review the same. However, no response was forthcoming. Ericsson, *via* email dated 29th December, 2014, called upon Lava to send any technical queries that Lava may have in respect of Ericsson's SEPs and proposed a meeting to work out the licensing arrangement in February, 2015.

570. Lava, *vide* email dated 19th January, 2015, stated that it has made its own assessment of the technical information supplied by Ericsson in order to hold a discussion with the representatives of Ericsson. The relevant extracts are set out below:

"[redacted]

571. Ericsson promptly responded to the aforesaid email *via* communication dated 20th January, 2015. The relevant extracts of which are set out below:

"[redacted]

[redacted]"

(Emphasis supplied)

572. Since no comments were received from Lava, Ericsson once again wrote an email to Lava on 27th January, 2015 asking for its technical comments so that Ericsson could bring the requisite experts for the meeting.

573. Lava, *via* email dated 30th January, 2015, replied that it will revert to the aforesaid email of Ericsson. However, in a complete turnaround, just two days before the proposed meeting scheduled on 6th February, 2015, Lava sent a communication dated 3rd February, 2015 to Ericsson, wherein it was disclosed that Lava has filed a suit against Ericsson before the Noida Court on 28th January, 2015. The relevant extracts from the said email are set out below:

[redacted]

(Emphasis supplied)

574. From a careful perusal of the correspondence exchanged between the parties, it can be concluded that Lava was well aware of the essentiality of Ericsson's patents and accordingly sought a FRAND license. It is pertinent

to note that Lava never questioned the essentiality of the suit patents during the period of negotiation. Lava repeatedly took time to revert back on technical queries that it may have with regard to essentiality of Ericsson's patents, but did not raise any query. The last email only expresses Lava's concerns about royalty rates, but not on the essentiality. In any event, it defies logic as to why Lava would have negotiated with Ericsson for over a period of three years, if it believed that Ericsson's patents were not essential. The fact that Lava negotiated with Ericsson would also demonstrate that Lava was conscious of the fact that Ericsson's devices were standard compliant and hence, implementing the SEPs of Ericsson.

15.5.4. ADMISSIONS BY LAVA

575. Even in the Noida Suit, no challenge was made by Lava either to Ericsson's claim charts or to the essentiality of Ericsson's patents. In fact, in paragraph 3 of the Noida plaint, it has been pleaded on behalf of Lava that:

> "*3* ***In many cases, compliance with such standards is only possible by using technology patented by multinational companies such as the defendant…..***
>
> ***…… Plaintiff humbly submits that entities such as the Defendant significantly benefited, and continue to benefit, from successful standardization inter alia in connection with 2G/3G standards***."
>
> *(Emphasis supplied)*

576. In the 'written statement and counter claim' filed on behalf of Lava, Lava has specifically admitted in paragraph 7 that Ericsson's claim mapping charts "*provide one possible means to meet the standards*". The same admission was also made by Lava in its written note of arguments filed on 16th August, 2017.

577. Ericsson submits that the present issue can be decided in its favour only on the basis of the admissions made by Lava. However, I refrain from doing so as both sides have led evidence on the issue. Therefore, I proceed to analyse the evidence led by the parties on this aspect.

15.5.5. EVIDENCE LED BY THE PARTIES

578. The claim charts relating to the eight suit patents of Ericsson have been duly exhibited by Stefan Bruhn (PW-2) and Mats Sagfors (PW-3) as **Exhibit PW-2/4, Exhibit PW-2/5, Exhibit PW-2/6, Exhibit PW-2/7, Exhibit PW-2/8, Exhibit PW-3/3, Exhibit PW-3/4** and **Exhibit PW-3/5**.

579. Even though Lava has objected to the admissibility of the claim charts, it is relevant to note that Lava has itself filed the said claim charts in the Noida Suit, as can be seen from the following table:

S. No.	Claim Chart filed by Ericsson and exhibited by its witnesses	Corresponding identical claim chart filed by Lava in its Noida Suit and relied upon (Volume IV, Part III in CS(COMM) 65/2016)
1.	**IN 203034** (Exhibit PW2/4)	Pg. 982-1003
2.	**IN 203036** (Exhibit PW2/5	Pg. 1004-1010
3.	**IN 234157** (Exhibit PW2/6)	Pg. 1011-1047
4.	**IN 203686** (Exhibit PW2/7)	Pg. 1048-1054
5.	**IN 213723** (Exhibit PW2/8)	Pg. 1055-1078
6.	**IN 229632** (Exhibit PW3/4)	Pg. 1079-1054
7.	**IN 240471** (Exhibit PW3/3)	Pg. 1095-1107
8.	**IN 241247** (Exhibit PW3/5)	Pg. 1108-1119

580. Stefan Bruhn (PW-2) has analysed claim charts in respect of the suit

patents, IN’034, IN '036, IN ‘157, IN ‘686 and IN ‘723, in his affidavit and has deposed as to how the claims of the said patents map on to the relevant standard specifications. The relevant paragraphs from his affidavit are extracted as under:

> “***10) A claim chart establishing as to how all the limitations of the granted claims of IN '034 map onto AMR speech encoding standard specification being ETSI TS 126 090 V4.0.0 (2001-03) [EXHIBIT P11] has been previously placed on record by Ericsson. I have studied and analysed the said claim chart along with the granted claims of IN '034 and the concerned standard specification, and I agree with the same and state that IN '034 maps onto the aforesaid AMR speech encoding standard specification and is thus an essential patent. I hereby crave leave to exhibit IN '034 claim chart as EXHIBIT PW2/4.*** *A copy of the aforesaid standard specification has already been placed on record by Ericsson, which has been admitted by Lava and I crave leave to rely upon the same. The Patent Family of IN '034 was also declared by Ericsson to ETSI as being essential in nature by way of an IPR Information Statement and licensing Declaration . In order to challenge the essentiality of IN ' 034, prior art documents have been referred by Mr. Madhusudan to allege that the claimed invention was previously known. I disagree with the aforesaid contention as none of the prior art documents referred by Lava disclose the claimed invention as per which joint vector quantization of gains over subframe boundaries (i.e. for two subframes) is possible without sacrificing the synchronization between encoder and decoder. Certified copy of the complete specification of IN 203034* ***[EXHIBIT P25]*** *has already been placed on record and its existence has been admitted by Lava, I hereby crave leave to rely upon the same.*
>
> *17)* ***A claim chart, establishing how all the limitations of the granted claims of IN '036 map onto AMR speech encoding standard specification being ETSI TS 126 090 V4.0.0 (2001-03) (EXHIBIT P11) has been previously placed on record by Ericsson . I have studied and analysed the said claim chart along with the granted claims of IN '036 and the concerned standard specification, and I agree with the same and state that IN '036 maps onto the aforesaid AMR speech encoding standard specification and is thus an essential patent. I hereby crave leave to exhibit IN '036 claim chart as EXHIBIT PW2/5.*** *The Patent Family of IN '036 was also declared by Ericsson to ETSI as being essential in nature by way of an IPR Information Statement and Licensing Declaration. In order to challenge the essentiality of IN '036, prior art*

documents have been referred by Mr. Madhusudan to allege that the claimed invention was previously known. I disagree with the aforesaid contention as none of the prior art documents referred by Lava disclose the claimed invention as per which the drawback of annoying artifacts/unwanted sounds associated with the prior approach of mode decision i.e. choosing waveform matching mode for voiced speech and choosing energy matching mode for noise-like signals like unvoiced speech and background noise has been overcome by advantageously combining waveform matching and energy matching criteria to improve coding of noise-like signals at lowered bit rates without the disadvantages of multi-mode coding. Certified copy of the complete specification of IN 203036 [EXHIBIT P27] has already been placed on record by Ericsson and its existence has been admitted by Lava, I hereby crave leave to rely upon the same.

24) ***A claim chart establishing how all the limitations of the granted claims of IN '157 map onto AMR speech encoding standard specifications being ET51 TS 126 090 V4.0.0 (2001-03) [EXHIBIT P11] and ETSI TS 126 073 V4.1.0 (2001-12) [EXHIBIT P5] has been previously placed on record by Ericsson. I have studied and analysed the said claim chart along with the granted claims of IN '157 and the concerned standard specifications, and I agree with the same and state that IN '157 maps onto the aforesaid AMR speech encoding standard specifications and is thus an essential patent. I hereby crave leave to exhibit the IN ' 157 claim chart as EXHIBIT PW2/6.*** *A copy of the aforesaid standard specification [ETSI TS 126 073 V4.1.0 (2001-12)]* ***[EXHIBIT P5]*** *has been placed on record by Ericsson, which has been admitted by Lava and I crave leave to rely upon the same. The Patent Family of IN '157 was also declared by Ericsson to ET51 as being essential in nature by way of an IPR Information Statement and Licensing Declaration. In order to challenge the essentiality of IN '157, prior art documents have been referred by Mr. Madhusudan to allege that the claimed invention was previously known or forms part of conventional technique as only 'trivial mathematical sequence' has been used . I disagree with the aforesaid contention as none of the prior art documents referred by Lava including G.729 ITU standard disclose the claimed invention as per which coding/decoding is improved without having to explicitly transmit coding mode information form encoder to decoder. Certified copy of the complete specification of IN 234157* ***[EXHIBIT P 29]*** *has already been placed on record by Ericsson and its existence has been admitted by Lava, I hereby crave leave to rely upon the same.*

*30) **A claim chart establishing how all the limitations of the granted claims of IN '686 map onto Link adaptation standard specification being ETSI TS 145009 V4.1.0 (2001-08) [EXHIBIT P 1O], has been previously placed on record by Ericsson. I have studied and analysed the said claim chart along with the granted claims of IN '686 and the concerned standard specification, and I agree with the same and state that IN '686 maps onto the aforesaid link adaptation standard specification and is thus an essential patent. I hereby crave leave to exhibit the IN '686 claim chart as EXHIBIT PW2/7.** A copy of the aforesaid standard specification has been placed on record by Ericsson, which has been admitted by Lava and I crave leave to rely upon the same. The Patent Family of IN '686 was also declared by Ericsson to ETSI as being essential in nature by way of an IPR Information Statement and Licensing Declaration. In order to challenge the essentiality of IN '686, prior art documents have been referred by Mr. Madhusudan to allege that the claimed invention was previously known. I disagree with the aforesaid contention as none of the prior art documents referred by Lava disclose the claimed invention as per which the robustness of the transmission of mode indicators and requests is increased while at the same time minimizing the transmission overhead and reducing delay associated with processing of mode information. Certified copy of the complete specification of IN 203686 **[EXHIBIT P3l]** has already been placed on record by Ericsson and its existence has been admitted by Lava, I hereby crave leave to exhibit the same.*

*36) **A claim chart establishing how all the limitations of the granted claims of IN '723 map onto AMR speech encoding standard specifications being ETSI TS 126 092 V4.0.0 (2001-03), ETSI TS 126 093 V4.0.0 (2000-12) and ETSI TS 126073 V4.1.0 (2001-12) [EXHIBIT PS] has been previously placed on record by Ericsson. I have studied and analysed the said claim chart along with the granted claims of IN '723 and the concerned standard specifications, and I agree with the same and state that IN '723 maps onto the aforesaid AMR speech encoding standard specifications and is thus an essential patent. I hereby crave leave to exhibit the IN '723 claim chart as EXHIBIT PW2/8.** Copies of the ETSI TS 126 092 V4.0.0 (2001-03) **[EXHIBIT P12)** & ETSI TS 126 093 V4.0.0 (2000-12) **[EXHIBIT P9)** standard specifications have been placed on record by Ericsson and the same have been admitted by Lava and I crave leave to rely upon them. The Patent Family of IN '723 was also declared by Ericsson to ETSI as being essential in nature by way of an IPR Information Statement and Licensing Declaration. In order to challenge the essentiality of IN '723, prior art documents have been referred by Mr. Madhusudan to allege that the*

claimed invention was previously known. I disagree with the aforesaid contention as none of the prior art documents referred by Lava disclose the claimed invention as per which modified (by perturbation) comfort noise parameters are used for generating comfort noise in a speech decoder. Certified copy of the complete specification of IN 213723 ***[EXHIBIT P33)*** *has already been placed on record by Ericsson and the existence of the same has been admitted by Lava, I hereby crave leave to rely upon the same.*"

(Emphasis supplied)

581. Lava objects to the admissibility of the claim charts (**Exhibit PW-2/4, Exhibit PW-2/5, Exhibit PW-2/6, Exhibit PW-2/7** and **Exhibit PW-2/8**) exhibited by Stefan Bruhn (PW-2), as he was not the author of the said claim charts.

582. Stefan Bruhn (PW-2) was cross-examined on this aspect. The relevant extracts from his cross-examination are set out below:

"***Q.190.*** *You have not prepared yourself the claim charts filed by the Plaintiff. Is that correct?*

A. *This is correct. As I wrote in my affidavit, I have analysed these claim charts and agreed with the same.* ***In my opinion they clearly show that the patents related to AMR that are suit matter map to the 3GPP/ETSI standards.***

Q.194. *I put it to you that the reason you have no records and notes of any analysis or study is that you have never yourself analysed the so-called claim charts?*

A. *I fully disagree with this assertion.* ***For me as an expert especially related to AMR it is the clear-cut case that the mappings that I have seen and analysed show that the suit AMR patents map to the mentioned standards.***"

(Emphasis supplied)

583. In the landscape of patent litigation, particularly in cases involving SEPs, it suffices to say that the claim charts are essentially documents prepared on the basis of extracts of the asserted claims of the suit patents as

against the extracts of the relevant standards to show the mapping of the claims. Claim mapping charts are a key tool in providing clarity on the essentiality of patents to the standards and aiding in transparent licensing practices, thereby playing a vital role in the broader ecosystem of standardization. Hence, it is not relevant as to who has prepared/authored the said claim charts. What has to be seen is whether the aforesaid mapping has been done in a correct manner or not. Therefore, I do not find merit in the aforesaid objection raised by Lava that the said claim charts could not have been exhibited by Stefan Bruhn (PW-2), as he did not prepare the claim charts.

584. Stefan Bruhn (PW-2) has deposed as an expert, who has analyzed the aforesaid five claim charts and come to a conclusion that the suit patents map on to the relevant ETSI standards. His expertise to depose on the aforesaid matter cannot be doubted as he has participated in the ETSI standardization process on several occasions and more particularly in the development of standards relating to AMR technology. He was specifically cross-examined on this aspect, the relevant extracts of which are set out below:

> "***Q.3.*** *Were you involved in any standardization process of the standards mentioned at page 24 to 28 of the Plaint namely:*
>
> *i. ETSI TS 126090 V4.0.0 (2001-2003);*
> *ii. ETSI TS 126073 V4.l.0 (2001-2012);*
> *iii. ETSI TS 145009 V4.l.0 (2001-2008);*
> *iv. ETSI TS 126, 092 ~4.0.0 (20?1-2003);*
> *v. ETSI TS 126093 V4.0.0 (2000-2012);*
> *vi. ETSI TS 123 107 V10.l.0 (2011-2006);*
> *vii. ETSI TS 125 301 V6.0.0 (2003-2012);*
> *viii. ETSI TS 125 302 V6.2.0 (2004-2012);*
> *ix. ETSI TS 125 331 V3.2l.0 (2004-2012);*

x. ETSI TS 101 349 V8.27.0 (2005-2009);
x. ETSI TS 101 350 V8.12.0 (2004-2004);

A. I was personally involved in the standardization of the AMR speech codec. Related specifications are (i) to (v) above."
(Emphasis supplied)

585. Mats Sagfors (PW-3) participated in the preparation of the claim charts in respect of the suit patents, IN '471, IN '632 and IN '747 and has deposed that the granted claims in respect of the aforesaid patents map onto the technical specification of the relevant standards. The relevant paragraphs from his affidavit are extracted as under:

"*10.* ***IN 240471 is an essential patent for 3G (UMTS) standard as is evident upon analysis of the claim chart previously placed on record by Ericsson. I have participated in the preparation of the said claim chart wherein granted claims of IN '471 have been mapped onto technical specifications comprising the UMTS standard and provided it to Mr. Lars Peter Kunkel for filing before this Hon'ble Court and I hereby crave leave to exhibit the same as EXHIBIT PW3/3.*** *In fact, Ericsson had also declared the patent family of IN '471 to ETSI as being essential in nature by way of IPR Information Statement and Licensing Declaration. In the present affidavit, I have restricted my analysis of essentiality of IN '471 to UMTS standard alone. Further, Ericsson has also placed on record print out of standard document ETSI TS 125 331 V3.21.0 (2004-2012) [EXHIBIT Pl5], which has been admitted by Lava and I crave leave to rely upon the same.* ***Thus, all devices compatible with the 3G standard must implement IN '471 and as a consequence infringe several of its claims.***

14. ***IN 229632 is an essential patent for 3G (UMTS) standard as is evident upon analysis of the claim chart previously placed on record by Ericsson. I have participated in the preparation of the said claim chart wherein granted claim of IN '632 has been mapped onto technical specifications comprising the UMTS standard and the said claim chart was provided by me to Mr. Lars Peter Kunkel for filing before this Hon'ble Court and I hereby crave leave to exhibit the same as EXHIBIT PW3/4.*** *Along with mapping the claim elements onto the technical specification, detailed comments have been provided in order to explain the same. In fact, Ericsson had also declared the patent family of IN '632 to ETSI as being essential in nature by way of IPR Information Statement*

and Licensing Declaration. Further, Ericsson has also placed on record print out of standard documents ET51 TS 123 107 VI0. 1.0 (2011 2006) [EXHIBIT P7], ETSI TS 125 301 V6.0.0 2003-2012) ***[EXHIBIT P8]*** *& ETSITS 125 302 V6.2.0 (2004-2012) (2003-2012) [EXHIBIT pa] & ETSI TS 125 302 V6.2.0 (2004-2012) [EXHIBIT P6], which have been admitted by Lava and I crave leave to rely upon the same.* ***Thus, all devices compatible with the 3G standard must implement IN '632 and as a consequence infringe its claims.***

17. ***IN '241747 is an essential patent for EDGE standard as is evident upon analysis is of the claim chart previously placed on record by Ericsson. I have participated in the preparation of the said claim chart wherein granted claim of IN '747 has been mapped onto technical specifications comprising the EDGE standard and provided it to Mr. Lars Peters Kunkel for filing before this Hon'ble Court & I hereby crave to exhibit the same as EXHIBIT PW3/5.*** *In fact, Ericsson has also declared the patent family of IN '747 to ETSI as being essential in nature by way of IPR Information Statement and Licensing Declaration. Further, Ericsson has also placed on record print out of standard documents ETSI TS 101 349 Va.27.0 (2005-2009) [EXHIBIT P13] & ETSI TS 101 350 Va.12.0 (2004-04) [EXHIBIT P14], which have been admitted by Lava and I crave leave to rely upon the same.* ***Thus, all devices compatible with the EDGE standard must implement IN '747 and as a consequence infringe its claims.***"

(Emphasis supplied)

586. As regards the submission of Lava that implementation of the ETSI standard is possible using the alternate technology, Mats Sagfors (PW-3) has stated in his affidavit that Lava has failed to provide any alternate implementation of the standard. The relevant extract from his evidence is set out below:

"***COUNTER TO LAVA'S CHALLENGE TO ESSENTIALITY AND SCOPE OF IN '471, IN '632 & IN '747***

31) I have read the written statement cum counter claim filed by Lava wherein various incorrect contentions have been raised. The ***claim charts filed on record by Ericsson clearly evidence that the granted claim/s map onto mandatory/operative portion of the standard. Further, as device claim/s have been granted in favour of Ericsson & the same have been mapped onto the concerned specifications, thus, there exists no alternate***

> ***manner of implementing the UMTS and EDGE standard***. ***Further, Lava has merely averred that there are other possible ways to achieve multiple implementations of the ETSI standards based on prior public domain information without providing any specific details qua the same***. *As a result, Lava has failed to establish that alternate implementation of UMTS and EDGE standard without using Ericsson's patents viz. IN 471, IN '632 & IN 747 is possible.*"
>
> *(Emphasis supplied)*

587. Therefore, Mats Sagfors (PW-3) claims that Lava has not challenged the essentiality of Ericsson's patents. It is his contention that Lava has failed to demonstrate a viable alternate implementation of the standards that circumvents the use of Ericsson's patented technologies. Consequently, Mats Sagfors's affidavit reinforces the argument that Ericsson's patents are essential for implementing the standards asserted and underscores the lack of evidence for feasible alternative technologies that could serve the same purpose without infringing on Ericsson's patents.

588. Dr. V. Kamakoti (DW-2) admitted in his cross-examination that no analysis of implementation of the standard using alternate technology was conducted by him. Relevant extracts from the cross-examination of Dr. V. Kamakoti (DW-2) are set out below:

> "***Q. 156.*** *I put it to you that you have failed to provide any specific examples of multiple implementations of ETSI standards that correspond to the suit patents.*
>
> ***A.*** ***I have never stated in my affidavit nor in my report that there are examples of multiple implementations of ETSI standards.*** *What I have stated in para 2. (vii) of Exhibit DW-2/2 is that by just by analyzing input and output behavior of two devices/executable programs one cannot prove that the two implementations are identical. This is also one of the toughest unsolved problem in computing which researchers across the globe have classified as "unsolvable."*
>
> *(Emphasis supplied)*

589. It cannot be denied that neither of the expert witnesses of Lava, G.S Madhusudhan (DW-1) and Dr. V. Kamakoti (DW-2) studied or analysed the ETSI standards, essentiality of the SEPs or the claim charts filed by Ericsson showing how the claims map on to the standards. This was specifically put to Dr. V. Kamakoti (DW-2) during cross-examination, the relevant extract of which is set out below:

> "***Q. 87. Have you studied or analysed any ETSI standard related to GSM, EDGE and UMTS?"***
>
> ***A. No.***"
>
> *(Emphasis supplied)*

15.5.6. ANALYSIS AND FINDINGS

590. Further, it is essential to acknowledge the fundamental principle of patent law that once a patent has been granted for a specific function or implementation method, it automatically precludes the granting of another patent for the identical function or method. However, in the context of SEPs, while different patents can cover various aspects or methods of implementing the same standard, it is only possible provided they are sufficiently distinct and innovative. Given this, Ericsson's granted patents covering specific portions of the standards strongly indicate exclusivity in their particular implementations. Therefore, when Ericsson's suit patents admittedly provide a mechanism for implementing a standard or a portion of it, the burden falls on Lava to demonstrate with cogent evidence, the existence of alternative methods of implementing the same standard. Lava has failed to discharge the aforesaid burden.

591. In conclusion, given the above analysis, Ericsson has successfully established the essentiality of its suit patents by way of the claim charts, which are demonstrating the alignment of the suit patents with the relevant standard. The said claim charts have been filed on record and have not been rebutted by any of the witnesses of Lava. Consequently, in light of the correspondence exchanged between the parties, admissions made by Lava and the evidence placed on record and arguments advanced during final arguments, it is clear that Ericsson has been able to prove essentiality of the suit patents.

15.6. INFRINGEMENT OF THE SUIT PATENTS

592. Having addressed the essentiality of the suit patents, now, I propose to deal with the specific issue of infringement of the eight suit patents by Lava's products. It is pertinent to mention that the burden of proving infringement of the suit patents lies on Ericsson.

15.6.1. DOCTRINE OF EXHAUSTION

593. Before determining the infringement of the suit patents, I deem it appropriate to deal with the preliminary defence of '*Doctrine of Exhaustion*' taken by Lava. In this regard, it is essential to first understand the concept of *'Doctrine of Exhaustion'*. The '*Doctrine of exhaustion*' is a fundamental principle in patent law that limits the rights of the patent holders after the first authorised sale of a patented product. This doctrine holds that once a patented product has been sold by the patent holder, or with their authorization, the patent holder's exclusive rights to control the use and sale of that product are 'exhausted'. This means that the purchaser and

subsequent owners are free to use or resell the product without infringing the patent rights associated with it.

15.6.1.1. SUBMISSIONS ON BEHALF OF THE PARTIES

594. Lava has pleaded that since it has merely imported mobile handsets into India from licensed entities, it cannot be held guilty of infringement of Ericsson's patents. Lava has further pleaded that it procures chipsets from [redacted] and [redacted] who are the licensees of Ericsson and therefore, no further license is required to be taken by Lava from Ericsson.

595. Based on the aforesaid pleadings, Lava contends that the '*Doctrine of Exhaustion*' would apply in the present case as the first point of authorized use of patents exhaust the rights of the patentee, i.e., Ericsson. Reliance in this regard is placed on Section 107A of the Patents Act.

596. *Per contra*, Ericsson submits that the 'Doctrine of Exhaustion' is not applicable in the present case as Lava has failed to demonstrate that the entity it imported its devices from, was a licensed entity. Further, Lava is selling multimode devices and in view of the same, Lava is still required to seek license for implementing Ericsson's AMR/EDGE/3G patents. Further, it is submitted that the invention as claimed in the suit patents extends much beyond the scope of the chipset. Ericsson's patents read on functionality and user equipment that provide substantial value to the users and the same has no relation to the price of a chipset. Therefore, it would not matter if Ericsson has granted a license to the chipset manufacturer for implementing its patents.

597. Ericsson relies on Section 48 of the Patents Act to contend that the

patentee has the right to prevent the third party from selling the products, which are the subject matter of the patents, without its consent.

15.6.1.2. LEGAL PROVISIONS

598. To appreciate the rival contentions, a reference may be made to Section 48 and Section 107A of the Patents Act:

> "***48. Rights of patentees***.—*Subject to the other provisions contained in this Act and the conditions specified in section 47, a patent granted under this Act shall confer upon the patentee—*
>
> *(a) where the subject matter of the patent is a product, the exclusive right to prevent third parties, who do not have his consent, from the act of making, using, offering for sale, selling or importing for those purposes that product in India;*
>
> *(b) where the subject matter of the patent is a process, the exclusive right to prevent third parties, who do not have his consent, from the act of using that process, and from the act of using, offering for sale, selling or importing for those purposes the product obtained directly by that process in India."*
>
> ***107A. Certain acts not to be considered as infringement***.—*For the purposes of this Act,—*
>
> *(a) any act of making, constructing, using, selling or importing a patented invention solely for uses reasonably related to the development and submission of information required under any law for the time being in force, in India, or in a country other than India, that regulates the manufacture, construction, use, sale or import of any product;*
>
> *(b)* ***importation of patented products by any person from a person who is duly authorised under the law to produce and sell or distribute the product, shall not be considered as a infringement of patent rights***."
>
> *(Emphasis supplied)*

599. In terms of Section 48 of the Patent Act, subject to the other provisions of the Patents Act, the patentee has the exclusive right to prevent third parties from selling or importing the products, which are the subject matter of the patent, without the consent of the patentee. Section 107A(b) of

the Patents Act provides that the import of the patented products from a person, who is authorized to produce, sell or distribute the said product, would not amount to infringement. Therefore, to make out a case under Section 107A(b), Lava has to show that it imports its products from a person, who is duly authorized to manufacture, sell or distribute the said products. In other words, Lava has to prove that the entity from which it imports its products has a valid license from Ericsson.

600. The '*Defense of Exhaustion*' and in particular Section 107A of the Patents Act, has been specifically considered by a Coordinate Bench of this Court in ***Strix Limited v. Maharaja Appliances Limited***,[36]. In the said judgement, it has been emphasised that in order to claim the benefit of the '*Defence of Exhaustion*', the claimant needs to present clear and convincing evidence that the product in question was obtained in a manner that respected the patent holder's rights. This involves demonstrating a legitimate purchase where the patent rights have been exhausted, meaning that the patented product was sold by or with the consent of the patent holder and such sale exhausted the patent holder's rights to control the product's further sale or use. The relevant observations in ***Strix*** (supra) are set out below:

> "*26. As regards the applicability of Section 107A of the Act, the Defendant has merely averred that it has written to Chinese supplier to give information on the patent held by it and is awaiting a reply. The plaintiff cannot be made to wait indefinitely for an injunction just because the Defendant is awaiting information from the Chinese supplier.* ***As long as the Defendant is not able to produce any information about the patent held by the Chinese supplier, the court will proceed on the footing that there is no such valid patent held by the Chinese supplier.*** *In any event, it*

[36] *Strix Limited v. Maharaja Appliances Limited*, 2009 SCC OnLine Del 2825.

cannot delay the protection that the plaintiff is entitled to seek on the basis of the patent registered validly granted to it.

27. ***The contention that the Defendant is not a fly-by-night operator and its business turnover is in several crores of rupees is a contention that should work against the Defendant for the simple reason that the Defendant is not expected to import a product without first checking if the Chinese supplier holds a valid patent.*** *The Defendant knew that the plaintiff held a valid patent for the product that the Defendant was marketing viz., the electric kettle. Even according to the Defendant, it was purchasing this electric kettle from the plaintiff in the years 2005- 2006. Therefore, there was an obligation on the Defendant, even while it imported the same product from China, to ensure that it was not violating the plaintiff's patent.*
electric kettle from the plaintiff in the years 2005- 2006. Therefore, there was an obligation on the Defendant, even while it imported the same product from China, to ensure that it was not violating the plaintiff's patent.

28. In the considered view of this Court, ***the plaintiff is entitled to enforcement and protection of its patent vis-a-vis other manufacturers, sellers and importers. Section 48 of the Act gives the patent holder a right to prevent all other users from making use of the patent or commercially exploiting the patent held by the plaintiff except with the prior permission of the plaintiff.***"

(Emphasis supplied)

15.6.1.3. EVIDENCE LED ON BEHALF OF THE PARTIES AND ANALYSIS

601. Sunil Bhalla has deposed in his affidavit that Lava's phones are fitted with the chipsets and the chipset manufacturers have necessary rights to manufacture chipsets that implement essential technology. The relevant extract from his affidavit is set out below:

"*5. I say that the Defendant is a brand owner of Lava and Xolo Mobile Phones. The phones sold by the Defendant are fitted with chipsets manufactured by internationally reputed chipset manufacturers like* [redacted]*., a Global Leader in semi-conductors and chipsets having annual turnover of billions of dollars. Some of the Defendant's devices also use chipsets manufactured by* [redacted] *, another leading global giant in*

this field. The Defendant believes that the chipset manufacturers, while implementing the cellular technology as part of chipset, employ processes which are valid as per law and have necessary intellectual property rights to manufacture the chipsets."

602. In this regard, Sunil Bhalla (DW-3) was specifically cross-examined on behalf of Ericsson. The relevant extracts from his cross-examination are set out below:

"***Q.102.*** *Has the Defendant, to your knowledge, any agreements/indemnity letters in its possession in relation to transfer of technology utilized in its cellular phones?*

A. *Please clarify what do you mean by transfer of technology and from whom to whom.*

Q.103. *Please answer the question as you understand these terms, if you understand them at all.*

A. *How I understand this question is that it refers to agreements or indemnity letters received by the Defendant or the component manufacturers from some third parties.* ***The Defendant is not in possession any such agreements or indemnities****.* ***However, the Defendant strongly believes that the component manufacturers would have shared with the Defendant if there were any liabilities on the Defendant for use of their components****. As many of the key component vendors are multibillion dollar public listed companies, I believe they would follow it as a standard process for being fair to their customers.*

Q.108. *Is it therefore correct that it is not part of your due diligence process to check if the component manufacturers have licensed the technology from third parties, and that such licenses extend to end products for all their functionalities and you simply import cellular phones from China based on beliefs?*

A. ***To our understanding such a due diligence was not required to be done due to the stature of the vendors and also that any such rights that exist with such third parties would have been exercised at the source.***"

(Emphasis supplied)

603. From the aforesaid cross-examination, the following admissions made by Lava are evident:

(i) Lava does not have any agreement with the chipset suppliers or component manufacturers, which reflects that they have a valid license from Ericsson to sell end user devices. Nor does it have any indemnity from any of the chipset suppliers or component manufacturers.

(ii) No due diligence was carried out by Lava regarding any license agreement or cross license agreement of the chipset manufacturers with a third party.

604. Clearly, the entire submission of Lava relating to '*Doctrine of Exhaustion*' is based on the assumption that Ericsson had license agreements with the chipset suppliers, component manufactures and sellers of the end-user devices, which potentially extended to end products including those imported by Lava. However, Lava has admitted that neither was any due diligence conducted in relation to the agreements of the chipset suppliers with third parties, nor had Lava obtained any indemnity from the said chipset suppliers. If Lava believed that it was entitled to use the products implementing the patents of Ericsson on account of chipset suppliers having a valid license from Ericsson, Lava should have obtained an indemnity from such chipset suppliers in this regard. Furthermore, if Lava believed that the onus to pay royalty was on the chipset supplier and not on Lava, which they have not fulfilled, then Lava was free to avail legal remedies against such chipset suppliers.

605. Similarly, Lava's claim that its component manufacturers have

licenses with Ericsson would also fail, considering there are no indemnity agreements, freedom to operate search reports, or specific contractual provisions that explicitly extend Ericsson's licensing protections to downstream entities such as Lava. This oversight undermines Lava's reliance on the '*Doctrine of Exhaustion*' as a defence, particularly in the absence of any formal arrangement that would indemnify Lava against patent infringement claims stemming from the use of Ericsson or any other SEP holder's patented technologies. Without clear evidence of such protections or a direct license from Ericsson, Lava's position remained vulnerable to infringement allegations, notwithstanding any licenses Ericsson may have granted to the component manufacturers.

606. It is the submission of Ericsson that the devices of Lava as a whole infringe the SEPs of Ericsson and therefore, it would not matter if Ericsson had granted licenses to the chipset manufacturers. The relevant extract from the affidavit of John Han (PW-1) is set out below:

> "*44. In that regard, it is most respectfully submitted that the scope of the claims of the suit patents is not restricted to a chipset or baseband processor and thus such chipset cannot be a basis for determining the royalty.* ***The complete specification of the suit patents reveal that the subject inventions relate to mobile stations, transceivers, encoders/decoders etc. and as such the value of the technology cannot be determined and gauged on the basis of manufacturing cost of a chipset. The interfunctionality between the device containing the chipset, the network and their relationship with other devices on the networks is extremely complex and to simply argue that the entire technology resides in the chipset is a misleading oversimplification. <u>The chipset, by itself, has no meaning or worth unless the same is installed and matched to work in the device which in turn has to work in the telecom network</u>. Just as the valuation of a copyright in a book cannot be equated to the cost of printing or the copyright in a movie cannot be equated to the cost of the physical DVD, the value of Ericsson's patents cannot be equated to the price of the chipset. Ericsson's patents read on functionality and***

user equipment which provide tremendous value to users which has no relation to the price of a chipset."

(Emphasis supplied)

607. In relation to the aforesaid, John Han (PW-1) was specifically cross-examined. The relevant extract is set out below:

"***Q.437.*** *Please see page 23 of your affidavit where you state that a chipset by itself has not meaning or worth unless the same is installed and matched to work in the device which in turn has to work on a telecom network. Would it be correct to state that chipset in a mobile phone can be equated to a heart in human body?*

A. ***In a typical mobile phone there could be various different chipsets and components, each one having its own functionality but nevertheless working together to provide a standardized cellular technology****. Accordingly, I really cannot say which of the chipsets is equated to heart in a human body*

Q.338. *It is possible for the selling price of the chipset to represent the value of the functionality that the chipset bring to the mobile phone?*

A. *Yes, for whatever functionality that chipset brings to the mobile phone.*

Q.385. *Does the internal reference rates of the Plaintiff take into consideration the value that the functionality of the claimed invention contributes to the relevant functionality of the smallest saleable compliant implementation that practices the essential patent claim?*

A. *I believe I have already answered this question but I do so again. Ericsson determines the value of our Standard Essential Patent portfolio against the end user product and its associated cellular functionality. Accordingly, it is not Ericsson's practice to value each and every patent in each and every country. Furthermore,* ***we do not believe the relevant functionality of the smallest saleable compliant unit is the right measurement for determining the value of Ericsson's vast SEP portfolio on a global basis***."

(Emphasis supplied)

608. In an end-device or downstream product, various components having their own functionality, work in consonance with each other to implement

the standardized technology. In my considered view, in light of the evidence on record and as discussed earlier, the suit patents relate to the end-device and not just a chipset. The complete specification of the suit patents underscores the intricate nature of the technology involved, extending beyond the chipset. The significance of the suit patents lies in the interoperability between mobile stations, transceivers, and other elements within the telecom network. Resultantly, I am of the view that the implementation of the suit patents is in respect of the end-user devices and such implementation is essential for the functionality and compliance of these end-user devices with the industry standards.

609. John Han (PW-1) further deposed that Ericsson had a license agreement with Qualcomm, which was only in relation to CDMA technology. The relevant extracts from his affidavit are set out below:

> "*55. Despite raising various queries qua Ericsson's agreement with Qualcomm Inc., Lava failed to provide complete information/details to Ericsson about its relationship with Qualcomm Inc. This also shows that objections/queries in relation to Plaintiff's agreement with Qualcomm, which were raised by Lava, were nothing but mere delaying tactics. In order to give Lava a clear picture of Ericsson's agreement with Qualcomm Inc. and its effect on the potential agreement, Ericsson shared with Lava, during the course of their meeting on 22.05.2012, a document titled as "Exhibit C". (an Exhibit of the agreement entered between Ericsson and Qualcomm Inc.).* ***The aforesaid document clearly shows that Ericsson's agreement with Qualcomm Inc. is limited in scope and cannot be interpreted to mean that any company which is using Qualcomm's chipsets is exempted from taking a license in respect of Ericsson's entire portfolio of Standard Essential Patents.*** *Despite the aforesaid, Lava kept raising repetitive queries in relation to Ericsson's agreement with Qualcomm Inc. However, when Ericsson asked for certain details/information which could have helped Ericsson in getting a clearer picture about Lava's concern in relation to the issue of the Qualcomm agreement, Lava failed to provide such details about its relationship with Qualcomm Inc.* ***Ericsson's agreement with Qualcomm Inc. is restricted only to the field of CDMA applications however, any multimode mobile***

handsets which also comply with 2G and EDGE technology would still be infringing in nature and would need a license to those applications and, to the best of my knowledge, Lava does not offer any handsets that implement 3G only, as opposed to both 3G and 2G.

56. Furthermore, during the pendency of the present suit, Lava has alleged that Ericsson has no consistent licensing policy inasmuch as it has offered license to chipset manufactures such as Qualcomm. Ericsson has not licensed a chipset manufacturer for the past 10-15 years and Qualcomm was an exception since that agreement was a part of much bigger business arrangement where Ericsson purchased Qualcomm's CDMA infrastructure business. As part of that business dealing, ***Ericsson granted limited rights under Ericsson's 3G standard essential patents with respect to Qualcomm's CDMA Applications. Accordingly, Qualcomm has no rights under Ericsson's GSM, GPRS, and EDGE related standard essential patents.***"

(Emphasis supplied)

610. John Han (PW-1) was also cross-examined on this aspect. The relevant extracts from his cross-examination are set out below:

"***Q.159.*** *Is it correct that the Plaintiff has entered info agreements based on Chipsets or modems etc. if so, please specify the same?*

A. *Ericsson has executed well over 100 global patent license agreements and to the best of my knowledge I am aware of only one where Ericsson has granted limited patent license to a company called Qualcomm.*

Q.160. *Can you please elucidate what you mean by a limited patent license?*

A. *As we previously explained to Lava,* ***Ericsson signed a WCDMA agreement only covering CDMA applications with Qualcomm. Accordingly, GSM, GPRS, and EDGE are not licensed to Qualcomm. That is what I mean by a limited license****.*

Q.292. *There is no claim on CDMA technology by the Plaintiff in the present suit?*

A. *That is correct. Plaintiff is not claiming anything on CDMA technology.*

Q.293. *Has the Plaintiff examined if any instruments of the Defendant were complying with CDMA technology?*

A. *No, because Ericsson has not asserted any patents against CDMA technology. There was no reason to examine whether the Defendant were selling any CDMA phones.*"

(Emphasis supplied)

611. A perusal of the aforesaid extracts from the cross-examination of John Han (PW-1) shows that the suit patents were not the subject matter of the agreement between Ericsson and Qualcomm, as the license granted by Ericsson to Qualcomm pertained only to CDMA applications, whereas the suit patents pertain to GSM, GPRS and EDGE. Hence, the agreement of Ericsson with Qualcomm would not come to the aid of Lava.

612. In light of the above analysis, Lava's preliminary defence invoking '*Doctrine of Exhaustion*' is untenable against Ericsson's claim of infringement of the suit patents. Consequently, in terms of Section 48 of the Patents Act, Ericsson cannot be precluded from proceeding against Lava seeking infringement of its patents.

15.6.2. HIGH COURT OF DELHI RULES GOVERNING PATENT SUITS, 2022

613. The legal framework surrounding the enforcement and defence against patent infringement suits, particularly those concerning SEPs, has seen significant evolution over the years. A pivotal development in this area is the formulation of the High Court of Delhi Rules Governing Patent Suits, 2022 [hereinafter referred to as 'DHC Patent Rules'], which lay down comprehensive guidelines for handling patent suits, including those involving SEPs. These rules aim to streamline the process of litigation in patent infringement cases, providing clarity on the submission of evidence

and the articulation of arguments. The provisions within these rules specifically address how parties involved in SEP-related disputes should present their cases, emphasising the importance of detailed claim charts and the necessity for defendants to explicitly outline their compliance with the standards or the implementation of alternate technologies. This structured approach not only facilitates a more efficient adjudication process but also aligns with the international best practices in patent litigation, ensuring that the intricacies of SEPs are adequately addressed. Therefore, I deem it appropriate to consider the specific provisions of the DHC Patent Rules relating to SEPs.

614. The aspect of infringement of SEPs has been specifically recognised in the DHC Patent Rules. The relevant provisions of the DHC Patent Rules relating to SEPs are reproduced hereinafter:

> "***2. Definitions…***
>
> ***(e) 'Infringement brief' –*** *'....* ***In the case of Standard Essential Patents (SEPs), the infringement brief shall contain claim charts, mapping the patent claims to the standards, and the manner in which the Defendant infringes the same'***
>
> ***(f) 'non-infringement brief'*** *–* ***'...as also in the case of SEPs, the Defendant shall disclose whether its products comply with the standard or the alternate technology/patent being implemented by it. The said party is also free to furnish its own Claim construction brief or claim mapping, if it so chooses, to support the plea of non-infringement'***
>
> ***3. Contents of pleadings***
>
> ***A. Plaint –*** *The plaint in an infringement action shall, to the extent possible, include the following aspects:*
>
> *(ix)* ***Precise claims versus product (or process) chart mapping, or in the case of SEPs, claim chart mapping through standards***
>
> ***B. Written Statement–*** *The Written Statement in an infringement action shall, to the extent possible, include the following aspects:*
>
> *(vi) If the Defendant raises a case of non-infringement,* ***<u>the</u>***

products/process/technology being used by the Defendant would also be specified. *Onus of proving infringement would, however, be in terms of Section 104A of the Act;*"

(Emphasis supplied)

615. Even though the DHC Patent Rules were framed in 2022, they provide a useful guidance to the courts towards the approach to be followed in the SEP infringement cases.

15.6.3. TWO-STEP TEST FOR ESTABLISHING INFRINGEMENT

616. In the landscape of SEP infringement litigation, establishing infringement involves both legal and technical evaluations. A significant aspect of SEP infringement suits is the methodology used to establish whether a product infringes the suit patents and the rights of the patentee. This methodology has been refined over the years, culminating in the two-step test as recognised by the Division Bench of this Court in ***Intex*** (supra). This test provides a framework for adjudicating SEP disputes.

617. The two-step test for establishing infringement of SEPs has been laid down by the US Court of Appeals in ***Fujitsu*** (supra) and has been approved by the Division Bench of this Court in ***Intex*** (supra). The relevant observations are set out below:

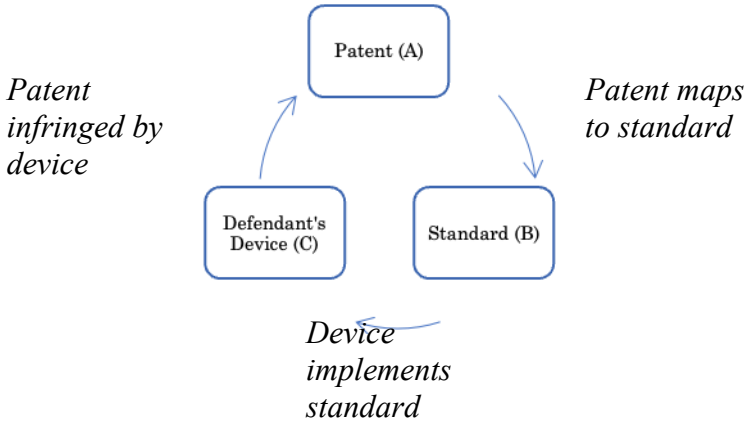
"***WHAT IS THE TEST OF INFRINGEMENT IN A STANDARD ESSENTIAL PATENT MATTER****?*

92. Since the SSOs do not check which patents are actually essential and the declarants do not provide any proof of essentiality, there is a possibility of a lot of blanket declarations being made which can be misleading. Consequently, the test for infringement in the case of an unwilling licensee of a Standard Essential Patent would have to be satisfied at the prima facie stage.

93. ***There is the direct test of infringement which is applied in all standard patent cases. The other is the indirect method which involves***

proving the following steps:
(i) Mapping patentee's patent to the standard to show that the patent is a Standard Essential Patent.
(ii) Showing that the implementer's device also maps to the standard.

94. This is akin to the Law of Transitivity, i.e., if A=B and B=C, then A=C, where A= Patent ; B = Standard ; C = Defendant's device



95. ***To show that the patent maps on to the standard (A=B), courts take into consideration "claim charts", which show that the claims of a patent are also present in the technical features of a standard.***

96. To show that the implementer's device conforms to the standard (B=C), courts can either consider authentic sources like test reports which show that the device conforms to the standard. However, this is not a necessary requirement, as most devices declare their compliance with a given standard. For instance, all mobile phones declare that they are 3G/4G/5G compliant.

97. The indirect test for proving Standard Essential Patent infringement is decades' old. For instance, the US Court of Appeals for the Federal Circuit in Fujitsu Ltd. v. Netgear Inc., (620 F.32 1321) held:

"We hold that a district court may rely on an industry standard in analysing infringement. ***If a district court construes the claims and finds that the reach of the claims includes any device that practices a standard, then this can be sufficient for a finding of infringement*** *We agree that claims should be compared to the accused product to determine infringement However,* ***if an accused product operates in accordance***

with a standard, then comparing the claims to that standard is the same as comparing the claims to the accused product."

98. ***This Court is of the opinion that Delhi High Court Patent Rules and International jurisprudence are unanimous in holding that the "indirect" method is a sure shot and better method of proving Standard Essential Patent infringement and essentiality.***"

(Emphasis supplied)

618. Even though the aforesaid test was applied by the Division Bench in ***Intex*** (supra) in the context of interim injunction, this test will be equally applicable in the facts and circumstances of the present case. The rationale for applying this test in SEP infringement cases lies in its methodical approach, firstly, by using claim charts to establish that the suit patents map onto a standard (A=B), and secondly, by assessing implementer's device for compliance with the standard (B=C). Significantly, Lava's products acknowledge their implementation of the standards in question, a requirement also stipulated in the '*Terms and Conditions of Unified License (Access Services)*' [**Exhibit PW-1/11**] issued by DoT. This explicit requirement for compliance with the standards simplifies the process of establishing the implementation of the standard, and by extension, the infringement of the suit patents in question. Consequently, the aforesaid two-step test of infringement is aptly suited for analysing the alleged infringement of Ericsson's SEPs by Lava's products in the present case.

15.6.4. ADMISSIONS MADE BY LAVA

619. Lava has made specific admissions in the Noida Suit with regard to its products being compliant with ETSI standards. It would be relevant to refer to some of the extracts from the plaint filed in the Noida Suit that are set out

below:

"*3. The Plaintiff, as mentioned above, imports, distributes and markets telecommunication devices manufactured in China.* ***Amongst these devices are mobile phone handsets and tablets, compatible with what is known in common parlance as 2G and 3G services. They contain a "chipset" which has certain software programs/components embedded in it to enable it to work on 2G-3G networks, worldwide, Standard Setting Organizations ('SSO') such as European Telecommunication Standards Institute ('ETSI') set technological standards for the telecommunications industry including standards that are relevant to interoperability of mobile phone devices etc…… In many cases, compliance with such standards is only possible by using technology patented by multinational companies such as the defendant. Therefore, importers/users such as the Plaintiff are in a peculiar situation where they are compelled to ensure that their devices conform with international standards governing the manufacture and deployment of mobile devices, which compliance is possible only by using technology(ies) patents in respect of which are claimed to be held by parties such as the Defendant.*** *Typically, companies such as the Defendant, which are also involved in the setting of the very standards in question, claim to own a large suite of such patents and on this basis demand unreasonably high royalty rates of entities such as the Plaintiff. Further in the present case the Defendant, with illegal and inequitable motives, inter alia of extracting unreasonably high royalties from Indian companies, deliberately does not and has not sought to impose any license conditions (or assert their patents) on chipset manufacturers. The Plaintiff also verily believes that the Defendant strategically does not assert any patents in China against manufacturers of these devices….*

*5 ……..****Plaintiff humbly submits that entities such as the Defendant significantly benefited, and continue to benefit, from successful standardization inter alia in connection with 2G/3G standards.***

xxx *xxx* *xxx*

6 ..... It is noted that India is yet to have its own SSO in the area of cellular telecommunications and as of today there is no single industry or government body in India that has evolved rules and procedures or considered the framework most suited to the Indian context. ***Currently, India has adopted standard laid down by international SSO's including the standards set by ETSI in the field of telecommunication.****"*

xxx *xxx* *xxx*

> *16 ..... **Indeed, it is not an option for the Plaintiff to be engaged in the business of mobile phone and tablet devices without conforming to one or the other of the relevant international standards**. .....*"
>
> *(Emphasis supplied)*

620. From the aforesaid extracts, it can be gauged that the following admissions have been made by Lava in the plaint filed in Noida Suit:

I. Lava's mobile phones contain a chipset with a certain software programmes/components embedded in it to enable it to work on 2G and 3G networks worldwide.

II. Lava's phones/devices conform with the international standards governing the manufacture and deployment of mobile phone devices laid down by Standards Setting Organization (SSO), such as European Telecommunications Standards Institute (ETSI).

III. India has adopted standards laid down by ETSI.

IV. Compliance with ETSI standards is only possible by using technology patented by companies such as Ericsson.

15.6.5. ANALYSIS AND FINDINGS

621. Lava contends that the two-step test for establishing SEP infringement is applicable only to the mandatory standards and argues that a different approach needs to be adopted for optional standards. According to Lava, in scenarios involving infringement of optional standards, the direct method of proving infringement is necessitated. Lava claims that such a direct approach is essential to conclusively establish infringement in cases where the standard is not mandatorily adopted but is rather an optional framework

that manufacturers may choose to implement. Ericsson has stated in its plaint that AMR patents for GSM mode as also its EDGE patent correspond to the standards that are adopted at the option of the implementer. However, once the optional standards are adopted, an implementor has no option but to use all the corresponding SEPs related to such optional standards.

622. The US Court of Appeals in ***Fujitsu*** (supra) observed that if a patentee establishes that an implementer has adopted the optional standard, the infringement can be established by the two-step test. The relevant observations are set out below:

> "***[9, 10]*** *We acknowledge, however, that in many instances, an industry standard does not provide the level of specificity required to establish that practicing that standard would always result in infringement.* ***Or, as with the 8952 patent, the relevant section of the standard is optional, and standards compliance alone would not establish that the accused infringer chooses to implement the optional section. In these instances, it is not sufficient for the patent owner to establish infringement by arguing that the product admittedly practices the standard, therefore it infringes****.* ***In these cases, the patent owner must compare the claims to the accused products or, if appropriate, prove that the accused products implement any relevant optional sections of the standard.*** *This should alleviate any concern about the use of standard compliance in assessing patent infringement. Only in the situation where a patent covers every possible implementation of a standard will it be enough to prove infringement by showing standard compliance.*"
>
> *(Emphasis supplied)*

623. Ericson has placed on record 'Test Reports' in respect of the devices of Lava namely, (i) Lava Iris X1 Grand, (ii) XOLO 8X 1000 HIVE (iii) XOLO Play 8X-1100 and (iv) XOLO Q700 Club

624. The following 'Test Reports' were filed in respect of the aforesaid devices:

(i) **Exhibit PW-2/9A**- AMR Test Reports- to establish Lava's devices use "AMR codecs in GSM mode".

(ii) **Exhibit PW-2/9B**- UMTS Test Report- to establish Lava's devices use "AMR codecs in 3G mode"

(iii) **Exhibit PW-3/7**- EDGE Test Report- to establish Lava's devices use "8-PSK functionality for the uplink and in particular retransmit an erroneous transmitted block using an MCS different from the initial MCS, which are applicable in both AMR and EDGE standards".

625. Stefan Bruhn (PW-2) deposed in his affidavit that the 'Test Reports' have revealed that the aforesaid devices of Lava use AMR in 2G and 3G mode, the relevant extracts of which are set out below:

> "*37. AMR support is not mandatory on 2G mobile networks, however, the same can be incorporated in telecommunication devices at the option of a manufacturer. Further,* ***when AMR is implemented in 2G mode, all the aforesaid 5 suit patents are infringed****. Any mobile phone (UE) being able to connect to 3G mobile network and supporting speech telephony according to the 3GPP mobile communication system standard is required to support the* ***mandatory*** *AMR speech codec according to the AMR speech coding standard 3GPP TS 26.071 (wherein 3GPP TS 26.090, 3GPP TS 26.093, 3GPP TS 26.092 & 3GPP TS 26.073 are included by reference). Accordingly, all 3G compliant telecommunication devices necessarily infringe IN '034, IN '036, IN ' 157 & IN '723. During the test, the protocol including the Bearer Capability Information Element (IE), at call-setup were logged. An analysis of the aforesaid revealed, that* ***Lava's UEs which were being tested i.e. LAVA iris X1 Grand, XOLO HIVE 8X-1000, XOLO Play 8X 1100 & XOLO Q700 Club support AMR in 2G mode and 3G mode and thus infringe all the aforesaid 5 suit patents.*** *I crave leave to exhibit the aforesaid test reports and test logs filed along with Lars Peter Kunkel's affidavit as* ***EXHIBIT PW2/9 (colly),*** *Lava's original products being LAVA iris X1 Grand, XOLO HIVE 8X 1000, XOLO Play 8X 1100 & XOLO Q700 Club which were tested at Ericsson Labs along with their purchase receipt have already been filed before this Hon'ble Court in a trunk and I crave leave to exhibit the same as*

EXHIBIT PW2/10 (colly).

38) Even the present models which are being sold by Lava in the market like Lava Iris Fuel 1, Lava pixel VI and Lava Xolo Omega etc. are infringing IN '034, IN'036, IN '686, IN '157 & IN ' 723. In order to confirm the same, I instructed and supervised the testing performed internally at Ericsson. ***Scanned copies of the test reports establishing that Lava Iris Fuel 1, Lava pixel VI and Lava Xolo Omega are infringing IN '034, IN'036, IN '686, IN ' 157 & IN '723 as they use AMR both in 2G and 3G mode, are being annexed*** *and exhibited herewith as* ***EXHIBIT PW2/11 (colly).*** *I shall produce the original test reports at the time of tendering of my affidavit. Further, the test logs of the aforesaid testing have been copied by me in a USB drive and the same is annexed and exhibited herewith as* ***EXHIBIT PW2/12.*** *I also crave leave to exhibit the various Lava devices being Lava Iris Fuel 1, Lava pixel VI and Lava Xolo Omega, that were tested by Ericsson as* ***EXHIBIT PW2/13 (colly).*** *I shall be producing the said devices at the time of tendering my affidavit.*"

(Emphasis supplied)

626. Similarly, Mats Sagfors (PW-3) has deposed in his affidavit that the 'Test Reports' have revealed that the devices of Lava are implementing EDGE standards. The relevant extract from his affidavit is set out below:

"*19. I have analyzed the test reports along with test logs previously filed by Ericsson in respect of LAVA irisX1 Grand, XOLO HIVE 8X-lOOO, XOLO Play 8x 1100 & XOLO Q700 Club wherein testing was performed to confirm retransmission of erroneously received EGPRS coded blocks using different modulation and coding scheme and* ***I agree with the conclusion drawn on the basis of test logs that all the aforesaid 4 devices support 8 PSK for uplink (ie. all the devices are EDGE compatible) and use different modulation and coding schemes for retransmission of erroneously received EGPRS coded blocks thereby infringing IN '747,*** *I crave leave to exhibit the aforesaid test reports and test logs (as contained in a CD) specific for EDGE testing filed along with Lars Peter Kunkel's affidavit as* ***EXHIBIT PW3/7****. Further, Lava's original products that were tested by Ericsson along with the purchase receipt (****EXHIBIT PW2/10 colly****) have been already placed on record in a trunk.*"

(Emphasis supplied)

627. It is pertinent to note that Lava has not raised any objection with regard to the contents of the aforesaid 'Test Reports'. Further, no questions

were put to Stefan Bruhn (PW-2) and Mats Sagfors (PW-3) in their cross examination to challenge the results of the 'Test Reports'.

628. Lava's technical expert, Dr. V. Kamakoti (DW-2), has also affirmed in his report dated 22nd July, 2015 [**Exhibit DW-2/B**] that the 'Test Reports' show that Lava's devices conform with the optional standards. The relevant paragraph from his affidavit is set out below:

> "*4.* ***Conclusion***
>
> *I. Whether the tests conducted by the experts, Mr. Ghate and Mr. Peter Kunkel demonstrate that the handsets sold by the Defendant infringe the suit patents?*
>
> *i) Reply:* ***The test reports referred in Mr. Kunkel's Affidavit only confirm whether the Lava handsets function in a GSM environment. They also confirm whether the mobile phones are· using AMR Speech Codec. A third test has been performed to show that the handset can support 3G and EDGE standard.*** *These are public standards. However, the actual algorithm the sequence thereof, the steps followed, as well as the software followed by Lava's phones have not been tested, by any of the experts. The tests conducted cannot and do not opine whether the claims of the patents are actually infringed by the Defendant.* ***The conclusions of the test reports only relate to the analysis of the output from the device to determine whether the device comply with the standards.***"
>
> *(Emphasis supplied)*

629. An analysis of the evidence placed on record by both the parties along with a perusal of the aforesaid 'Test Reports' shows that Lava's devices are compliant with all the optional portions of the ETSI standards such as AMR for 2G and EDGE for 2G, which are being enforced by Ericsson in the suit. Applying the two-step test for infringement to the facts of the present case, it cannot be disputed that the devices of Lava are compliant with the ETSI standards as also optional standards, amounting to infringement of the portfolio of SEPs of Ericsson by Lava.

630. Lava has further argued that the infringement of the suit patents cannot be established in view of the existence of alternate technology to implement the standard. Pertinently, when Dr. V. Kamakoti (DW-2) was specifically cross-examined on the aspect of infringement, he did not refer to non-infringement on account of any alternate technology. The relevant extracts of his cross-examination are set out below:

> "***Q.163.*** *I put it to you that Ericsson's patents are being infringed by Lava?*
>
> ***A. I am not a patent lawyer. I can only state that 8 patents of Ericsson are mere algorithms and do not require a special purpose hardware to execute. I do not have access to Lava source code, their hardware schematics and bill of materials, hence, I cannot comment on whether Ericsson's patents are being infringed by Lava or not.***"
>
> *(Emphasis supplied)*

631. Upon thorough consideration of all aspects of this case, it becomes evident that the compliance of Lava's devices with the established standards is a central and unavoidable reality for their market presence in India. In India, DoT and TRAI have recognized the ETSI standards as approved standards for GSM and UMTS network and also for equipment providers. The same has been provided for in the Unified Access Services License Agreement that the telecom service providers have to enter into with the DoT. Therefore, it is untenable to suggest that Lava's devices being sold in India are not standard compliant.

632. Given the standard compliance, and considering the established principles of patent law as applied to SEPs and taking into account the two-step test as approved by the Division Bench in ***Intex* v. *Ericsson*** (supra), it logically follows that the infringement of Ericsson's SEPs is an inevitable

outcome. This conclusion is drawn not only from the regulatory and technical compliance of Lava's products but also from the broader legal context of SEPs, where adherence to a standard implies the use of patented technology. Thus, in light of the evidence and arguments presented, coupled with the regulatory framework in place, it is reasonable to infer that the standard-compliant nature of Lava's devices leads to the infringement of the suit patents. Further, given that the test reports have been placed on record by Ericsson showing compliance of Lava's devices with the optional standards to supplement the admissions and statutory compliance, the onus fell on Lava to not just claim the use of alternate technology, but also demonstrate the same, which it has failed to do. Lava has failed to furnish any test report to counter Ericsson's 'Test Reports', nor has it led any evidence or expert analysis to prove that the conclusions drawn in Ericsson's 'Test Reports' are incorrect or misleading.

633. In view of the discussion above, I am of the considered view that Lava has infringed Ericsson's suit patents. Therefore, Issue no.2 is decided in favour of Ericsson and against Lava.

16. FRAND

Issue no.5: Whether the plaintiff is entitled to a decree declaring that the rates offered by the plaintiff qua its portfolio of Standard Essential Patents are FRAND in nature as claimed?

Issue no.7: Whether the plaintiff is entitled to damages or accounts the profits? If so, on what terms and for what period?

Onus of proof on Ericsson

16.1. BACKGROUND

634. SEPs are patents that are essential to a standard in a particular industry. The owners of SEPs are required to license these patents on FRAND terms on the basis of their contractual obligations to the SSOs, to ensure fair competition and accessibility.

635. The issue that the Court is adjudicating in the present case is whether Ericsson can obtain a declaration that the royalty rates offered by them to Lava in respect of their portfolio of SEPs, are indeed FRAND. Determination of this would require the Court to consider the following:

i. Compliance with FRAND Commitments
ii. Market Rates and Conditions
iii. Negotiation History

636. This Court will examine if the rates offered by Ericsson comply with the generally accepted principles of FRAND. This includes assessing whether the rates are non-discriminatory and comparable to the rates offered by Ericsson to other licensees. The negotiation process and conduct of both the parties would also be relevant for this analysis, especially when there are accusations of unfair trade practices and bad faith negotiations levelled by both Ericsson and Lava.

16.2. INTRODUCTION TO FRAND

637. In licensing of SEPs, the concept of FRAND licensing occupies a pivotal position, especially concerning SEPs. SEPs are patents that are indispensable for the implementation of a standardised technology. Given their essential nature, the holders of these patents have to commit to

licensing them on FRAND terms. This commitment serves to safeguard patent holder's rights and interests while ensuring that key technologies are accessible to industry players and ultimately, consumers.

638. Given this interpretation of the FRAND, I will now delve into the individual concepts of '*Fair*', '*Reasonable*', and '*Non-Discriminatory*'. Although there do not appear to be any direct judicial precedents that explicitly spell out the individual definitions of these terms, there are some seminal articles and industry practices that have shed light on their meaning[37]. These sources provide valuable insights into how these terms are interpreted and applied in the context of SEP licensing. Taking into consideration the same, in my assessment, the individual terms mean the following:

i. Fair: The term 'Fair' in FRAND points to the ethical and equitable aspects of licensing. It implies that the terms and conditions of the license should be just and impartial, respecting both the patent holder's contributions and the licensee's rights.

ii. Reasonable: The term 'Reasonable' relates to the economic aspect of the licensing terms. The fees and royalty rates should be aligned with the industry norms and the economic value of the patent, ensuring that they are not exorbitant or exploitative.

iii. Non-Discriminatory: The 'Non-Discriminatory' element mandates

[37] Sidak, J. Gregory. "*The Meaning of FRAND, Part I: Royalties*." Journal of Competition Law & Economics, vol. 9, no. 4, 2013, pp. 931–1055; Lemley, Mark A., and Carl Shapiro. "*A simple approach to setting reasonable royalties for standard-essential patents*." *Berkeley Tech. LJ* 28 (2013): 1135; U.S. Department of Justice and Federal Trade Commission. Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition. 2007, pp. 33–56. Available at http://www.justice.gov/atr/public/hearings/ip/222655.pdf.

that license terms must be consistent across different licensees. It prohibits a patent holder from engaging in biased practices that favour certain entities and discriminate against others.

639. In summary, a FRAND license should be fair in its treatment of both parties, reasonable in its economic demands and non-discriminatory in its application across different licensees.

640. The adoption of these principles would be essential in promoting innovation in the telecommunications space while ensuring equitable accessibility and preventing excessive monopolisation. Therefore, FRAND terms prevent patent holders from monopolising a standard, fostering a competitive and dynamic market while ensuring that the essential technologies are accessible to various industry players, leading to broader and more rapid technological adoption and advancement.

641. With this understanding of the FRAND principles, let us now delve into the understanding of the FRAND commitment.

16.3. THE FRAND COMMITMENT

642. FRAND is a voluntary commitment by an SEP owner to an SSO like ETSI to comply with its Intellectual Property Rights (IPR) policy, creating a contractual obligation between the two parties. As discussed earlier, this commitment is to provide access to the standardised technologies covered by the SEPs on terms which are FRAND to the willing licensees. This commitment emanates from the declarations made to an SSO at the time of development of the concerned standard.

643. The basis of the FRAND commitment in the present case is the ETSI

IPR Policy [**Exhibit D-11**]. The ETSI IPR policy does not define FRAND. It only provides that the fair compensation should be provided to the IPR owners and to determine the said compensation, bilateral negotiations are considered to be the best method. The scope of FRAND commitment of a party depends upon the interpretation of the ETSI IPR Policy to the extent that how the same is understood and acted upon by the industry as well as the Courts when issues pertaining to the same arise.

644. The ETSI IPR Policy has two main objectives, (i) to ensure wide implementation of the technologies developed and adopted by the ETSI as standards and (ii) to ensure that the inventors of the said standardised technologies are 'adequately' and 'fairly' rewarded for the use of their IPRs. The relevant clause of the ETSI IPR Policy is set out below:

> " ***Clause 6.1 of the ETSI IPR Policy***
>
> "*6.1 When an ESSENTIAL IPR relating to a particular STANDARD or TECHNICAL SPECIFICATION is brought to the attention of ETSI,* ***the Director-General of ETSI shall immediately request the owner to give within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory ("FRAND") terms and conditions under such IPR*** *to at least the following extent:*
>
> *- MANUFACTURE, including the right to make or have made customized components and sub-systems to the licensee's own design for use in MANUFACTURE;*
> *- sell, lease or otherwise dispose of EQUIPMENT so MANUFACTURED;*
> *- repair, use, or operate EQUIPMENT; and*
> *- use METHODS*
>
> *The above undertaking may be made subject to the condition that those who seek licences agree to reciprocate."*
>
> *(Emphasis supplied)*

645. The inherent challenge in the FRAND commitment is the determination of FRAND terms, while being theoretically robust, often encounters complexities in practice, as is evident in the adjudication of the present suits.

16.4. SIGNIFICANT INTERNATIONAL RULINGS ON FRAND

646. One of the earliest judicial rulings in the context of ETSI standards and FRAND commitments, while being in the nature of a preliminary ruling, was delivered by the Court of Justice of European Union in its judgment titled ***Huawei Technologies Co. Ltd.* v. *ZTE Corp. & Anr***.[38] In the said decision, the Court of Justice of European Union laid down the following protocol in the context of ETSI IPR Policy, which governs the conduct of both the parties pertaining to FRAND negotiations. The relevant extracts from the said judgment are set out as under:

> "*60. Accordingly, the proprietor of an SEP which considers that the SEP is the subject of an infringement cannot, without infringing Article 102 TFEU, bring an action for a prohibitory injunction or for the recall of products against the alleged infringer without notice or prior consultation with the alleged infringer, even if the SEP has already been used by the alleged infringer.*
> *injunction or for the recall of products against the alleged infringer without notice or prior consultation with the alleged infringer, even if the SEP has already been used by the alleged infringer.*
>
> *61. Prior to such proceedings,* ***it is thus for the proprietor of the SEP in question, first, to alert the alleged Infringer of the infringement complained about by designating that SEP and specifying the way in which it has been infringed.***
>
> *62. As the Advocate General has observed in point 81 of his Opinion, in view of the large number of SEPs composing a standard such as that at issue in the main proceedings, it is not certain that the infringer of one of*

[38] *Huawei Technologies Co. Ltd. v. ZTE Corp. & Anr.*, CJEU case C-170/13 ECLI:EU:C:2015:477

those SEPs will necessarily be aware that it is using the teaching of an SEP that is both valid and essential to a standard.

63. Secondly, after ***the alleged infringer has expressed its willingness to conclude a licensing agreement on FRAND terms, it is for the proprietor of the SEP to present to that alleged infringer a specific, written offer for a license on FRAND terms, in accordance with the undertaking given to the standardization body, specifying, in particular, the amount of the royalty and the way in which that royalty is to be calculated.***

64. As the Advocate General has observed in point 86 of his Opinion, ***where the proprietor of an SEP has given an undertaking to the standardization body to grant licenses on FRAND terms, it can be expected that it will make such an offer.*** *Furthermore, in the absence of a public standard licensing agreement, and where licensing agreements already concluded with other competitors are not made public, the proprietor of the SEP is better placed to check whether its offer complies with the condition of non-discrimination than is the alleged infringer.*

65. ***By contrast, it is for the alleged infringer diligently to respond to that offer, in accordance with recognized commercial practices in the field and in good faith, a point which must be established on the basis of objective factors and which implies, in particular, that there are no delaying tactics.***

66. ***Should the alleged infringer not accept the offer made to it, it may rely on the abusive nature of an action for a prohibitory injunction or for the recall of products only if it has submitted to the proprietor of the SEP in question, promptly and in writing, a specific counter-offer that corresponds to FRAND terms.***

67. Furthermore, ***where the alleged infringer is using the teachings of the SEP before a licensing agreement has been concluded, it is for that alleged infringer, from the point at which its counter-offer is rejected, to provide appropriate security, in accordance with recognized commercial practices in the field, for example by providing a bank guarantee or by placing the amounts necessary on deposit.*** *The calculation of that security must include, inter alia, the number of the past acts of use of the SEP, and the alleged infringer must be able to render an account in respect of those acts of use.*
fringer must be able to render an account in respect of those acts of use.

68. In addition, ***where no agreement is reached on the details of the***

> ***FRAND terms following the counter-offer by the alleged infringer, the parties may, by common agreement, request that the amount of the royalty be determined by an independent third party, by decision without delay.***"
>
> *(Emphasis supplied)*

647. The aforesaid FRAND protocol was laid down in order to balance equities along with the legitimate interests of the patent owner and the licensee concerned and to ensure that the parties to FRAND negotiation do not have unjust bargaining powers.

648. In addition, ***Huawei* v. *ZTE*** (supra) emphasises the importance of good faith negotiations, the right to challenge patents and the conditions under which an SEP holder can seek legal remedies without abusing its dominant position. In the said decision, the Court of Justice for the European Union has highlighted that SSOs do not assess the validity or essential nature of the patents during the standardization process. Consequently, an alleged infringer is entitled to challenge the validity, essential nature, or actual use of these patents during or after license negotiations. Furthermore, the judgment outlines the conditions under which an SEP holder does not abuse its dominant position when seeking legal remedies in respect of its patent rights. These conditions include informing the alleged infringer about the infringement, providing a specific written offer for a FRAND license after the alleged infringer has shown willingness to license. Legal remedies can be sought by the patent owner where the alleged infringer does not respond diligently and in good faith to the FRAND offer and employs delaying tactics. Finally, the CJEU has also clarified that an SEP holder is permitted to bring legal action for infringement against the alleged infringer and seek rendering of accounts or damages for the past use of the SEP,

provided that the SEP holder has offered to license the SEP on FRAND terms. The relevant extracts are set out below:

> "*69. Lastly, having regard, first, to the fact that a standardisation body such as that which developed the standard at issue in the main proceedings does not check whether patents are valid or essential to the standard in which they are included during the standardisation procedure, and, secondly, to the right to effective judicial protection guaranteed by Article 47 of the Charter,* ***an alleged infringer cannot be criticised either for challenging, in parallel to the negotiations relating to the grant of licences, the validity of those patents and/or the essential nature of those patents to the standard in which they are included and/or their actual use, or for reserving the right to do so in the future****.*
>
> *70. It is for the referring court to determine whether the abovementioned criteria are satisfied in the present case, in so far as they are relevant, in the circumstances, for the purpose of resolving the dispute in the main proceedings.*
>
> *71. It follows from all the foregoing considerations that the answer to Questions 1 to 4, and to Question 5 in so far as that question concerns legal proceedings brought with a view to obtaining the recall of products, is that Article 102 TFEU must be interpreted as meaning that the proprietor of an SEP, which has given an irrevocable undertaking to a standardisation body to grant a licence to third parties on FRAND terms, does not abuse its dominant position, within the meaning of Article 102*
>
> *TFEU, by bringing an action for infringement seeking an injunction prohibiting the infringement of its patent or seeking the recall of products for the manufacture of which that patent has been used, as*
>
> *long as:*
>
> *– prior to bringing that action, the proprietor has, first, alerted the alleged infringer of the infringement complained about by designating that patent and specifying the way in which it has been infringed, and, secondly, after the alleged infringer has expressed its willingness to conclude a licensing agreement on FRAND terms, presented to that infringer a specific, written offer for a licence on such terms, specifying, in particular, the royalty and the way in which it is to be calculated, and*
>
> *–* ***where the alleged infringer continues to use the patent in question, the alleged infringer has not diligently responded to that offer, in accordance with recognised commercial practices in the field and in***

good faith, this being a matter which must be established on the basis of objective factors and which implies, in particular, that there are no delaying tactics.

Question 5, in so far as that question concerns legal proceedings brought with a view to obtaining the rendering of accounts or an award of damages

76. In the light of the foregoing considerations, the answer to Question 5, in so far as that question concerns legal proceedings brought with a view to obtaining the rendering of accounts or an award of damages, is that Article 102 TFEU must be interpreted as not prohibiting, in circumstances such as those in the main proceedings, an undertaking in a dominant position and holding an SEP, which has given an undertaking to the standardisation body to grant licences for that SEP on FRAND terms, ***from bringing an action for infringement against the alleged infringer of its SEP and seeking the rendering of accounts in relation to past acts of use of that SEP or an award of damages in respect of those acts of use.***"

(Emphasis supplied)

649. One of the most significant decisions, which has been delivered in recent times in the realm of SEPs and their licensing, is the landmark ruling of the UK Supreme Court in ***Unwired Planet International Ltd.*** **v.** ***Huawei Technologies Co. Ltd & Others***.[39] This decision, which has undergone a meticulous three-tier review process within the UK's judicial system, has provided a nuanced approach in the context of global SEP licensing practices. In the said judgment, the purpose of grant of FRAND license and the nature of FRAND commitment under the ETSI IPR Policy has been discussed by the UK Supreme Court. The relevant extract from the said judgment is as under:

"14. … It appears from this brief review of the IPR Policy in its context

[39] *Unwired Planet International Ltd. v. Huawei Technologies Co. Ltd & Others.*, [2020] UKSC 37

that the following conclusions may be reached. First, ***the contractual modifications to the general law of patents are designed to achieve a fair balance between the interests of SEP owners and implementers, by giving implementers access to the technology protected by SEPs and by giving the SEP owners fair rewards through the licence for the use of their monopoly rights.*** *Secondly, the SEP owner's undertaking, which the implementer can enforce, to grant a licence to an implementer on FRAND terms is a contractual derogation from a SEP owner's right under the general law to obtain an injunction to prevent infringement of its patent. Thirdly, the obtaining of undertakings from SEP owners will often occur at a time when the relevant standard is being devised and before anyone may know (a) whether the patent in question is in fact essential, or may become essential as the standard is developed, in the sense that it would be impossible to implement the standard without making use of the patent and (b) whether the patent itself is valid. Fourthly,* ***The only way in which an implementer can avoid infringing a SEP when implementing a standard and thereby exposing itself to the legal remedies available to the SEP owner under the general law of the jurisdiction governing the relevant patent rights is to request a licence from the SEP owner, by enforcing that contractual obligation on the SEP owner****. Fifthly, subject only to an express reservation entered pursuant to clause 6.2,* ***the undertaking, which the SEP owner gives on its own behalf and for its affiliates, extends to patents in the same patent family as the declared SEP, giving the implementer the right to obtain a licence for the technology covering several jurisdictions****. Finally, the IPR Policy envisages that the SEP owner and the implementer will negotiate a licence on FRAND terms.* ***It gives those parties the responsibility to resolve any disputes as to the validity of particular patents by agreement or by recourse to national courts for determination*****....**"

(Emphasis supplied)

650. Even though the aforesaid judgments were in the context of European Union and UK respectively, in my considered view, the principles for determining FRAND and the manner of negotiations would be equally applicable in the Indian context as both the decisions have considered the interplay with the ETSI IPR Policy. It is relevant to mention here that India has one of the largest telecom industries in the world and therefore, the global practises of the telecom industry that are judicially recognised would

have bearing on the practises followed in the Indian telecom industry. Additionally, it has to be borne in mind that the aforesaid judgments in ***ZTE*** (supra) and ***Unwired Planet*** (supra) were approved and followed by the Division Bench of this Court in ***Intex*** (supra) and ***Nokia Technologies OY*** **v.** ***Guangdong Oppo***.[40]

16.5. WITNESSES ON BEHALF OF BOTH THE PARTIES

651. On the issues relating to FRAND and damages, Ericsson led evidence of two witnesses namely, John Han (PW-1) and Dr. Jonathan Putnam (PW-4). In relation to this issue, Lava also led evidence of the two witnesses namely, Sunil Bhalla (DW-3) and Shankar Iyer (DW-4).

652. With the aforesaid background, I shall now deal with the contentions raised by both the parties in relation to the Issues no.5 and 7.

16.6. WHETHER LAVA NEGOTIATED WITH ERICSSON IN GOOD FAITH

16.6.1. CORRESPONDENCE EXCHANGED BETWEEN THE PARTIES

653. To determine this issue, I have analysed the correspondence exchanged between the parties. The correspondence exchanged between the parties have been placed on record and exhibited as **Exhibit P4 (Colly)**.

590 In the very first communication dated 1st November, 2011, Ericsson had asserted its patents and expressed its willingness to grant a license on FRAND terms to Lava and called upon Lava to discuss a licensing arrangement. The relevant extracts from the said email are set out below:

‘[redacted]

[40] *Nokia Technologies OY v. Guangdong Oppo.*, 2023 SCC OnLine Del 3841

[redacted]

(Emphasis supplied)

654. In its reply dated 8th November, 2011, Lava took a stand that they are not manufacturers of mobile handsets and are simply trading in mobile

handsets. Hence, Lava is not required to take a license. Ericsson promptly replied to the aforesaid email on 11th November, 2011 stating that as a brand owner the liability to take license is of Lava.

655. The aforesaid submission of Lava defies commercial logic. Ultimately, it is the brand owner which is selling the device to end-consumers and therefore, would be liable to pay license fee/royalty fee to the patent owner. The liability cannot be passed on to the manufacturer, who is manufacturing the phone on an order being placed upon by the brand owner. Lava specifically questioned John Han (PW-1) during cross-examination as to whether Ericsson has entered into any license agreement with any manufacturer, who is not a brand owner. The relevant extracts from the affidavit of John Han (PW-1) are set out below:

> "***Q.230.*** *Has the Plaintiff entered into any license agreement with any manufacturer who is not a brand owner?*
>
> ***A.*** ***To the best of my knowledge Ericsson has not entered into a license agreement with the manufacturer who itself does not sell its own brand. Furthermore, even with our existing license agreements our licensee is not allowed to sell its licensed product to another handset brand company.***"
>
> *(Emphasis supplied)*

656. Further, a perusal of the subsequent emails exchanged between the parties shows that Lava kept on procrastinating and resisted fixing of a meeting with Ericsson for discussing licensing terms.

657. Via email dated 12th January, 2011, Ericsson circulated a draft of its non-disclosure agreement (NDA) to Lava so that more information could be shared by Ericsson with Lava. NDA is a basic document that the parties execute while entering into commercial negotiations, which involve sharing

of confidential information. Signing of an NDA is an industry practice to protect the commercial interest of both the negotiating parties. Clause 4.4 of the ETSI IPR policy recognises that an NDA may be essential for the parties to hold negotiations. [41]

658. Lava kept on raising objections in relation to the draft of the NDA circulated by Ericsson and in this regard various emails were exchanged between the parties for more than a year, thereby delaying the signing of the NDA. Ultimately, the NDA was signed on 13th March, 2013. The fact that Lava deliberately delayed signing of an NDA is borne out from the cross-examination of John Han (PW-1). The relevant extracts of which are set out below:

> "***Q.138.*** *Please see page.1341 (part of Exhibit P-4), parties were not agreeing to this format and consequently the agreement at page 1622-1623 was signed with amended terms specially in relation to governing laws and the place of arbitration. Is this correct?*
>
> ***A.*** *Since you are asking me this question I am happy to explain the history because surely you are not just asking me to look at the signatures and verify the date. Ericsson originally provided our NDA to the Defendant in early 2012 because that is the industry practice and what a fair and reasonable party in every negotiation promptly discuss and negotiate on. After Ericsson provided the original NDA, at the request of Lava Ericsson entertained the possibility of signing multiple NDAs with ICA members. Ericsson carefully listened to and accommodated many of ICA members' issues and even then they refused to sign the NDAs.* ***Only after we had to initiate the Micromax law suit, Lava signed the NDA,***

1. Clause 4.4 of the ETSI IPR Policy:

*"**4.4 Notice on the use of NDAs in IPR negotiations***

It is recognized that Non-Disclosure Agreements (NDAs) may be used to protect the commercial interests of both potential licensor and potential licensee during an Essential IPR licensing negotiation, and this general practice is not challenged. Nevertheless, ETSI expects its members (as well as non-ETSI members) to engage in an impartial and honest Essential IPR licensing negotiation process for FRAND terms and conditions."

where the only change in the language on this two page agreement was changing the venue from Sweden to Singapore. Surely changing the venue from Sweden to Singapore does not take 15 months of negotiation in Our industry.

(Emphasis supplied)

Q.144. *I put to you that the signing of the NDA had nothing to do with the Micromax suit.*

A. *As I stated earlier, it is my understanding that Lava was not serious for negotiating the NDA until the Micromax law suit. Only then it signed under the terms Ericsson had been offering well over 15 months*"

659. On 5th April, 2013, Ericsson shared the term sheet for a normal bilateral patent license agreement and called upon Lava to sign a patent license agreement before 1st May, 2013. The relevant extract of the said email is set out below:

"[redacted]

(Emphasis supplied)

660. On 12th April, 2013, Lava sought information from Ericsson on all patents covered by the license proposed by Ericsson and complete specifications of its SEPs as well as FRAND agreements entered into by Ericsson with other companies. The relevant extracts from the said email are set out below:

"[redacted]

[redacted]

[redacted]

[redacted]

[redacted]”

661. Ericsson replied to the aforesaid email on 20th April, 2013 and clearly stated that all licensing agreements entered into with third parties are confidential in nature and therefore, the same cannot be shared. Thereafter, several emails were exchanged between the parties, in which Lava asked for various details, such as exhaustive lists of Ericsson's patents, certified copies of patents, identification of relevant standards and the patent license agreements of Ericsson with third parties.

662. Ericsson sent a detailed communication dated 14th July, 2014 to Lava showing its frustration that despite negotiating for more than two years with Lava, Ericsson has not been able to sign a licensing agreement. Nevertheless, Ericsson addressed the concerns raised by Lava and provided necessary information as sought by Lava. The relevant extracts from the said email are set out below:

“[redacted]

[redacted]

[redacted]

[redacted]

(Emphasis supplied)

663. Lava acknowledged the receipt of the aforesaid information vide email dated 25th July, 2014 and sought six to eight weeks' time to review the aforesaid information. On 19th September, 2014, another email was sent by Lava stating that they are still reviewing the information shared by Ericsson. It becomes evident from the aforesaid communications that Lava did not express any inclination to take a license from Ericsson. There was no response on behalf of Lava to the royalty rates offered by Ericsson, which were similar to the rates determined by the Court in respect of Micromax, a similarly situated entity as Lava. Nor was any counter-offer made by Lava.

664. Ultimately, Lava sent an email dated 13th January, 2015 to Ericsson, wherein it was stated that Lava is open to meet Ericsson's representatives on 5th-6th February, 2015. Ericsson called upon Lava to send all the queries which Lava had with regard to Ericsson patents/standards so that appropriate persons from Ericsson's team could be present for the meeting. However, no such queries were forthcoming from Lava.

665. Via email dated 29th January, 2015, Ericsson communicated to Lava, a list of its representatives, who would be present at the meeting scheduled

for 6th February, 2015. Subsequently, vide email dated 30th January, 2015, Lava replied that it will revert to the aforesaid email of Ericsson.

666. Just two days before the proposed meeting scheduled on 6th February, 2015, Lava sent a communication dated 3rd February, 2015 to Ericsson, wherein it was disclosed that Lava had filed a suit against Ericsson in a Noida Court on 28th January, 2015. Relevant portion of the email dated 3rd February, 2015 is reproduced below:

"[redacted]"

(Emphasis supplied)

16.6.2. Analysis of Correspondence and Evidence Led on Behalf of the Parties

667. An analysis of the aforesaid emails would show that Ericsson engaged in negotiations with Lava for over three years in good faith, so that all

queries and concerns of Lava could be addressed and thereupon Lava would obtain a license from Ericsson. The technical information with regard to all the SEPs including the claim charts and the standards to which they correspond and the clarifications sought by Lava were duly provided by Ericsson. John Han (PW-1) was specifically cross-examined on this aspect, the relevant extracts of which are set out below:

> "***Q.451***. *What were the technical aspects that were to be discussed ``in that meeting?*
>
> ***A.*** *That is a very good question because* ***Ericsson repeatedly asked Lava to provide us with their technical comments and questions so that we would know what to discuss during that meeting. However, inspite of promising us that they would provide such information, no such information was ever provided to Ericsson so we were also wanting to find out which aspect of our technical discussion we were going to have during that meeting. We found out later that the Noida law suit was filed well before the meeting so I don't think Lava had any intention of discussing any technical aspects with Ericsson's representatives who had flown from the US and Sweden.***
>
> ***Q.452.*** *What you have stated in answer to Q.No.451 is inconsistent to your statement in your purported affidavit paragraph 65 "There was clear understanding between the parties that after discussing the technical aspects, commercial discussions will commence." Is it correct?*
>
> ***A.*** *It is incorrect. Ericsson has always been willing to have good faith technical discussions. Accordingly, that statement in my affidavit is true that it is Ericsson's understanding that Ericsson hoped to have a technical discussion and then move on to commercial discussion.* ***In order to have a productive technical discussion, Ericsson repeatedly asked Lava to give us their technical questions prior to the meeting. Because that information was never provided, I answered your question by stating that Ericsson did not know which aspect of the technical discussion we were going to have for that meeting***."
>
> *(Emphasis supplied)*

668. The dishonesty of Lava is also evident from the fact that during

negotiations, Lava kept on insisting that Ericsson provides its third-party license agreements to Lava. Such an insistence by Lava was a blatant disregard of the confidentiality attached to these third-party agreements. Lava's understanding that after signing of an NDA with Ericsson, Ericsson was obliged to share confidential information pertaining to third parties is completely misplaced. As stated above, the purpose of executing NDA was to share confidential information pertaining to signatories to the said NDA. It does not mean that after signing of NDA, Ericsson was obliged to provide confidential information pertaining to third parties. If Ericsson had provided these agreements with third parties to Lava, it would have constituted a breach of confidentiality clauses contained in the said agreements. This position was duly explained by John Han (PW-1) in his cross-examination. The relevant extracts are set out below:

> "***Q.309.*** *What according to the Plaintiff is the purpose and object of execution of an NDA agreement if documents thereafter too remain confidential between the parties to the NDA?*
>
> ***A.*** ***The purpose and object of an NDA is for company like Ericsson and Lava to share their own confidential and proprietary information with the other. However, the NDA between Ericsson and Lava does not give Ericsson the right to disclose somebody else's confidential information to Lava***
>
> ***Q.145.*** *Is there any indication in your correspondence Exhibit P-4 (Colly) how many agreements were disclosed to, copies given or inspected by Lava with respect to the 8 suit patents? If so please point out the same?*
>
> ***A.*** *I am assuming that you are asking for third party patent license agreements* ***when Ericsson enters into a license agreement with a third party we sign an NDA very similar to the one we offered to Lava as well as the final license agreement. Both of these agreements have confidentiality provisions which Ericsson honours and takes very seriously. Accordingly, without their consent or court order Ericsson cannot share such documents***

with other third parties. Otherwise, Lava would be asking us to breach our agreement with other legitimate companies and to violate law. *Accordingly, Ericsson could not provide any such agreements to the Defendant.*

Q.204. *Would it be correct that prior to execution of an NDA, the Plaintiff would not be in a position to share details about any third party licensing agreement with a prospective licensee?*

A. *We talked about this yesterday and I feel like I am repeating myself again.* ***With or without NDA, Ericsson cannot share our confidential agreements with a prospective licensee. However, without disclosing the details of such agreements, Ericsson is more than willing to share terms and conditions that are material to a global patent license agreement after signing an NDA.*** *Before signing an NDA, nevertheless, Ericsson does provide other adequate details such as the scope of the license, representative patent list and others.*

Q.205. *In response to question 204 when you say that you provide other details prior to execution of an NDA, these do not include terms and conditions of any third party license agreement. Is that correct?*

A. ***Again, even though we cannot share the exact details of other third party agreements that Ericsson has executed, Ericsson is willing to share an industry practice and Ericsson's practice to enter into a 5 year to 7 year global patent license agreement.***"

(Emphasis supplied)

669. Dr. Jonathan Putnam (PW-4) was also cross-examined on this aspect. The relevant extracts from his cross-examination are set out below:

"***Q.222.*** *Therefore, am I to understand that a proposed licensee who executes an NDA with Ericsson would be entitled to disclosure of all relevant information to satisfy itself about Ericsson's adherence to its FRAND commitment and essentiality of its portfolio or any part of it to the proposed licensee?*

A. *I do not know what 'all relevant information' refers to. Further, the NDA itself governs the obligations and entitlements of the parties, and it speaks for itself.* ***Speaking generally, an NDA does not grant the right to receive the terms of licenses with third parties or to obtain information subject to legal privilege.*** *And there are*

likely to be other mutually agreed exclusions as well. As to essentiality, that is ultimately determined by a Court, not by an SEP holder."

(Emphasis supplied)

670. It is pertinent to note that even the ETSI does not impose a duty on the IPR owners to disclose commercial licencing terms to prospective licensees. Therefore, Ericsson, in terms of the aforesaid policy, was not required to disclose its agreements with other licensees to Lava. Nevertheless, Ericsson shared copies of the interim orders passed by this Court in a suit filed by Ericsson against Micromax, which was a similarly placed entity as Lava, to demonstrate that the rates being offered to Lava were similar.

671. As agreed by Lava, a meeting was scheduled in New Delhi on 6th February, 2015, for which various high-level officers/technical experts of Ericsson were to fly to India from all parts of the world. In the email dated 29th January, 2015, Ericsson provided the names of its representatives, who were coming to India for the meeting with Lava. However, when Ericsson's representatives had already arrived in India to negotiate the licensing terms, in a complete *volte-face*, Lava filed the Noida suit. It was only on 3rd February, 2015, Lava informed Ericsson of the Noida suit, by which time the various representatives from all over the world were already in India.

672. The lack of willingness of Lava towards signing of the license agreement has been articulated by John Han (PW-1) in his cross-examination. The relevant extracts from the cross-examination are set out below:

"***Q.397.*** *I put it to you that the Defendant was always ready and willing, and continues to be so to have a license agreement pertaining to suit*

patents registered in India, whose validity and essentiality could be established by the Plaintiff to Lava?

A. ***Your statement only confirms my understanding that Lava had actually no intention of negotiating with Ericsson bilaterally and that it is only required to enter into individual patent license after suit.***

Q.453. *The Defendant was always negotiating in good faith and had suggested in its mail of 17th December, 2014 (Page 3112 of Exhibit P-4) requesting that the commercial discussion may precede the technical discussion and had informed the Plaintiff that tone and tenor of its communications suggest to us and gives us a sense of being threatened. Is this correct?*

A. *If you look at our response dated 29th December, 2014 (Page-3143) we clearly state that we were 'puzzled' that Lava would feel threatened. The next sentence clearly states that we have asked for relevant information so that we could have a meaningful negotiation of the GPLA. However, no such information had been provided by Lava. Therefore, I believe your statement is incorrect.*

Q.454. *The Defendant was willing to meet the representatives of the Plaintiff and gone with the discussions on 5th and 6th of February, 2015 but it was the Plaintiff who refused the same?*

A. ***Why would Ericsson incur the cost and inconvenience of flying all those people into India just to refuse to have a meeting that Lava wanted to have. Furthermore, if Lava wanted to negotiate in good faith technically and commercially, why did it file a law suit against Ericsson and inform Ericsson likewise, right before the scheduled meeting. Just because Lava states that it wanted to have a meeting, I believe their action and conduct speaks otherwise.***

Q.460. *I put it to you that since Defendant did not agree to the unreasonable terms being put by the Plaintiff, the Plaintiff is calling Lava as an unwilling licensee?*

A. *I disagree.*"

(Emphasis supplied)

673. Lava has strenuously argued that the approach of Ericsson was that

Lava should accept whatever terms Ericsson offered to Lava. I do not find merit in this submission. If this was the case, Ericsson would not have negotiated with Lava for over three years to arrive at a FRAND rate. This was specifically answered by John Han (PW-1) in his cross-examination, the relevant extracts of which are set out below:

> "***Q.459.*** *I put it to you that Defendant was told and made to believe that it should accept the terms of the Plaintiff without any demur?*
>
> ***A. I disagree because if that was the case Ericsson would not try to meet and negotiate over a two year period.***"
>
> *(Emphasis supplied)*

674. In ***Intex* v. *Ericsson*** (supra), the Division Bench of this Court has observed that the implementor would be termed as an 'unwilling licensee' if it neither accepts the offer made by the licensor nor make a counter-offer. The relevant observations of the Court are set out below:

> "*69. Licensor will be considered a willing licensor only if it gives a FRAND offer and in certain situations provides information necessary, subject to confidentiality agreement, for a licensee to evaluate an offer (relevant to 'ND' part of FRAND). If the licensor offers a supra-FRAND offer i.e. exorbitant royalty rates, it will not be considered a willing licensor.*
>
> *70.* ***Similarly, an implementer has no right of silence or inaction at this stage. It is not correct to suggest that without access to other agreements executed by the Patentee no counter-offers can be made.*** *Normally, an implementer can take recourse to its own license agreements executed with other Standard Essential Patent proprietors/licensors, to determine an appropriate FRAND rate that it would be willing to pay or to determine if the rate offered by an Standard Essential Patent proprietor is FRAND or not. This is evident from the judgment of the Dutch Court of Appeal in Koninklijke Philips N.V. v. Wiko SAS [Case Number 200.219.487/01 decided on 02.07.2019] wherein it has been held as under:-*
>
> > *"4.37.* ***Wiko pointed out that it does not have the licence agreements that Philips concluded with other parties for the***

same patent portfolio, so that Wiko is unable to demonstrate that Philips' proposal is not FRAND*. Even apart from the fact that according to the above findings, Wiko failed on several points to substantiate its arguments and furnish evidence of its arguments and its defence should already fail on this basis,* ***this point of view does not hold, Wiko concluded licence agreements for UMTS and LTE portfolios with Qualcomm, Huawei and Nokia. By providing insight into the fees and stipulations agreed upon with those parties in relation to (the value of) the SEPs held by those parties, Wiko could have substantiated (a suspicion of) the alleged fact that Philips' offer was not FRAND and the alleged fact that its own counter-offer was FRAND****; however, Wiko failed to do this. Under those circumstances the Court of Appeal does not see any reason to reverse the burden of proof or to assume an increased duty to contend facts and circumstances for Philips, as Wiko argued."*

71. The above decision has been affirmed by the Dutch Supreme Court and has attained finality. Thus, it is not true that the implementer, who is often a large commercial entity itself having a global business presence, enters into any kind of negotiation with a Patentee 'blindly.

72. Further, ***the implementer has to either accept the licensor's offer or give a counter offer along with an appropriate security in accordance therewith to prove its bonafides as in the interregnum it cannot freely sell its devices using such Standard Essential Patents.*** *If no ad-hoc royalty is paid during the interregnum, such party benefits, to the disadvantage of other willing licensees, and gets an unfair competitive edge in the market.*

73. ***Accordingly, FRAND obligations have been interpreted to impose a burden not just on Standard Essential Patent holders, but on implementers as well. The Standard Essential Patents regime incorporates mutual reciprocal obligations on both the Essential Patent holder and the implementer. It is not a 'one way street' where obligations are cast on the Essential Patent holder alone. Consequently, the Standard Essential Patents regime balances the equities between the Patentee and the implementer and ensures a level playing field. This Court is also of the view that the conduct of the parties during negotiations is one of the key factors to be kept in mind while assessing whether a potential licensor and licensee were a willing licensor or a willing licensee. The said finding is normally fact sensitive****."*

(Emphasis supplied)

675. Examining the correspondence exchanged between the parties in light of the legal principles, it is abundantly clear that Lava never had any intention to enter into a FRAND licensing agreement with Ericsson. Lava employed all means and methods for delaying the execution of license with Ericsson. Lava does not dispute the fact that Ericsson conveyed to Lava the rates that were offered by Ericsson to Micromax in terms of the orders dated 19th March, 2013 passed by this Court. However, Lava failed to give a definitive response to the said offer. Nor did Lava give any counter offer to Ericsson.

676. On behalf of Ericsson, John Han (PW-1) as well as Dr. Jonathan Putnam (PW-4) have deposed that another offer was made to Lava in a meeting held between the representatives of both the parties in August, 2014, which provided for split rates for India and overseas. Even though, Sunil Bhalla (DW-3) denied that such an offer was made, he did not deny that a meeting took place in August, 2014. Further, Shankar Iyer (DW-4), in his deposition, admits that an offer was made by Lava in March, 2015, when the litigation between the parties had commenced. Once again, the said offer did not elicit any response from Lava. When Lava could not delay any further the meeting with Ericsson to negotiate the licensing terms, Lava decided to file the Noida Suit. Thus, filing of the Noida suit just a few days prior to the scheduled meeting between the parties, was another attempt by Lava to avoid its obligation of taking a license from Ericsson.

677. Even during the course of hearing the final arguments in the present suits on 7th March, 2023, a specific query was put by the Court to the

counsel for Lava as to whether Lava was willing to pay the same rates as were being paid by Micromax in terms of the order passed by this Court. Counsel for Lava informed the Court that he would take instructions and inform the Court on the next date of hearing. However, no response was ever given to the said Court query by Lava. All the aforesaid factors demonstrate that Lava did not negotiate with Ericsson in good faith and was an 'unwilling licensee'

16.6.3. CONCLUSION

678. In view of the discussion above, it is clear that Lava did not engage in negotiations with Ericsson in good faith. Lava's actions, including the failure to respond to queries, the strategic filing of a lawsuit just before a scheduled meeting, the insistence on third-party confidential information and the lack of responsiveness to Ericsson's offers and even the Court queries, collectively demonstrate a pattern of behaviour that is inconsistent with the principles of fair and constructive negotiation. Consequently, Lava can aptly be described as an *'unwilling licensee'* in respect of Ericsson's SEPs.

16.7. CAN FRAND RATE BE USED AS A MEASURE OF DAMAGES

16.7.1. SUBMISSIONS ON BEHALF OF THE PARTIES

679. It is submitted on behalf of Lava that in case of SEPs, the principles applicable for awarding damages and determining the terms of a license are different in nature and the award of damages is not to be equated with royalties to be paid under a contractual license. Reliance in this regard is

placed on the judgment of the Division Bench of this Court in ***Intex* v. *Ericsson*** (supra) and the judgment of the High Court of Justice, Patents Court, London in ***IPCom GmbH & Co. KG* v. *HTC Europe Co. Ltd.***[42]

680. On the other hand, Ericsson has submitted that the aforesaid contention raised by Lava in relation to measure of damages is contrary to the legal principles laid down by the Division Bench of this Court in ***Xiaomi Technology & Anr.* v. *TLM Ericsson (Publ) & Anr.***[43]

16.7.2. LEGAL PROVISIONS AND JUDICIAL PRECEDENTS

681. In this regard, a reference may be made to Section 108(1) of the Patents Act, which is set out below:

> "***108. Reliefs in suits for infringement.—*** *(1) The reliefs which a court may grant in any suit for infringement include an injunction (subject to such terms, if any, as the court thinks fit) and, at the option of the plaintiff, either damages or an account of profits.*"

682. Section 108(1) of the Patents Act categorically provides that in a patent infringement suit, the court may grant relief of injunction and either damages or an account of profits. In the present case, since all the suit patents have already expired, the relief of injunction cannot be granted. Hence, at the stage of final hearing, Ericsson seeks damages alone.

683. In ***Xiaomi Technology*** (supra), the Division Bench of this Court held that the measure of damages for infringement of a patent would be the royalties payable to the licensor. The relevant paragraph is set out below:

> "*13. We are passing the pro tam order keeping in view the fact that treating the averments in the plaint to be true, the adverse effect upon the first respondent would be the finances which would otherwise flow to the*

[42] *IPCom GmbH & Co. KG v. HTC Europe Co. Ltd.*, [2020] EWHC 2941 (Pat).
[43] *Xiaomi Technology & Anr. V. TLM Ericsson (Publ) & Anr.*, 2014 SCC OnLine Del 7688.

coffers of the first respondent if ultimately it is found that the appellants is infringing the patent of the first respondent. ***The measure of the infringement would be the amount which the appellants would then have to pay to the first respondent as per policy of the first respondent while granting licenses. It is trite that the measure of damages for infringement of a patent would be the revenue loss to the patentee which it would have got by way of royalty while granting the license.***"

(Emphasis supplied)

684. The Patents Court of England and Wales in its judgment in ***Unwired Planet International Ltd. & Anr.*** **v.** ***Huawei Technologies Co. Ltd & Others***[44], has also recognised that the damages shall be awarded at FRAND rates. It was observed that the patentee's loss in case of infringement of its SEPs is the amount of money that the said patentee would have earned by granting license for its SEPs.

685. The judgment in ***IPCom*** (supra) relied by Lava does not hold that the damages cannot be calculated using FRAND rates. In the said case, the implementor, HTC, declined to take any FRAND license from IPCom and instead chose to get injuncted and undertook to stop selling its infringing devices in UK. Since HTC did not wish to sell its products in UK, the question of determining a FRAND license did not arise. Accordingly, the Court conducted a damages enquiry only in view of the injunction operating against HTC, divorced from a FRAND determination. Therefore, the reliance placed on the judgment in ***IPCom*** (supra) by Lava is misplaced.

16.7.3. EVIDENCE LED BY THE PARTIES

686. I shall now proceed to analyse the evidence led on behalf of the

[44] *Unwired Planet International Ltd. & Anr. v. Huawei Technologies Co. Ltd & Others*, [2017] EWHC 711 (Pat)

parties in this regard.

687. John Han (PW-1) deposed in his affidavit that Ericsson would be entitled to damages that would be calculated on the basis of loss of license fee that was payable to Ericsson by Lava, if Lava had executed a FRAND license agreement with Ericsson. The relevant extract from the affidavit of John Han (PW-1) is set out below:

> *"77. In view of the aforesaid, Lava is liable to pay damages for all the infringing devices being sold by Lava as Lava has failed to procure a license in respect of the same despite being aware about Ericsson's essential patent portfolio.*
>
> *78. As per Ericsson's understanding and estimate, all 3G compliant non-Qualcomm enabled multi-mode devices of Lava would be infringing the 2G, EDGE and 3G essential patents of Ericsson and the Qualcomm chipset enabled devices would be infringing the same patents, but would be licensed under Ericsson's 3G essential patents by virtue of the pass-through rights discussed earlier.* ***In view of the aforesaid, Ericsson would be entitled to the following damages which are being calculated on the basis of loss of license fee which Ericsson would have received, had Lava executed a FRAND license agreement with Ericsson at the time of commencement of its business of importing, selling, offering for sale etc. its telecommunication devices.***"
>
> *(Emphasis supplied)*

688. During cross-examination, Shankar Iyer (DW-4), the economic expert, who deposed on behalf of Lava, also agreed that the damages in cases relating to infringement of SEPs can be based on reasonable royalties. The relevant extracts are set out below:

> "***Q.150.*** *If you believe that no SEP implementer who agrees to be bound by the final judgment of the Court should ever be injuncted then why should an SEP implementer ever agree to negotiate and sign a license with an SEP owner as there would never be a threat of an injunction?*
>
> ***A.*** *With respect, counsel misunderstands the game theoretic underpinnings involved in such an analysis, and conflates ex-ante commitment with ex- post.* ***The premise of this question is***

misguided because refusal to negotiate and sign a license would lead to litigation and potentially substantial damages. *Accordingly, per the model described above, there are other credible threats apart from injunction.* ***The SEP holder always has the option of recovering for any infringement found through the avenue of damages.***

Q.156. *Please see your answer to Q.150. The term "potentially substantial damages" has been used by you, could you state as to in what manner and for what period are such damages calculated in SEP infringement cases?*

A. *As my answer to Q.150 shows, I was making a general statement in response to a general question. Given that I was speaking generally,* ***I can generally state that damages, if any, could be in the form of lost profits (if the SEP holder has actual sales in the market place) or reasonable royalties.*** *With respect to the period over which damages, if any, are to be calculated, this would depend on the facts of any specific case."*

(Emphasis supplied)

16.7.4. ANALYSIS AND FINDINGS

689. In view of the legal position discussed above, it is clear that the damages have to be awarded to Ericsson based on royalties payable at FRAND rates, as the damages are in the nature of compensation quantified in terms of the royalty that the patent owner would have earned from the licensee. Had Lava entered into a license agreement with Ericsson at the time it started selling its products in India, Ericsson would be entitled to royalties on FRAND terms. Since this was not done Ericsson rightly claimed damages based on the amount of royalties it would have earned, calculated on FRAND rates.

16.7.5. APPLICATION OF FILTERS IN CALCULATING FRAND RATES

690. It is further submitted on behalf of Lava that even if FRAND rates are

to be considered for calculating damages, the same can only be the starting point and the following filters are to be applied to determine damages:

i. The damages can only be granted for tested devices.

ii. The damages can be granted only on the basis of Smallest Saleable Patent Practising Unit (SSPPU), i.e., chipset and not on the basis of the market value of the end-product such as handset, dongle or tablet.

iii. The damages can only be granted for asserted patents and not for the entire portfolio.

691. Now, I shall deal with the aforesaid contentions raised by Lava with respect to application of various filters to calculate damages on FRAND rates.

16.8. WHETHER DAMAGES CAN BE GRANTED ONLY FOR TESTED DEVICES

692. It is the case of Lava that it is liable to pay damages for only such devices, which have been tested and are found to be implementing the eight suit patents, as discussed in the infringement analysis. In the present case, only four models of Lava have been tested and found to be infringing the suit patents.

693. In support of the aforesaid submission, the reliance has been placed on the judgment of the US Court of Appeal in ***Fujitsu*** (supra). The relevant extract from the said judgment is set out below:

> "*Because the district court correctly granted summary judgment of noninfringement of the asserted claims of the 8642 and 8993 patents, we affirm. Regarding the 8952 patent, we affirm summary judgment of noninfringement for all products but the four models for which Philips produced appropriate evidence of direct infringement. For these four models, we reverse the district court's summary judgment of no*

contributory and no induced infringement because genuine issues of material fact remain."

694. In ***Fujitsu*** (supra), the inventive feature of the patent therein was held to be not a requirement of the concerned standard. Hence, the damages were awarded only in respect of models that were directly infringing SEPs. In the present case, it has already been determined that all the suit patents are essential to the standards. Therefore, the aforesaid judgment is not applicable in the facts and circumstances of the present case.

695. In ***Intex* v. *Ericsson*** (supra), the Division Bench of this Court held that testing of all the devices that are claimed to be standard compliant is not required. The relevant observations are extracted as under:

> "*96. To show that the implementer's device conforms to the standard (B=C), courts can either consider authentic sources like test reports which show that the device conforms to the standard. However,* ***this is not a necessary requirement, as most devices declare their compliance with a given standard. For instance, all mobile phones declare that they are 3G/4G/5G compliant.***"
>
> *(Emphasis supplied)*

696. It has already been concluded in the infringement analysis in Issue no.2 that the devices of Lava are compliant with the ETSI standards as also the optional standards. Therefore, there is no merit in the submission of Lava that the damages should only be granted in respect of the tested devices.

16.9. WHETHER DAMAGES CAN BE GRANTED ONLY ON THE BASIS OF THE SMALLEST SALEABLE PATENT PRACTISING UNIT (SSPPU)

16.9.1. SUBMISSIONS ON BEHALF OF THE PARTIES

697. It is contended on behalf of Lava that the damages can be granted

only on the basis of the SSPPU, i.e., chipset in the end-products like handsets, dongles and tablets sold by Lava and not on the entire market value of the said products. In this regard, Lava has placed reliance on the judgment of the US Court of Appeals in ***Ericsson Inc & Anr.*** **v.** ***D-Link Systems Inc & Ors.***[45]

698. *Per contra,* it is submitted by Ericsson that it is the industry practice to license SEPs at the end-product level instead of negotiating and executing licenses with each individual component suppliers, as it is an economically efficient way of licensing standardized technology. This also reduces the transaction costs that may be incurred in such licensing deals. It is stated that all the major players in the industry license their SEPs at the end-product level.

16.9.2. JUDICIAL PRECEDENTS

699. In ***Ericsson*** **v.** ***Intex***,[46] a Coordinate Bench of this Court held that the chipset basis for royalty calculation cannot be accepted and emphasised that the practise of royalty calculation on the end-user device is non-discriminatory. The aforesaid judgment was also upheld by the Division Bench of this Court in ***Intex*** **v.** ***Ericsson*** (supra).

700. Lava has relied upon the judgment of the US Court of Appeal in ***Ericsson*** **v.** ***D-Link*** (supra) to contend that SSPPU should be the starting point for royalty calculations. The relevant observations of the Court are set out below:

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[45] *Ericsson Inc & Anr. v. D-Link Systems Inc & Ors.*, 773 F.3d 1201 (Fed. Cir. 2014).
[46] *Telefonaktiebolaget LM Ericsson (PUBL) v. Intex Technologies (India) Limited*, 2015 SCC OnLine Del 8229.

> "*As we explained recently in VirnetX, Inc. v. Cisco Systems, Inc., 767 F.3d 1308 (Fed. Cir. 2014),* ***where multicomponent products are involved, the governing rule is that the ultimate combination of royalty base and royalty rate must reflect the value attributable to the infringing features of the product, and no more.*** *767 F.3d at 1326 (citing Garretson v. Clark, 111 U.S. 120, 121 (1884)). As a substantive matter, it is the "value of what was taken" that measures a "reasonable royalty" under 35 U.S.C. § 284. Dowagiac Mfg. Co. v. Minn. Moline Plow Co., 235 U.S. 641, 648 (1915).* ***What is taken from the owner of a utility patent (for purposes of assessing damages under § 284) is only the patented technology, and so the value to be measured is only the value of the infringing features of an accused product.***
>
> ***When the accused infringing products have both patented and unpatented features, measuring this value requires a determination of the value added by such features. Indeed, apportionment is required even for non- royalty forms of damages: a jury must ultimately "apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features" using "reliable and tangible" evidence.*** *Garretson, 111 U.S. at 121. Logically, an economist could do this in various ways —— by careful selection of the royalty base to reflect the value added by the patented feature, where that differentiation is possible; by adjustment of the royalty rate so as to discount the value of a product's non-patented features; or by a combination thereof. The essential requirement is that the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product.*"
>
> *(Emphasis supplied)*

701. In my analysis, the decision in ***Ericsson* v. *D-Link*** (supra), which advocated for the use of the SSPPU as the basis for royalty calculation, is not directly applicable to the present case for several key reasons:

a. Nature of the devices in question: In ***Ericsson* v. *D-Link*** (supra), the Court dealt with devices featuring multiple components. In contrast, the present case involves mobile devices where telecommunication network connectivity is not merely an additional feature, but the core functionality. Communication via telecom networks is the essence of

mobile phones, distinguishing them from the multi-featured devices in ***Ericsson v. D-Link*** (supra), where Wi-Fi was just one of the many components. Therefore, applying the SSPPU approach, which focuses on individual components, overlooks the holistic value and primary purpose of the mobile devices.

b. Relevance and Impact of Patented Technology: The patented technology in question in the present case is central to the primary function of the mobile devices, rather than being a peripheral or secondary feature. This makes the SSPPU approach less suitable, as it undervalues the contribution of the patented technology to the overall value of the device.

c. Industry Practices and Economic Efficiency: The prevailing industry practice of calculating royalties based on the end-product aligns with the economic reality of mobile devices, where the value and functionality are not limited to individual components but are derived from the integration of various technologies into a single cohesive unit.

d. Shift in Institute of Electrical and Electronics Engineers (IEEE's) Royalty Calculation Approach: The decision in ***Ericsson* v. *D-Link*** (supra) advocated the IEEE policy. Significantly, IEEE which previously endorsed the SSPPU methodology, has since evolved its stance, now recognizing the end-product as a more appropriate base for the calculation of royalties[47]. This shift reflects a broader industry

[47] Implications for FRAND royalty rate determination of the updated IEEE IPR policy. Accessed from https://oxfirst.com/insights-&-news/implications-for-frand-royalty-rate-determination-of-the-updated-ieee-ipr-policy/;

consensus and aligns with the economic realities of products like mobile devices, where the value is derived from the integration of various technologies into a cohesive whole.

702. The applicability of ***Ericsson* v. *D-Link*** (supra) was subsequently clarified by the US Court of Appeal in ***Commonwealth Scientific and Industrial Research Organisation (CSIRO)* v. *Cisco Systems Inc.***,[48] wherein it was observed that the reasonable royalty rate must be based on the incremental value that the patented invention adds to the end-product. The relevant observations are set out below:

> "*Title 35, section 284 of the United States Code provides that ''upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer....'' Under § 284, damages awarded for patent infringement ''**must reflect the value attributable to the infringing features of the product, and no more**.'' Ericsson, Inc. v. D–Link Sys., Inc., 773 F.3d 1201, 1226 (Fed.Cir.2014). This principle—apportionment—is ''the governing rule'' ''where multi-component products are involved.'' Id. Consequently, to be admissible, all expert damages opinions must separate the value of the allegedly infringing features from the value of all other features. VirnetX, Inc. v. Cisco Sys., Inc., 767 F.3d 1308, 1329 (Fed.Cir. 2014).*
>
> *xxx* *xxx* *xxx*
>
> ***In Garretson, the Supreme Court affirmed a special master's report that the patentee had submitted no proof of its damages because it failed to apportion to the value of the patented feature. Id. at 121–22. Likewise today, given the great financial incentive parties have to exploit the inherent imprecision in patent valuation, courts must be proactive to ensure that the testimony presented—using whatever methodology—is sufficiently reliable to support a damages award.*** *See Summit 6, LLC v. Samsung Elecs. Co., 802 F.3d 1283, 1296 (Fed.Cir.2015) (''Estimating a*

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https://standards.ieee.org/wp-content/uploads/import/governance/bog/resolutions/september2022-updates-sasb-bylaws.pdf

[48] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) v. Cisco Systems Inc.*, 809 F.3d 1295 (Fed. Cir. 2015).

reasonable royalty is not an exact science.''); VirnetX, 767 F.3d at 1328 (explaining that a district court must exercise ''its gatekeeping authority to ensure that only theories comporting with settled principles of apportionment were allowed to reach the jury''). And as ***we have repeatedly held, ''the essential requirement'' for reliability under Daubert ''is that the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product.'' Ericsson, 773 F.3d at 1226.*** *In short, apportionment.*

xxx *xxx* *xxx*

In addition to the smallest salable patent-practicing unit principle, we have also explained that ''the entire market value rule is a narrow exception to this general rule'' ''derived from Supreme Court precedent'' in Garretson. Laser Dynamics, 694 F.3d at 67. Under the entire market value rule, if a party can prove that the patented invention drives demand for the accused end product, it can rely on the end product's entire market value as the royalty base. *Id.*

Fundamentally, the smallest salable patent practicing unit principle states that a damages model cannot reliably apportion from a royalty base without that base being the smallest salable patent-practicing unit. That principle is inapplicable here, however, as the district court did not apportion from a royalty base at all. Instead, the district court began with the parties' negotiations. *At trial, the district court heard evidence that, around the time of the hypothetical negotiations, the parties themselves had brief discussions regarding Cisco taking a license to the '069 patent. According to the district court's factual finding—which is supported by the testimony at trial—Cisco informally suggested $0.90 per unit as a possible royalty for the '069 patent. The district court used this rate as a lower bound on a reasonable royalty. For the upper bound, the district court looked to the $1.90 per unit rate requested by CSIRO in its public Rate Card license offer. Because the parties' discussions centered on a license rate for the '069 patent, this starting point for the district court's analysis already built in apportionment.* ***Put differently, the parties negotiated over the value of the asserted patent, ''and no more.'' Ericsson, 773 F.3d at 1226. The district court still may need to adjust the negotiated royalty rates to account for other factors (see infra Section II.B), but the district court did not err in valuing the asserted patent with reference to end product licensing negotiations.***[1]

The rule Cisco advances—which would require all damages models to begin with the smallest salable patent-practicing unit—is

> ***untenable. It conflicts with our prior approvals of a methodology that values the asserted patent based on comparable licenses.*** *See VirnetX, 767 F.3d at 1331; ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc., 694 F.3d 1312, 1333 (Fed.Cir.2012); Finjan, Inc. v. Secure Computing Corp., 626 F.3d 1197, 1211–12 (Fed.Cir.2010). Such a model begins with rates from comparable licenses and then ''accounts for differences in the technologies and economic circumstances of the contracting parties.'' Finjan, 626 F.3d at 1211. Where the licenses employed are sufficiently comparable,*[2] *this method is typically reliable because the parties are constrained by the market's actual valuation of the patent…..*
>
> ***Accordingly, we conclude that the district court did not violate apportionment principles in employing a damages model that took account of the parties' informal negotiations with respect to the end product.***"
>
> *(Emphasis supplied)*

703. The US Court of Appeals in ***FTC* v. *Qualcomm***[49] took a view that the parties routinely enter into license agreements that base the value of the patented inventions as a percentage of the sales price of commercial products and there is nothing inherently wrong with using the market value of the entire product for royalty calculation.

704. The Patents Court of England and Wales in ***Unwired Planet*** (supra) also fixed FRAND rates as a percentage of the net selling price of the handsets. The relevant paragraph is set out below:

> "*604. The first debate is about the definition of the royalty base in the context of infrastructure revenues.* ***The royalty base is the sum to which the percentage is applied to give the royalty due. It will largely correspond to the price paid for goods and the definition is largely agreed in the draft contract as something called "Selling Price" for "End User Devices" (i.e. handsets) and "Infrastructure Revenue" for infrastructure.*** *The question is whether Infrastructure Revenue should include income from managed services, operation and/or maintenance. Huawei contend it should not. They point out that these services are not*

[49] *FTC v. Qualcomm,* 969 F.3d 974 (9th Cir. 2020).

included in the corresponding definition in the […] licence and the […] licence."

(Emphasis supplied)

705. Therefore, in light of the prevailing international jurisprudence, it is evident that the basis of calculation of royalty is more appropriately placed at the end-product level rather than the chipset. This approach not only aligns with the industry practices and economic efficiency but also resonates with the legal precedents set by various courts globally.

16.9.3. EVIDENCE LED BY THE PARTIES

706. In this regard, John Han (PW-1), in paragraph 44 of his evidence, has deposed that the chipset cannot be the basis for determining royalty as all the components of the device are integrated together to take benefit of the standardised technology. The relevant extract from his affidavit is set out below:

"*44. In that regard, it is most respectfully submitted that* ***the scope of the claims of the suit patents is not restricted to a chipset or baseband processor and thus such chipset cannot be a basis for determining the royalty. The complete specification of the suit patents reveal that the subject inventions relate to mobile stations, transceivers, encoders/decoders etc. and as such the value of the technology cannot be determined and gauged on the basis of manufacturing cost of a chipset. The inter-functionality between the device containing the chipset, the network and their relationship with other devices on the networks is extremely complex and to simply argue that the entire technology resides in the chipset is a misleading oversimplification. The chipset, by itself, has no meaning or worth unless the same is installed and matched to work in the device which in turn has to work in the telecom network……***"

(Emphasis supplied)

707. John Han (PW-1) was extensively cross-examined on this aspect and his deposition withstood the test of cross-examination. The relevant extracts

from his cross-examination are set out below:

"***Q.402.*** *The Lamborghini phone that is priced at Rs.3,00,000- and an iBall's device in the range of Rs. 1500/- both in your opinion reflect in their net selling price an equal component of value added by the so-called physical apparatuses claimed to have been invented by the Plaintiff as part of its' 8 suit patents?*

A. *Because I am not aware exactly what this Lamborghini phone is I really cannot answer your question. However, I do appreciate what you are asking if the Lamborghini phone is indeed priced at Rs.3,00,000/- which may be associated with value of non-cellular functionalities such as their brand recognition, special leather made on the casing etc. Accordingly,* ***when Ericsson negotiates with a potential licensee under the executed NDA, our licensees explain their business model and there are instances where Ericsson has agreed to a fix dollar per device or put a cap on the maximum amount our licensee is asked to pay.*** *Accordingly, Ericsson would not be charging* [redacted] *for example on the Rs.3,00,000/ -. Instead based on our good faith negotiations with our licensee, we would place necessary parameters so that we do not charge beyond the value of our patented technologies.*

Q.403. *In the agreements purportedly entered into with 29 companies, is there any deduction for example from the net selling price for components such as screen display, charger, camera and other components that are not even standardized by ETSI or any SSO?*

A. *If you are referring to integrated components within a mobile phone I believe our license agreement would not deduct those individual components from our net selling price determination. You used a screen display as an example and I would like further elaborate on that.* ***When the GSM technology was developed it was mainly for voice communication. Accordingly, the screen size on those GSM phones was small because it only had to display the phone numbers. The GPRS and EDGE which stands for enhanced GPRS is for communicating packet data. Accordingly, the screen size of those phones became larger in order to benefit the packet data being displayed. With 3G and 4G which are primarily for data communication the screen size obviously became bigger in order for those communicated data for the standardized technology can be displayed. Accordingly, as you can see all these components are intertwined and integrated***

> ***together in order to take the benefit of the standardized technologies.***"
>
> *(Emphasis supplied)*

708. The fact that the royalty is based on the fully functional end-user device and not on any component of the device, was also affirmed by Dr. Jonathan Putnam (PW-4) in his affidavit at paragraphs 74, 95 and 102, which are set out as under:

> "*74.* ***All the comparable licenses specify that the NSP of the end user device (the handset or tablet) shall serve as the royalty base when calculating the royalties owed to Ericsson. No comparable license specifies the chipset or any other component of the end user device as the royalty base. Further, the use of the end user device as the royalty base is standard practice in this industry. On this basis, I conclude that Ericsson's use of the end user device as the royalty base in its offer to Lava is consistent with the terms and conditions found in the comparable licenses, agreed upon by Ericsson and numerous other parties with licenses that are similar to the hypothetical Ericsson/Lava license, and thus FRAND.***
>
> *95. Some might argue that "FRAND terms and conditions" nevertheless require a chipset royalty base on the In re Innovatio and Microsoft vs. Motorola decisions in the United States. But again, both cases involved different industries and different standards; there were no ETSI standards at issue in that case. Even more critically, the courts in those cases lacked adequate evidence on market-based licensing terms for the patent portfolios in question.* ***I am not aware of case law, in the United States or elsewhere, where a court applied the SSPPU methodology involving 2G, 3G, or 4G technology or handsets when market evidence, i.e., comparable licenses, were available, as they are here. In fact, in the CSIRO vs. Cisco matter, the United States Court of Appeals for the Federal Circuit rejected Cisco's argument that the law required the use of the chipset as the royalty base.***
>
> *102.* ***Because FRAND terms and conditions should be determined by reference to comparable licenses when such licenses are available, it should be dispositive that the overwhelming industry practice is to use the price of products sold by manufacturers of end-user devices, such as handsets, as the royalty base. Ericsson's licenses all use handset prices as the royalty base or imputed royalty base (along with fixed-price caps***

and floors). Thus, a baseband chipset royalty base would be inconsistent with licensing practices in the mobile telecommunications industry. It also would be inconsistent with the non-discrimination component of FRAND if Lava were to obtain chipset-based royalties*, contrary to Ericsson's well-settled practice and to industry practice more generally. And as I have explained the value of the inventions in the licensed patents is only fully realized by the improved functionality in the end user device.*"

709. On the other hand, Sunil Bhalla (DW-3) deposed that the royalty should be based on the value of the relevant component implementing the patented technology in the device. The relevant extracts from his affidavit are set out below:

"43…
(ii) The Plaintiff has offered a license to the Defendant based on the value of the handset. The appropriate royalty base is ultimately a legal and a technical question as to what, and in which part of the phone, any alleged patent of the Plaintiff adds value and as to the interpretation of FRAND. I cannot speak on these issues. However, from a commercial stand point, what I do understand is that every component that goes into a mobile phone like a base band processor, antenna, screen, charger, battery, camera is sold separately in the market and there is no reasonable explanation why the price of the component would not represent the value it adds to the phone. When we calculate, or determine the sale price of a mobile phone we include (i) cost of procuring the parts (ii) the cost of assembly (iii) cost of marketing and distribution (iv) the cost of working capital (v) after sale service vi) profit margin etc. The profit margin of the Defendant has not exceeded 3-4% of its sales in any year. In my view, a reasonable, willing licensor would be agreeable to identify the relevant component practicing the patented technology and charge royalty using the value of the said component as the base.

(iii) As I understand, each essential patent claimed by the Plaintiff must contain some invention which adds value to the technology and is essential for compliance with corresponding standard set by the SSOs. A patentee should be able to apportion the value of contribution of the essential patented invention from the overall value of a multi component product. Patentee must apportion the value of the invention from other non-patented features and royalty must be based on the value of such invention, rather than the value of the standard as a whole or any

increased value the patented feature gains from its inclusion in the standard."

16.9.4. ANALYSIS AND FINDINGS

710. In my opinion, Ericsson has led sufficient evidence to show that the telecom industry uses the end-device as a base for calculating royalty, which Lava has failed to dislodge.

711. Additionally, I have perused some of the comparable agreements [**Exhibit PW-1/15(colly)**] placed on record by Ericsson. The royalty rates agreed upon by the parties in the aforesaid licenses are based on the net selling price of the end-device. In none of the aforesaid licences, has the royalty been calculated on the value of the chipset or any other component.

712. The international jurisprudence on this aspect is unanimous that the basis for calculating royalty should be the end-product and not the chipset. In light of the settled legal position as well as the evidence on record, it is clear that the calculation of royalty on the basis of a SSPPU is inconsistent with the licensing practices in the telecommunication industry. Therefore, in my considered view, the royalty in the present case has to be calculated on the basis of the net selling price of the end-device.

16.10. WHETHER DAMAGES CAN BE GRANTED ONLY FOR ASSERTED SUIT PATENTS AND NOT FOR THE ENTIRE PORTFOLIO

16.10.1. SUBMISSIONS ON BEHALF OF THE PARTIES

713. It is the case of Lava that Lava is liable to take a license for use of only such suit patents in India, which are found to be valid, essential and infringed by this Court. Calculating damages by applying a royalty rate

covering thousands of foreign patents across multiple countries, would be excessive and disproportionate to the acts of infringement alleged by Ericsson in the plaint.

714. *Per contra*, Ericsson has submitted that it is the industry practise to grant global portfolio license on FRAND rates and it is impractical for an SEP owner to grant individual licenses on a country-by-country basis. It is further submitted that Lava has global operations and therefore, Lava is liable to pay royalty based on the global portfolio of Ericsson.

16.10.2. JUDICIAL PRECEDENTS

715. In ***Intex* v. *Ericsson*** (supra), the Division Bench of this Court has held that a patentee can seek global portfolio rates on the basis of the representative patents asserted in the suit. Further, it has also been held that seeking a global portfolio rate cannot be said to be against FRAND and in fact, it is the industry practise to seek royalty rates based on the entire portfolio. The relevant paragraphs are set out as under:

> "*101. Similarly, the Beijing High Court in* ***Inacom v. Sony (2015, No. 1194, Civil First Instance Judgment)****, upheld the claim for damages on the basis of the portfolio rate (RMB 1/unit), by holding that the sole patent asserted in the suit- which was key to the larger portfolio of patents- has been infringed.*
>
> *102. A study of decisions from various countries Industry practice, demonstrate the following unanimous view:*
>
> *(i) In a lawsuit for patent infringement, Standard Essential Patent holders assert only a handful of representative patents, even though they may have hundreds or thousands of Standard Essential Patents in their portfolio.*
>
> *(ii) An injunction restraining the sale of devices, is granted*

upon the Standard Essential Patent holder establishing infringement of even one (1) patent.

(iii) Determination of FRAND royalty rate for the entire portfolio is also done based on an evaluation of the representative patents asserted in the suit.

(iv) Licensing or evaluating FRAND rate on a patent-by-patent basis is impractical and is contrary to industry practice.

xxx *xxx* *xxx*

WHETHER A STANDARD ESSENTIAL PATENTEE CAN OFFER PORTFOLIO LICENCE INCLUDING A LICENCE INVOLVING DISPUTED OR POTENTIALLY DISPURTED FOREIGN PATENTS?

105. The issue that whether a Standard Essential Patent Owner, who has made a FRAND commitment, was required to offer individual single-patent FRAND licenses (i.e. Licenses limited to a particular patent in a particular territory), or whether he could comply with his FRAND obligations by offering a portfolio/cluster licence, was the primary question in the long running ***Unwired Planet v Huawei*** *(supra) litigation. Both the trial judge (Birss J) and* ***the Court of Appeal held that a patentee was not required to offer individual patent licences or country specific licences and that global portfolio licenses were capable of being FRAND.***

106. In addition to the standards themselves being international, many patent portfolios are international, as are the businesses of many implementers. Finally, outside of the litigation process, ***Standard Essential Patent owners and implementers will often negotiate a licence which best suits their respective needs in accordance with FRAND principles and this licence will often be global or at least cover a number of different territories. It may be wholly impractical for Standard Essential Patent owner to seek or negotiate a licence of its patent rights country by country, just as it may be prohibitively expensive for it to seek to enforce those rights by litigating in each country, in which they subsist. For all these reasons, the UK Courts have held that these considerations point strongly to the conclusion that a global portfolio licence between a Standard Essential Patent owner and an implementer may be FRAND.*** *Whether it is or not, in any given case, will depend on all the relevant circumstances. The Supreme Court of UK opined that the*

ETSI Intellectual Property Rights Policy is intended to have international effect and that the lower courts in UK were correct to infer that in framing its Intellectual Property Rights Policy, ETSI intended that parties and courts should look to and draw on commercial practices in the real world.

107. ***In fact, the UK Supreme Court recognizing the impracticality of seeking FRAND relief against an infringer on a patent-by patent basis has held in Unwired Planet v Huawei (supra), "In deciding that a worldwide licence was FRAND Birss J had regard to practice in the telecommunications industry to agree portfolio licences*** *and observed that every patent licence which the parties had produced in the trail bundles was a worldwide portfolio contract, although some licences carved out a particular territory while licensing the rest of the world (paragraphs 524-534). Unwired's portfolio covered 42 countries and was large enough that if would not be practicable to fight over every patent. A willing licensor of such a portfolio and a willing licencee such as Huawei with global sales would agree on a worldwide licence (paragraph 538-543).* ***He recorded that it was common ground that the industry assessed patent families rather that individual patents within a family (paragraph 546). He thus drew on industry practice in deciding that a FRAND licence would be a worldwide licence.***

*108. The UK Supreme Court also upheld the Court of Appeal's decision in paragraph 63 that the English courts did have jurisdiction to determine the FRAND terms of a disputed foreign patent. It held "****We now turn to the submission […] that the English courts have no jurisdiction to determine the terms of a licence involving disputed or potentially disputed foreign patents. We disagree. If the judgements of the English courts had purported to rule on the validity or infringement of a foreign patent, that would indeed be beyond their jurisdiction. But that is not what Birss J and the Court of Appeal have done. Indeed, they looked to the commercial practice in the industry of agreeing to take a licence of a portfolio of patents, regardless of whether or not each patent was valid or was infringed by use of the relevant technology in the standard, and constructed the IPR Policy and construed the IPR Policy as promoting that behaviour.***

109. Even, according to 'Terrell on the Law of Patents', the UK Supreme Court in ***Unwired Planet v Huawei*** *(supra) held that: (a)* ***it would not be disproportionate for the court to exclude an implementer from the UK market unless it enters into a global licence solely because it has infringed a single UK patent, because the implementer would be accessing the ability legally to manufacture and sell products which***

> ***comply with the standard on a worldwide basis;*** *and (b) it was not anomalous for two reasons that an implementer should be liable for damages only for the loss which a Standard Essential Patent owner incurs through the infringement of one or more of its UK patents if the implementer chooses to withdraw from the UK market rather than enter into a worldwide licence but that, if the implementer wishes to market its products in the UK, it must pay global royalties. First, the exercises which the court performs in: (i) awarding damages, and (ii) determining the terms of a licence, are different in nature and the award of damages is not to be equated with royalties paid under a contractual licence. Secondly, what the implementer purchases in entering into a worldwide license is the ability legally to manufacture and sell standard-compliant products on a worldwide basis.*
>
> *xxx* *xxx* *xxx*
>
> *111. Consequently,* ***as value is in the technology which forms a part of the standard and the suit patents is just representative of that technology, Ericsson is not required to offer individual patent licences or country specific licences and that global portfolio licences are capable of being FRAND.***"
>
> *(Emphasis supplied)*

716. It is pertinent to note that the aforesaid observations of the Division Bench in ***Intex* v. *Ericsson*** (supra) were in respect of a similar factual matrix, for the same patent owner, i.e., Ericsson, wherein it was held that Ericsson is not required to offer individual or country specific patent licenses, when global portfolio licenses are capable of being FRAND.

717. Admittedly, in the Noida suit, Lava itself sought license from Ericsson on FRAND terms in respect of all its SEPs and not just the suit patents. The relevant extract is set out below:

> "*61.* ***Without prejudice to the Plaintiffs aforesaid contentions, the Plaintiff submits the Defendant is bound by their irrevocable undertaking and promises and are obligated to license all SEPs to the Plaintiff on FRAND terms.*** *The Plaintiff further submits that the Defendant by breach of its own undertakings, promises and representations has caused immense damage to the Plaintiff which*

damages the Defendant is liable to make good."

(Emphasis supplied)

718. Nevertheless, I shall now proceed to analyse the evidence led by the parties in this regard.

16.10.3. EVIDENCE LED BY THE PARTIES

719. On behalf of Ericsson, John Han (PW-1) has deposed in his evidence that it is the industry practice as also economically efficient to offer a global license for the entire portfolio of SEPs and not only for the individual patents. He has further deposed that Ericsson uniformly licenses its patents on a global portfolio basis. The relevant extracts from the affidavit of John Han (PW-1) are as follows:

> *"38. As per its FRAND commitment,* ***Ericsson offers and enters into global patent license agreement with the implementers of the standards for the entire portfolio of Ericsson's essential patents, and as a result, the vast majority of Ericsson's licensees pay a worldwide rate on all of their worldwide sales, regardless of geography.***
>
> *39. In my experience, which spans over a decade of negotiating patent license agreements for Ericsson,* ***Plaintiff and licensees have always negotiated and arrived at a license under Ericsson's patents that is global in scope. Ericsson's licensees frequently manufacture mobile devices in one country and sell them in another, and, because standards like 2G and 3G are global, a consumer can use his or her phone all over the world.*** *Given the reality that a licensee's products are very likely made, used, and sold in multiple countries, the licensee needs a global license.*
>
> *xxx* *xxx* *xxx*
>
> *41. All of Ericsson's license agreements are portfolio-based license arrangements granting licenses under all of Ericsson's applicable standard essential patents to our licensees.* ***This is the norm and industry practice in the field of telecommunications as it is not feasible and practical for patent holders to negotiate and conclude individual patent license agreements for thousands of patents in different jurisdiction***

especially in view of the limited term of patent rights*. Such global portfolio license agreements typically have terms of five to seven years thereby providing global portfolio based arrangement between the two parties during that licensed period.*

42. ***Aligned with the industry practice, Ericsson also specifies one global rate to avoid the increased transaction costs associated with negotiating different rates for different geographies, collecting royalties paid at different rates by a single licensee, tracking locations in which products are manufactured, used, and sold, and ensuring compliance by performing complicated audits involving multiple rates spanning multiple geographies.****"*

(Emphasis supplied)

720. John Han (PW-1) was extensively cross-examined on this aspect, the relevant extracts from his cross-examination are as under:

"***Q.152.*** *So I take that the plaintiff would not agree to give a license of its alleged suit patents if the licensee wants to confine his business within this country?*

A. Ericsson would not be willing to grant a license only for those 8 patents because we would be in the same situation again with other Ericsson's patents. Ericsson does not believe it is fair and reasonable for Ericsson to two to three years to negotiate and enter into license agreements with respect to its individual patents.

Q. 153. *Are you aware of any court order either in India or outside where the so-called industry practice has been termed to be unfair or abuse?*

A. I do believe number of courts have adjudicated that portfolio-based licensing is indeed FRAND. For example, I believe that the US ITC Court has made this practice and for example the Brazilian Anti-Trust Competition Agency has reviewed Ericsson's practice and demand them to be FRAND.

Q.154. *So I take it that there is no court authority which has held that the Plaintiff's conduct is unfair, abusive or it seeks to impose conditions which are unreasonable?*

A. *You are correct.*

Q.369. *Every agreement that the Plaintiff enters into in those countries specifies the details of the patent portfolio of the Plaintiff in respect of which license is being granted. Is that correct?*

A. ***I believe I have already answered this question. When Ericsson enters into a license agreement it is our practice to enter into global portfolio-based license agreements. Accordingly, we define the term Licensed Patents to include any and all patents and patent applications that may be deemed essential during the terms of the license period. As a result, it is not our practice to list the details of the licensed patents in our agreements.***

Q.385. *Does the internal reference rates of the Plaintiff take into consideration the value that the functionality of the claimed invention contributes to the relevant functionality of the smallest saleable compliant implementation that practices the essential patent claim?*

A. *I believe I have already answered this question but I do so again.* ***Ericsson determines the value of our Standard Essential Patent portfolio against the end user product and its associated cellular functionality. Accordingly, it is not Ericsson's practice to value each and every patent in each and every country. Furthermore, we do not believe the relevant functionality of the smallest saleable compliant unit is the right measurement for determining the value of Ericsson's vast SEP portfolio on a global basis.***"

(Emphasis supplied)

721. Dr. Jonathan Putnam (PW-4), being an external economic expert, explained the nature of portfolio licensing during his cross-examination. He stated that it would be inefficient and discriminatory to grant license only for individual patent or the eight suit patents. The grant of such a license would discriminate in that licensee's favour and FRAND does not permit such discrimination. By seeking such discriminatory terms, the entity demonstrates that it does not actually seek a FRAND agreement. The relevant extracts are as under:

"***Q.42.*** *I put it to you this offer does not give any details of any particular declaration by the Plaintiff to any particular standard of ETSI for the alleged 8 suit patents as mentioned in page 24 to 28 of the plaint?*

A. The offer is for a portfolio license. This means it applies to all patents that are essential under any of the listed standards including all 2G and 3G standards administered by ETSI. Ericsson only negotiates and executes portfolio licenses, because this is the most efficient and comprehensive means of exchanging patent rights, and it offers the broadest protection to a prospective licensee. It would be inefficient and discriminatory to single out the 8 suit patents or any other individual patents. And as I have said all SEPs in Ericsson's portfolio are subject to the FRAND commitment and have been declared to ETSI.

Q.154. *Would you consider an entity which seeks license of only 8 suit alleged SEPs, to be an unwilling licensee?*

A. Yes, because the grant of such a license would discriminate in that licensee's favour. FRAND does not permit such discrimination. By asking for discriminatory terms, the entity demonstrates that it does not actually seek a FRAND agreement.

Q.158. *Whether, in your opinion, the unwillingness of a SEP holder to license only a part of its portfolio to a potential licensee, comply with FRAND?*

A. Yes, it does comply with FRAND. It is not reasonable to license only some of the licensor's SEPs, because such a license exposes both the licensor and the licensee to further litigation. Second, because other licenses are granted on the entire SEP portfolio, it is not possible to set a price for only a sub set of the portfolio. Third, a license to part of the portfolio is discriminatory and therefore, not FRAND.

Q.182. *Where is the obligation of a prospective licensee to take license of patents including SEPs which are not registered in the territory of its operations?*

A. *This is a legal question. It is also complicated.* ***One reason it is complicated is that mobile phones are made, used, and sold in different territories. Another reason is that companies cannot predict in which territories they will sell phones during the term***

> ***of the license agreement. Accordingly, the licensee usually needs and wants a license to patents registered outside the territory of its headquarters. That desire is reflected in the global licenses that are negotiated in telecommunications industry, including in the comparable license agreements produced in this case.***"
>
> *(Emphasis supplied)*

722. Pertinently, Shankar Iyer (DW-4), being the external economic expert, during his cross-examination, admitted that the prevailing industry practice is to negotiate global patent licensing agreements (hereinafter referred to as 'GPLAs'). The relevant extracts from his cross-examination are as under:

> "***Q.57.*** *I put it to you that in the context of SEPs it is the general industry practice to negotiate global patent license agreements on the basis of the portfolio, in order to avoid high transaction costs and in order to ensure expediency and also benefits to the licensees for global expansion of their business?*
>
> ***A.*** ***While it is true that industry practice is to negotiate global patent license agreements, in certain cases that practice is predominantly driven by two factors****. One, the convenience to the SEP holder, who may be self-interested in achieving particular licensing outcomes. Two,* ***in licensing a global portfolio makes sense for a named SEP implementer/defendant who has global scope with respect to sales. The recent literature makes this quite clear.*** *For example, an academic article that I cite DW-4/26, has this to say:* ***"most smart phone suppliers would presumably want worldwide patent rights under their licenses, unless they supply devices to only a few countries".*** *(See the discussion of Geographic Scope on page-5 of DW-4/26). Accordingly, the critical issue with respect to scope of the license is the geographic scope of sales of the named SEP implementer/defendant who is the counterparty to the SEP holder. If the named SEP implementer/defendant sells predominantly in one country, all else equal, it is commercially unreasonable to expect it to in license a worldwide license.*"
>
> *(Emphasis supplied)*

723. On the contrary, in paragraph 22 of his affidavit, Shankar Iyer (DW-

4) has deposed that the worldwide license is irrelevant for a geographically specialized licensee like Lava as it sells all its products in the Indian market and in Nepal. Paragraph 22 is set out as under:

> "*22. I say that from an economic perspective, Ericsson's proposal for a world-wide, non-exclusive license for Ericsson's portfolio of SEPs covering GSM, GPRS, EDGE and 3G technologies is irrelevant to a geographically specialized licensee.* ***Ericsson's claimed licensing practice of only offering a Global Patent Licensing Agreement and global rates, is a convenience only to Ericsson, when licensees are focused on particular geographies and do not seek freedom to operate worldwide. (Lava sells almost all its products in the Indian market with some products sold in Nepal.)*** *Ericsson's "global rate" is thus both discriminatory and welfare-reducing to geographically specialized licensees.*"
>
> *(Emphasis supplied)*

724. However, in his cross-examination, Shankar Iyer (DW-4) admitted that his analysis in paragraph 22 of his affidavit was based only on the representations made by Lava's counsel and no independent analysis was done by him. The relevant extracts are as under:

> "***Q.30.*** *What is the basis of the statement made by you in* ***Para 22*** *as also in other places in the affidavit for example para 93of your affidavit "Lava sells almost all its products in the Indian market with some products sold in Nepal"?*
>
> ***A.*** *I specifically posed this question of Lava's counsel. In particular, I asked Lava's counsel which Geographic locations the named Defendant in this matter, Lava International Limited, sells in.* ***They represented to me that the named Defendant Lava International Limited sells predominantly in the Indian market with some attendant sales in Nepal. Accordingly, my statements in paragraph 22 with respect to the geographic scope of Lava International Limited's sales is based upon information provided to me by Lava's counsel.***"
>
> *(Emphasis supplied)*

725. Sunil Bhalla (DW-3) deposed that Ericsson has asserted only eight

patents in the present suit, therefore, Lava should be required to pay royalty only for eight suit patents and not the entire global portfolio held by Ericsson. The relevant extract from his affidavit is set out below:

> "*43 ...*
>
> *(i)The defendant has consistently requested a license for only those patents in India which are found to be valid and essential and are relevant to the Defendant's business. The Plaintiff may have registered patents in various territories in the world, in particular the US and EU countries, those patents and the rights accruing therefrom do not add any value to the Defendant's business. Indeed, in my limited understanding, the patents registered outside India do not create any legal rights in India in favour of the Plaintiff. Therefore, it is unfair for the Plaintiff to charge a global rate to the Defendant based on their global portfolio whereas the Indian portfolio of the Plaintiff is limited only to about 30 Indian patents. As the Defendant has not accepted the Plaintiff's offer to license the global portfolio of EU and US in addition to Indian patents, the Defendant is branded as an unwilling licensee. This is not correct as nobody can be forced to pay for something that is not needed. Since Plaintiff has chosen to assert only 8 Indian Patents out of the total global portfolio of claimed 39,000 Patents, the Defendant at best can be proportionately required to be charged for only the 8 Indian patents, provided they are adjudicated to be valid and essential and infringed by the Defendant's products*."

16.10.4. ANALYSIS AND FINDINGS

726. SEPs are key in ensuring compatibility among diverse products and services, fostering a unified technological environment. The above discussion on legal principles and also the evidence placed on record, recognises that the development of SEPs and their licensing on FRAND terms for the entire portfolio, as opposed to the individual patent licensing, is crucial to ensure the development and functioning of interoperable technologies particularly in the telecommunications industry. This manner of licensing is crucial for maintaining compatibility across different devices

and networks. Additionally, this approach helps mitigate the risk of selective technology usage by implementers, which impairs interoperability.

727. The case set up by Lava for licensing individual patents from a portfolio is not workable as this could cause substantial administrative burdens and inefficiencies for both licensors and implementers. Individual patent licensing is likely to increase transaction costs, legal complexities, and uncertainties in technology implementation. In contrast, a portfolio-wide license streamlines this process, benefiting all the parties involved and eliminating the need for piecemeal licensing. Moreover, licensing the entire portfolio under FRAND principles ensures equitable and fair treatment of implementers, preventing any potential unfair advantages or discrimination. Above all, Ericsson has led sufficient evidence to prove that it is the industry practice to offer a global portfolio license for the entire portfolio and it is in conformity with the FRAND licensing practises to not offer individual patent licences or country specific licences.

728. Considering these factors, it is concluded that requiring implementers to license the entire SEP portfolio is a justifiable and balanced approach. This strategy not only facilitates the smooth operation and progression of technology but also aligns with the interests of both licensors and licensees. It upholds the principles of fairness and proportionality in the technological ecosystem. Granting damages only for the asserted patents, rather than for the entire portfolio, would not only deviate from industry practices and FRAND principles but also potentially disrupt the balance and fairness in the licensing ecosystem. In any case, when an implementer is implementing a standard, it is automatically implementing all the patents essential to that

standard. Therefore, the license it would need to take would be for all the SEPs and not just a representative set of SEPs, which have been asserted in a suit. Consequently, the damages would have to be assessed on the basis of the entire portfolio of patents and not just the asserted suit patents.

16.11. WHETHER COMPARABLE LICENSING APPROACH CAN BE PREFERRED FOR CALCULATION OF DAMAGES

WHETHER TOP-DOWN APPROACH CAN BE ADOPTED IN THE PRESENT CASE.

16.11.1. SUBMISSIONS ON BEHALF OF THE PARTIES

729. Lava has submitted that the preferred mode of calculation of damages is the 'top-down approach' and not the 'comparable licensing approach'. In this regard, Lava has placed reliance on the Judgment of the Patents Court of England and Wales in ***Unwired Planet*** (supra).

730. *Per contra*, it has been submitted on behalf of Ericsson that licenses, which are comparable in nature, play a significant role in the determination of royalty rates. According to Ericsson, these comparable licenses serve as evidence that can be used to establish FRAND rates. Furthermore, Ericsson contends that while the top-down approach is employed in the calculation of royalty rates, it is only utilized as a supplementary method to cross-verify the rates derived from the analysis of comparable licenses. Therefore, the comparable agreements can be looked into by courts to determine FRAND rates.

16.11.2. JUDICIAL PRECEDENTS

731. A top-down approach in SEP licensing requires determining the aggregate royalty burden for all patents essential to a particular standard and then apportioning a share to the total SEPs in the portfolio in question. For this, the implementor should provide comprehensive evidence, including the total number of SEPs applicable to the respective standards as well as a practical estimation of the total royalty burden.

732. The Patents Court of England and Wales in ***Unwired Planet*** (supra) observed that the comparable licensing agreements would represent the best evidence of the value of the portfolio in question. Thus, comparable agreements are the best piece of evidence to determine FRAND licensing rates. The relevant paragraphs from the said judgment are set out below:

> "*170. There was no real dispute of principle about how to work out what is and is not FRAND. The question is what would be fair, reasonable and non-discriminatory. Asking what a willing licensor and a willing licensee in the relevant circumstances acting without holding out or holding up would agree upon is likely to help decide that question. The evidence of the parties themselves will be relevant, including evidence of how negotiations work in practice in the industry. To the extent they are available other licences may be deployed as comparables.* ***Just as comparables may be useful in a damages enquiry when considering a reasonable royalty and may be useful in determining the terms of a license of right or in a Copyright Tribunal, so comparables may be useful in deciding what is FRAND. As always judgments will have to be made about how closely comparable any given license is to the relevant circumstances in issue. The relevance of comparables is that they are evidence of what real parties in real negotiations have agreed upon.*** *But like any real situation many factors may have been in play which make the license less relevant. The negotiations may have involved a greater or lesser degree of hold up or hold out and it may be impossible to know that from the evidence available.*
>
> *179. The other approach is to use comparable licences. These are licences which have already been entered into. The most directly comparable licences will be licences the patentee has already entered into for the portfolio in question. There are two in this case, the Unwired Planet-*

Lenovo 2014 license and the Unwired Planet-Samsung 2016 license. ***One might assume directly comparable licences would represent the best evidence of the value of the portfolio in issue.*** *However, the rates in these two licences are very different from each other and each side contends that one of them is not a useful comparable at all. I will return to those licences below.*

270. Furthermore, putting weight in these statements do not take into account what implementers and SEP holders have actually been content to agree in the intervening years. ***Compared to public statements, comparable licences are concrete data points, albeit their interpretation can be uncertain and the factors derived from them even more so****. One could use comparable licences to try and derive a figure for the total royalty burden T but to achieve that requires one to have done all the same work which is needed to apply comparables directly anyway, so back calculating T will not add anything.*"

(Emphasis supplied)

733. In ***Unwired Planet*** (supra), Justice Birss relied upon comparable licenses to determine FRAND rates. It was observed by Justice Birss that top-down approach is more useful in cross-checking the rates determined on the basis of comparable licenses. The conclusion of the said judgment is set out below:

"*806....*

10. ***A FRAND rate can be determined by using comparable licences if they are available. Freely negotiated licences are relevant evidence of what may be FRAND. A top-down approach can also be used in which the rate is set by determining the patentee's share of Relevant SEPs and applying that to the total aggregate royalty for a standard but this may be more useful as a cross-check.***"

(Emphasis supplied)

16.11.3. EVIDENCE LED BY THE PARTIES

734. Dr. Jonathan Putnam (PW-4), in his evidence, deposed that where comparable transactions exist, the best method to determine royalty is on the

basis of license fees paid to the patent owner by other licensees. Accordingly, he analysed 52 comparable licensing agreements that Ericsson entered into with other licensees in respect of its 2G and 3G SEP portfolios, which are most comparable with a license being offered to Lava.

735. Even though Lava advocates the adoption of top-down approach, it is pertinent to note that in paragraph 3 of his affidavit, Shankar Iyer (DW-4) recognized the evidentiary value of the comparable licensing agreements to determine FRAND royalties, the relevant extract is set out below:

> *"3. Over the course of my career, I have studied numerous industries and markets in the context of patent disputes. I have worked on more than a hundred matters that have involved intellectual property and have substantial expertise with a full range of remedies—including lost profits, price erosion, reasonable royalties, disgorgement, head start damages, and preliminary and permanent injunction analyses—that arise in complex commercial litigation. I have knowledge of and substantial experience with damage and valuation methodologies.* ***In numerous matters involving patent disputes, I have analyzed hundreds of comparable or purportedly comparable licenses, cash flow projections, and other indicia in the context of royalty calculations.****"*
>
> *(Emphasis supplied)*

736. During cross-examination, Shankar Iyer (DW-4) agreed that the dispositive comparable license agreements can be used to determine royalty rates. The relevant extracts are set out below:

> "***Q.223.*** *Do you agree with the statement "when comparable licenses exist which are dispositive, they can be potentially used to determine a rate and base which when multiplied produce the appropriate royalty"?*
>
> ***A.*** *This reads like an extract from a Court's opinion. I would want to know the context involved, but, as a general proposition, and* ***putting great weight on the word "dispositive", I agree.***"
>
> *(Emphasis supplied)*

737. Sunil Bhalla (DW-3), while conducting top-down analysis, stated that

the royalty rate for an SEP should be derived by dividing the single digit aggregate royalty rate equally amongst the total number of declared SEPs for a particular standard. However, he stated that he is not capable of conducting valuation of patents on FRAND terms. The relevant extracts are set out below:

> *"43…**I say that though I am not an expert on valuation of patents on FRAND terms, however, based on my commercial understanding of the subject and knowledge acquired by research, my understanding is that the approach and methodology undertaken by the Plaintiff are not fair or reasonable.** The defendant, has amongst others the following concerns regarding the patent licensing terms offered by the Plaintiff:*
> *…*
>
> *(vi) In India the Plaintiff has submitted that there is no basis of valuing FRAND royalty on any term other than the value of Global Portfolio. This is incorrect and false. The Plaintiff in its submission to Federal Trade Commission has submitted "(F)RAND in the context of UMTS to require a reasonable (single digit) aggregate royalty rate to be divided among the holders of essential patents based on the equality of essential patents. Such a principle recognizes that if the royalty levels for a standard are cumulatively too high, they will adversely impact and may negate the economic benefits of standardization. It is, therefore, important when negotiating royalty rates that individual licensors take into account the cumulative royalty levels payable by licensees, **A significant feature of any standard-specific definition of (F)RAND should, therefore, include the reasonable aggregate royalty rate range for standard compliant products. "The position of the Plaintiff remains similar to its submission to ETSI wherein supports the similar concept of equality amongst all SEP's and Maximum Cumulative royalty and suggests that royalty for SEP's should be based on Aggregate Reasonable Terms where 'Aggregated Reasonable Terms (ART) means that the total royalties (often referred to as "cumulative royalties") have to be reasonable in the sense of being commercially viable, i.e. affordable.** To mean that in the aggregate the terms should be objectively commercially reasonable taking into account the generally prevailing business conditions relevant for the standard and applicable product, patents owned by others for the specific technology, and the estimated value of the specific technology* in *relation to the necessary technologies of the product."*

(vii) ***Thus based on the principles of Single Digit aggregate royalty rate to be divided equally amongst the SEP, the commercial business calculation of determining a rate of single SEP is a simple unitary mathematics calculation of dividing the determined single digit royalty rate by the total number of declared SEP for a particular technology such as GSM.*** *Following are two examples of calculation:*

	GSM	***UMTS***	***GPRS***
No. of claimed and declared patent family	*2678*	*5061*	*494*
Maximum cumulative Royalty/Aggregate Reasonable Term	*1%*	*1%*	*1%*
Standard Rate or Royalty per Patent (%)	*0.000004*	*0.000002*	*0.00002*

	GSM	***UMTS***	***GPRS***
No. of claimed and declared patent family	*2678*	*5061*	*494*
Maximum Cumulative Royalty/Aggregate Reasonable Term	*9%*	*9%*	*9%*
Standard Rate or Royalty per Patent (%)	*0.000034*	*0.000018*	*0.00018*

In the absence of such calculations it is impossible to ascertain what royalty should be charged by which Licensor and to actually implement a limit on total royalty to be paid."

(Emphasis supplied)

591 Sunil Bhalla (DW-1) was cross-examined in respect of the aforesaid top-down analysis conducted by him. As per the said cross-examination, Sunil Bhalla has stated that the information used to make the tabular

representation has been provided to him by his team. However, neither in the affidavit, nor in the cross-examination, has the source of the aforesaid data been revealed. The relevant extracts of the cross-examination are set out below:

> *"**Q.167.** Please see page 24 of your affidavit. Who provided you these tables?*
>
> ***A.*** *These tables have been made by information provided and shared by me with my team.*
>
> ***Q.168.*** *Who obtained the data?*
>
> ***A.*** *If the question is referring to the data of the number of Claimed and Declared Patent Family, it was compiled by my team under my instructions.*
>
> ***Q.169.*** *Have you placed on record any documents given by your team which was the basis of their alleged compilation?*
>
> ***A.*** *To my knowledge, we have not provided on record any documents given by my team which was the basis of their compilation.*"

16.11.4. ANALYSIS AND FINDINGS

738. While top-down analysis is one form of calculation of FRAND royalty rates, the data relating to the total aggregate royalty payable in respect of all SEPs relevant for a particular standard and the number of SEPs declared essential for that standard, is required for adopting the top-down methodology. In the event, the data on the number of patent families essential to the standard is not properly referenced, the derived figures can at best represent an illustrative example of performing the calculation. Lava has neither provided sufficient evidence to justify a top-down approach for licensing, nor provided adequate calculations to claim a particular FRAND

rate or FRAND range. If advocating for a top-down approach, Lava should have presented a practical estimation of the total royalty burden, supported by requisite evidence.

739. Without leading evidence of the SEP landscape in the standards asserted, specific valuation of the portfolio of Ericsson and the aggregate royalty burden, Lava's contention for the adoption of top-down methodology as a viable alternative to comparable licensing approach, lacks a foundational base.

740. In fact, it has been candidly admitted on behalf of Lava that Lava has not entered into any license agreement with any other entity, nor is Lava paying any royalty in respect of the SEPs. Reference may be made to the cross examination of Sunil Bhalla (DW-3) in his cross-examination. The relevant extracts are set out below:

> "***Q.199.*** *Does the Defendant have any patent license agreement with any other company?*
>
> ***A.*** *While the Defendant is in discussions with few other companies,* ***it has not yet signed any agreement as the discussions have not been completed.*****"**
>
> *(Emphasis supplied)*

741. In light of the discussion above, I am of the considered view that comparable licenses provide for FRAND rates that have been negotiated between parties in similar circumstances, which makes the comparable licensing agreements highly reliable for determination of royalties for a prospective licensee. Therefore, the comparable licenses can be looked at by this Court for determination of FRAND rates payable by Lava.

16.12. WHETHER SIPROLABS LICENSING PROGRAM FOR WCDMA

SEPs IS RELEVANT TO THIS CASE.

16.12.1. ABOUT SIPROLAB

742. SIPROLAB Telecom was a private patent pool administrator and licensing agent for some standards relating to 3G (WCDMA) technologies.[50]

743. WCDMA is a telecommunication technology standard used in the third generation (3G) of mobile telecommunications networks and services. WCDMA falls under the broader umbrella of Universal Mobile Telecommunications System (UMTS). It provides higher data speeds and capacity compared to older 2G networks. WCDMA technology has been vital in the evolution of mobile telecommunications, enabling advanced services like high-speed internet access, video calling and mobile TV.

744. As per publicly available information, SIPROLAB has considerable experience in patent pool creation and management for standardized telecommunications technologies[51]. The said pool aims to simplify the licensing process for companies needing to use WCDMA technology by consolidating SEPs into a single portfolio, thereby enabling easier and more efficient access for licensees.

16.12.2. SUBMISSIONS ON BEHALF OF THE PARTIES ON SIPROLAB LICENSING PROGRAM

745. Lava has submitted that the SIPROLAB W-CDMA Licensing Program is not only directly relevant to the present case but also serves as a

[50] https://en.prnasia.com/releases/global/W_CDMA_Patent_Pool_for_Terminals_Offers_Additional_Royalty_Pricing_Options-68436.shtml

[51] https://www.prnewswire.com/news-releases/sipro-lab-telecom-becomes-the-new-licensing-administrator-of-the-w-cdma-patent-pool-113354394.html

reasonable benchmark for assessing the fairness and reasonableness of Ericsson's proposals to Lava. To substantiate its reliance on the SIPROLAB Licensing Program, Lava has primarily relied upon the testimony of Shankar Iyer (DW-4).

746. *Per Contra*, Ericsson has claimed that the SIPROLAB Licensing Program is not relevant for either the adjudication of the present suit or determination of FRAND rates. To support this contention, Ericsson contends that its absence as a participating member of the SIPROLAB Licensing Program and limited focus of SIPROLAB on 3G SEPs, obviates its relevance in determining rates for 2G and EDGE technologies, which have been asserted in the present suits. Additionally, Ericsson questions the use of early adopter rates considering Lava's long negotiation history with Ericsson.

16.12.3. EVIDENCE OF LAVA IN RESPECT OF SIPROLAB LICENSING PROGRAM

747. Primarily, Shankar Iyer (DW-4) in his evidence has averred that the royalty rates offered by Ericsson are higher than the benchmark rate which ought to be applicable. For the said analysis, Shankar Iyer (DW-4) has relied upon the SIPROLAB WCDMA Licensing Program and the maximum rates that would be applicable. It is contended by him that all the assumptions made in his analysis including the benchmark rates are beneficial to Ericsson. The relevant extracts from the affidavit of Shankar Iyer (DW-4) are set out below:

> *"19. For my analysis, I use industry data, including royalty structures publicly announced by patent pools for technologies at issue, as a reasonable benchmark to assess whether Ericsson's proposals to Lava are*

consistent with F/RAND terms. A patent pool directly relevant to the current matter is the SIPROLAB W-CDMA Licensing Program.

20. I say that my analysis (Section V.A below) shows that ***a maximum benchmark rate for the eight Patents at Issue ranges between*** [redacted] ***per unit sold.***

*21. I find that in contrast****, the per unit royalty rates for Lava's cheapest phones implied by Ericsson's royalty demands range between*** [redacted] ***and rates are even higher for more expensive Lava phones.*** *These rates are substantially higher than the SIPROLAB patent pool benchmark.*

xxx *xxx* *xxx*

23. Accordingly, a F/RAND license that gives Lava freedom to operate in India should be predicated on Ericsson's portfolio of valid and essential Indian patents that Lava allegedly infringes by selling Lava phones in the Indian market. (To the extent that Lava also sells a limited quantity of allegedly infringing phones outside India, Ericsson and Lava could, of course, negotiate F/RAND rates over the additional country or countries where Lava sells such phones.) ***Based on the list of fewer than thirty claimed Indian SEPs that Ericsson sent Lava, the SIPROLAB patent pool suggests that the maximum benchmark rate for the thirty SEPs for the relevant technologies (assumed belonging to thirty distinct families) ranges between*** [redacted] *Again, the per unit rates implied by Ericsson proposals to Lava substantially exceed this range (as well as the one I computed for the eight Patents at Issue). I therefore conclude that Ericsson's proposals are not FRAND.*"

(Emphasis supplied)

748. Lava has contended that its financial liability should be strictly limited to the suit patents, rather than being compelled to pay for a broader portfolio of patents that may be irrelevant to its operations. In support of this assertion, Shankar Iyer (DW-4) has calculated a per-patent rate based on the SIPROLAB patent pool benchmark. He has also made a comparative evaluation of the rates suggested by the SIPROLAB patent pool against those proposed by Ericsson. In his affidavit, Shankar Iyer (DW-4) comes to the following calculation:

"96. To arrive at a benchmark rate, I calculate the average rate a licensor within this pool receives for a patent family. Consider, for example, the rate at which the pool licenses to a company that sells 100,000 units each quarter, which is 267.25 per device sold based on SIPRO LAB's schedule presented above. Since SIPROLABS patent pool contains 400 patent families, the average licensor receives 267.25 x (1/400) or 20.17 per patent family. This average rate reflects the incremental valuation of an average patent family within the pool and provides a benchmark rate for each of Ericsson's SEP families at issue.

Given Lava's annual sales volume, the royalty rates Lava would pay to the average licensor within the SIPROLAB patent pool for the license of a single patent family would range between:

[redacted] *and*
[redacted]

97. Applying these rates to the eight Patents at Issue and assuming that they belong to eight distinct families, I obtain a royalty rates that range between:

[redacted], *and*
[redacted]

98. To summarize: By applying the above methodology, I conclude that a maximum benchmark rate for the eight Patents at Issue ranges between [redacted] *and* [redacted] *per unit sold.*

160. ***Therefore, the royalty rate in a FRAND offer has to be in the range of INR*** [redacted] ***to INR*** [redacted] ***per unit sold. Ericsson has failed to give such an offer.****"*

(Emphasis supplied)

749. Shankar Iyer (DW4) has also led evidence on behalf of Lava outlining the methodology used for deriving a benchmark rate for Ericsson's patented technologies on the basis that the SIPROLAB Pool is covering 3G technology, whereas most of the patents asserted in the suit are related to the 2G standards, which predate the 3G standard. Consequently, in his affidavit, he sets out the royalty rates applicable to the SIPROLAB Licensing Program. The relevant extracts from his affidavit are set out below:

"*90. The current royalty rates for SIPROLAB W-CDMA have been in place since September 25, 2012 and include volume discounts based on the total number of products for which a licensee pays royalties in each quarter. (Exhibit DW4/21). The royalty structure also changes over time:* ***For the first two years, the royalty rates are based on a percentage of the Net Selling Price of the end product and are constrained by floors and ceilings. Starting from the third year, the royalty rates become a certain dollar amount per each product.*** *However,* ***if a licensee is an "early adopter," i.e., if the licensee enters a license agreement within six months of contact with SIPROLAB, they automatically qualify for the fixed per unit rates starting from year 1.*** *(Exhibit DW4/21). I present these royalty rates in the table below.*"

Table 3: Royalty Rates for SIPROLAB W-CDMA Licensing Program

(Early Adopter Program)

Quarterly Unit	Per unit Rate (USD)	Per unit Rate (INR)
1 to 2.5M	$1.00	₹67.25
2.5M to 6.25M	$0.75	₹50.44
6.25M to12.5M	$0.55	₹36.99
12.5M to 25M	$0.41	₹27.57
25M to 50M	$0.30	₹20.18
50M+	$0.22	₹14.80

91. For the reasons discussed above, the rates in this patent pool can be used to arrive at a benchmark rate for Ericsson's patented technology related to W-CDMA technology. In addition, given that the 2G technology predates the 3G technology and that licensing rates for 2G technologies tend to be lower than the rates for 3G technologies, ***I conservatively apply the imputed rates for 3G-related patented technologies to the 2G-related patented technologies****.*

92. ***To arrive at a benchmark rate, I calculate the average rate a licensor within this pool receives for a patent family. Consider, for example, the rate at which the pool licenses to a company that sells 100,000 units each quarter, which is ₹67.25 per device sold based on SIPRO LAB's schedule presented above. Since SIPROLAB's patent pool contains 400 patent families, the average licensor receives ₹67.25 x (1/400) or ₹0.17 per patent family. This average rate reflects the***

incremental valuation of an average patent family within the pool and provides a benchmark rate for each of Ericsson's SEP families at issue.

93. I emphasize that the ₹67.25 per device sold based on SIPRO LAB's schedule is not a F/RAND rate for Ericsson's Patents at Issue for two reasons. First, the ₹67.25 per device is a benchmark rate that should be divided among all the 400 patent families, as I have shown below to arrive at a benchmark for Ericsson's India SEPs. Second, any F/RAND rate for Ericsson's India SEPs pursuant to the SIPROLAB per patent benchmark should be adjusted to account for the fact that Lava is geographically specialized and does not seek worldwide freedom to operate outside of India and Nepal."

(Emphasis supplied)

750. In support of Lava's claim that SIPROLAB Licensing Pool is relevant to the present case, Shankar Iyer (DW-4) outlines the approach to establish a benchmark royalty rate for Ericsson's SEPs using the SIPROLAB WCDMA patent pool. He has also highlighted that the adjustments are necessary to account for specific factors, such as geographical scope and differences between technology generations.

751. In view of the above, Lava claims that the FRAND royalty rate ought to have been in the range of [redacted] per device and that Ericsson has failed to provide such an offer. It is their case that considering that none of the offers made by Ericsson were in the said range derived by their expert and are accordingly inconsistent with the FRAND principles.

752. Lava in its written submissions dated 16th August, 2017 has claimed that there can be no other basis for determining a FRAND rate other than the methodology advocated by Shankar Iyer (DW-4) considering the SIPROLAB Licensing Program. Lava has also taken a categorical stand that calculation of damages has to be on the basis of the suit patents only and not the portfolio of patents asserted by Ericsson. Consequently, Lava claims that

considering that Ericsson has not led evidence of damages on the basis of the suit patents, Ericsson is not entitled to any damages. The relevant extracts from the said written submissions are also set out below:

> "*160. Therefore,* ***the royalty rate in a FRAND offer has to be in the range of [redacted] per unit sold. Ericsson has failed to give such an offer.***
> *161. In view of the above, Lava submits that the royalty rate offered by Ericsson in its offers of 05 April 2013, 25 March 2015 and even in the alleged offers of 21 August 2014 and November 2015 are all inconsistent with their FRAND obligations and Issue No. 5 should be decided against Ericsson.*
>
> *162. If the Court were to accept Lava's positon on Issue No.5 that only the Indian patents found essential and valid should form the basis of FRAND, then Issue No.7 on the quantum of damages would follow therefrom.*
>
> *163. While* ***Lava considers that there is no other basis to determine the FRAND rate than as suggested above****, if for any reason the Court is persuaded to determine FRAND based on value of any patent not in suit and not found essential and valid and infringing, then Lava submits that the calculation of damages will have to be undertaken for the eight Suit Patents by apportioning from the FRAND portfolio rate fixed by the Court the value of the eight Suit Patents.*
>
> *164. There is no authority in law that allows a party to allege and prove infringement of one patent and seek damages based on the value of all its other patents. Therefore, the* ***damages have to be apportioned and calculated for the eight patents and DW-4 is the only witness who has led the relevant evidence on the issue.***
>
> *xxx* *xxx* *xxx*
>
> *166. Ericsson having refused to lead any evidence on the calculation of damages based on the infringement of the eight suit patents cannot seek any damages. If the Court is inclined to grant any damages at all the only basis available is the calculation of DW-4."*
>
> *(Emphasis supplied)*

16.12.4. ANALYSIS AND FINDINGS

753. I have examined the rival submissions presented by Lava and

Ericsson in respect of the relevance, applicability and underlying principles of the SIPROLAB Licensing Pool. The contrasting viewpoints presented by both Ericsson and Lava highlight the complexities involved in aligning licensing practices with the industry standards, while also adhering to the principles of fairness and reasonableness as dictated by the FRAND commitment.

754. To begin with, a reference may be made to the cross-examination conducted by Ericsson of Shankar Iyer (DW-4). The cross-examination would provide clarity into the methodologies and evaluations used by Shankar Iyer (DW-4) in his approach to establishing a benchmark rate for Ericsson's patents, particularly in the context of the SIPROLAB patent pool program and its relevance to W-CDMA technology. Some of the key responses given by Shankar Iyer in his cross examination are set out below:

> "***Q.72.*** *In the context of W-CDMA which is where you have relied upon Siprolabs, does Siprolabs license the end product.*
>
> ***A.*** *As I set-forth in paragraph 90 of my affidavit, for the first two years, Siprolabs royalty rates are based on a percentage of the net selling price of the end product and are constrained by floors and ceilings. Starting in the third year, the royalty rates become a certain dollar amount for each product.*
>
> ***Q.132.*** *Are you aware if Siprolab has approached Lava asking them to take the license?*
>
> ***A.*** *No.*
>
> ***Q.177.*** *Have you evaluated the value of Siprolabs W-CDMA patents qua the UMTS standard?*
>
> ***A.*** *To the extent that UMTS technology is also referred to as the W-CDMA technology, Siprolab itself values its patent pool according to the schedule set forth in Ex.DW-4/21. To reiterate Siprolab's offer for a prospective licensee with less than 2.5 million quarterly*

units is valued at 1% of the net sale price with a floor of USD 1 and a ceiling of USD 2. These figures bind the value associated with Siprolab's W-CDMA patent pool.

Q.178. *Do you believe that the figures which are offered by Siprolab reflect the incremental value of the patents in the Siprolab's pool?*

A. *Again, to reiterate what I said yesterday, the figures are ones that are offered by Siprolab. The true incremental value of the patents in the pool will be the outcome of negotiation between Siprolab and prospective licensees because realised incremental value is what both licensor and licensee mutually agree upon.*"

755. The above cross-examination of Shankar Iyer reveals key details about SIPROLAB licensing practices. Specifically, Shankar Iyer confirmed that SIPROLAB licenses the end product, applying royalty rates as a percentage of the net selling price for the initial two years, within pre-established floor and ceiling limits. Furthermore, he clarified that SIPROLAB evaluates its 3G patent pool based on a structured pricing schedule, setting the value at 1% of the net sale price of each unit, subject to a minimum of USD 1 and a maximum of USD 2 per unit. This testimony confirms that in the SIPROLAB portfolio, the royalty burden is determined on the basis of the net selling prices of the devices and not on the basis of the chipset Furthermore, it is safe to conclude that portfolio-wide licensing is a mechanism adopted not only by individual licensors but also by patent pools such as SIPROLAB.

756. The SIPROLAB Patent Licensing Pool deals with patents under the WCDMA standard. Out of the eight suit patents, only two patents have been asserted to the 3G/WCDMA standard and the rest of the six patents have been asserted to the EDGE and AMR standards. This is the first indicator of a potential mismatch in the applicability of SIPROLAB rates and benchmark

rates computed and used by Shankar Iyer (DW-4). Notably, the rates provided by SIPROLAB do not specifically address AMR and EDGE standards, which are the subject matter of six of the suit patents. Further, Lava has not even led evidence to contend that two of the suit patents relating to the 3G standard are part of the SIPROLAB Licensing Program, which further undermines their reliance on SIPROLAB's rates and terms.

757. Moreover, there is no indication that Lava had sought or attempted to obtain a license from the SIPROLAB patent pool, even when Ericsson approached Lava in November 2011 with its offer for FRAND licensing. Throughout the negotiation period, Lava did not make a reference to the SIPROLAB, raising questions about the sudden reliance on SIPROLAB's licensing rates and program in the present case. This approach seems contradictory especially given Lava's earlier claim that royalty rates should be calculated based on the chipset and on a patent-by-patent and country-by-country basis, which contrasts with the SIPROLAB Licensing Program's method of calculating royalties on a global portfolio basis and based on the net selling price of the device.

758. Additionally, Shankar Iyer's selection of the 'early adopter' rates (early adopter rates are offered to the implementor when the negotiations are completed within six months) for his analysis lacks any justification, particularly considering Lava's extensive negotiation period with Ericsson.

759. Therefore, the analysis conducted by Shankar Iyer (DW-4) in his affidavit appears to involve a comparison of dissimilar elements. On one hand, he utilizes rates associated with a portfolio-based license, as seen in the SIPROLAB Licensing Program. On the other hand, when attempting to

compute FRAND rates in the present case, he shifts to a patent-by-patent licensing mechanism. In my considered view, there is no rationale for adopting the methodology proposed by Shankar Iyer, as it departs from the portfolio-based approach that underpins the SIPROLAB licensing program. This inconsistency undermines the reliability of his analysis and its relevance to the determination of FRAND rates in this case.

760. Therefore, based on the evidence on record and the arguments, in my considered view, the SIPROLAB Licensing Program for WCDMA SEPs is not relevant to this case.

16.13. WHETHER ERICSSON'S OFFER TO LICENSE THE PORTFOLIO OF PATENTS RESULTS IN HOLD UP OR ROYALTY STACKING

16.13.1. INTRODUCTION

761. The concept of patent hold-up refers to the ability of SEP owner to extract higher and unfair royalties once the industry is locked into the standard and switching to an alternative technology is not feasible. This situation arises when a company, having pledged to license its essential technology on FRAND terms, later demands exorbitant fees or unfavourable licensing terms.

762. On the other hand, the concept of royalty stacking refers to the problem where a single licensee faces the accumulation of royalty claims from multiple patent holders. This occurs particularly in industries where products, like standard-compliant devices, may infringe upon thousands of patents. Each patent holder might demand a royalty, leading to an overall cost that can be unsustainable for the licensee, potentially stifling innovation

and market competition.

16.13.2. SUBMISSIONS ON BEHALF OF THE PARTIES

763. Lava has submitted that the license for Ericsson's patent on the basis of the portfolio licensing approach will result in hold up and royalty stacking, which is against FRAND principles.

764. *Per Contra*, Ericsson has claimed that their GPLA ensures that royalty stacking and hold up conditions do not occur. Ericsson has submitted that courts have recognised that the issues of royalty stacking and hold-up are not the real concerns in the telecommunication industry. It is further submitted on behalf of Ericsson that Lava has not executed any license agreement with any third party relating to GSM, EDGE and WCDMA patents. Therefore, the issue of royalty stacking does not arise in the present case.

16.13.3. JUDICIAL PRECEDENTS

765. To address the challenges posed by patent hold-up and royalty stacking, the courts have increasingly emphasised the need for concrete evidence before considering these issues in determination of infringement proceedings. This approach was notably highlighted in ***Ericsson* v. *D-Link*** (supra), where the court required clear and substantial proof of patent hold-up and royalty stacking to warrant a jury instruction. The judgment underscored the necessity for parties alleging such practices to present specific instances and quantifiable data to substantiate their claims. This requirement for tangible evidence ensures that the considerations of patent hold-up and royalty stacking are grounded in actual market realities and not

speculative assertions.

766. The judgment in ***Ericsson v. D-Link (supra)***, which was a jury trial, specifically provides that a party alleging royalty staking and hold-up has to place on record sufficient and cogent evidence in respect of the same. The court emphasised that without concrete evidence, i.e., instances of Ericsson demanding higher royalty rates post-adoption of the 802.11(n) standard, jury instruction could not have been given for consideration of the said issue. In the said decision, the court underscored the fact that D-Link's expert did not quantify the actual royalties paid for 802.11 patents, nor did D-Link present evidence of other licenses or royalty demands related to its Wi-Fi enabled products. The relevant paragraphs from the said judgment are set out below:

> *"**In this case, we agree with the district court that D–Link failed to provide evidence of patent hold-up and royalty stacking sufficient to warrant a jury instruction. JMOL Order, 2013 WL 4046225, at *25–26 (''Defendants failed to present any evidence of actual hold-up or royalty stacking.'' (emphasis in original)). If D–Link had provided evidence that Ericsson started requesting higher royalty rates after the adoption of the 802.11(n) standard, the court could have addressed it by instructing the jury on patent hold-up or, perhaps, setting the hypothetical negotiation date before the adoption of the standard.10 D– Link, however, failed to provide any such evidence.** Absent evidence that Ericsson used its SEPs to demand higher royalties from standard-compliant companies, we see no error in the district court's refusal to instruct the jury on patent hold-up or to adjust the instructions expressly to take patent hold-up into account. Indeed, as noted above, the court found that Ericsson complied with its RAND obligations and did not demand an unreasonable royalty for use of its technology.*
>
> *A jury, moreover, need not be instructed regarding royalty stacking unless there is actual evidence of stacking. The mere fact that thousands of patents are declared to be essential to a standard does not mean that a standard-compliant company will necessarily have to pay a royalty to each SEP holder. In this case, D–Link's expert ''never even attempted to determine the actual amount of royalties Defendants are currently paying for 802.11 patents.'' JMOL Order, 2013 WL 4046225, at *18.*

> *In other words,* ***D–Link failed to come forward with any evidence of other licenses it has taken on Wi–Fi essential patents or royalty demands on its Wi–Fi enabled products. Because D–Link failed to provide any evidence of actual royalty stacking, the district court properly refused to instruct the jury on royalty stacking.*** *We therefore hold that the district court did not err by refusing to instruct the jury on the general concepts of patent hold-up and royalty stacking."*
>
> *(Emphasis supplied)*

16.13.4. EVIDENCE LED BY THE PARTIES

767. In the present case also, no evidence has been led by Lava to prove royalty stacking and hold-up.

768. Further, in respect of the portfolio wide license that has been offered in the present case, there has been a reduction in the royalty rates that Ericsson sought to charge from various implementors including Lava. This is also detailed in the subsequent section in which specific rates have been considered by this Court.

769. Shankar Iyer (DW-4), in his cross-examination, has admitted that Lava has not executed any license for use of standardized technologies and is currently not paying royalty to any of the SEP owners. The relevant extract is set out below:

> *"**Q.58.** Did you check with Lava if it had executed any patent license agreement with any SEP holder for 2G and 3G devices?*
>
> ***A.*** *I asked a related question to Lava's counsel, which is whether Lava is currently paying any royalties associated with SEP technologies.*
>
> ***Q.59.*** *What was Lava's response to you?*
>
> ***A.*** ***Lava represented to me that they are not currently paying royalties associated with SEP technologies.****"*

770. The aforesaid stand regarding payment of royalties for SEP technologies, was also taken by Sunil Bhalla (DW-3) in his cross-examination. The relevant extract is set out below:

> *"**Q.199.** Does the Defendant have any patent license agreement with any other company?*
>
> ***A.*** *While the Defendant is in discussions with few other companies, **it has not yet signed any agreement as the discussions have not been completed.**"*
>
> *(Emphasis supplied)*

16.13.5. ANALYSIS AND FINDINGS

771. From the aforesaid cross examination, it is evident that Lava has not entered into any patent license agreements with SEP holders for the standards for which the suit patents are SEPs. The absence of any licensing agreements or royalty payments to SEP holders by Lava is a clear indicator that Lava is not fulfilling the obligations that implementers have towards SEP holders.

772. On a specific query by this Court during the course of final arguments, if Lava is paying any royalty to any of the SEP owners, the counsel appearing on behalf of Lava took the liberty to answer the same on the next date of hearing. However, no answer was forthcoming and neither has the same been dealt with in the written submissions by Lava.

773. The absence of a clear answer, especially after a direct query from the court casts significant doubt on Lava's engagement with SEP holders on the aspect of licensing and royalty payments. The counsel's failure to address this crucial aspect, despite being given the opportunity, is indicative of Lava's attempt to free ride over patented technology.

774. To make a valid argument for royalty stacking or hold-up, an implementor must present concrete evidence, as emphasised in ***Ericsson v. D-Link*** (supra) and reiterated in the present case. Specifically, the implementor must demonstrate that post-adoption of the standard, the SEP holder has started to demand higher royalties than those initially offered. In the absence of specific evidence that would prove even the demand for higher royalties, there can be no case made out that royalty stacking or hold-up is occurring. Without such evidence, the implementor's claim lacks the necessary factual and evidentiary basis to substantiate allegations of anti-competitive behaviour by the SEP holder.

775. In my considered view, no question of royalty stacking arises in the present case as Lava is not paying any royalty to any party in respect of any of the SEPs being implemented by it in its devices. Further, the fact that Ericsson has negotiated with Lava for more than 4 years and has in fact made various FRAND offers from time to time, despite the fact no counter-offer was ever given by Lava, also shows that there was never a situation of hold-up in this case.

16.13.6. WHETHER LAVA'S CONDUCT LEADS TO HOLD-OUT.

776. Moreover, from the above analysis, the clear position that emerges is that Lava's approach in this negotiation can be characterised as a deliberate strategy of hold-out, which is a tactic adopted by the implementors to delay or avoid reaching an agreement. The potential for hold-out by a prospective licensee has also been recognised in ***Unwired Planet*** (supra) by Justice Birss. The relevant extracts are set out below:

"*657. The other issue is the potential for hold-out by putative licensees. Hold-out is also called reverse hold-up. There is no difference. Hold out can be considered from two perspectives: the potential for hold out in theory, and the evidence for it in practice.*

xxx *xxx* *xxx*

*664. Unwired Planet pointed out that in the experts' joint memorandum Prof Neven accepted that there are circumstances in principle in which implementers can exercise bargaining power by holding out, but suggested that bargaining power must be assessed in the context of the court procedure that would be triggered in the case of disagreement. Unwired Planet referred to Prof Neven's "**Justice is not blind**" paper cited above which indicated that in the context of the court procedures adopted in key jurisdictions in Europe, including the United Kingdom, licensee hold-out is a very real possibility.* ***The paper includes a conclusion that "serious consideration should be given in the policy debate to the risk of reverse hold up by the licensees" and that while concerns of hold-up by SEP holders may not be well-founded, "In fact, it would appear that the licensee may often engage in a reverse hold-up."*** *The paper was put to Prof Neven in cross-examination. He emphasised that the modelling in the paper was theoretical and that the case law had moved on since then due to* ***Huawei v ZTE****.* ***These points are both true as far as they go but in my judgment the Professor's paper can properly be taken to recognise that hold-out by licensees is something which can occur and can be an economically rational approach for a licensee to take.***

665. ***Overall I find that there is clear potential on theoretical grounds for hold-out to occur****.*

(Emphasis supplied)

777. Hold-out strategies lead to the continuous use of patented technology without the payment of appropriate royalties. As a result, the implementers gain undue advantages, such as prolonged access to the technology without financial obligations. This approach can be deemed unfair and unreasonable as it disrupts the balance between the rights of the patent holder and the interests of the implementer. Such hold-out actions undermine the principles of FRAND licensing, which are designed to ensure equitable access to SEPs while providing fair compensation to the patent owners. In the context of

this negotiation, Lava's hold-out strategy not only hampers the resolution of licensing terms but also poses a challenge to the integrity of the FRAND framework, affecting the overall ecosystem of SEPs.

16.14. WHETHER THE LICENSES FILED ON BEHALF OF ERICSSON ARE COMPARABLE LICENSES.

16.14.1. SUBMISSIONS ON BEHALF OF THE PARTIES

778. In this regard, Lava has made the following submissions:

I. The comparable licenses placed on record by Ericsson are global in scope and comprise several thousand foreign patents and cover multiple countries other than India. Thus, the rates offered are a lot more than the value of eight suit patents and are more than any license required for the devices sold by Lava in India.

II. In case of SEPs, factors such as scale and size of business, area of operation, product portfolio, negotiation and the circumstances of execution of the parties who executed the agreements must be considered, failing which the alleged comparable license agreements cannot be considered as 'comparable'.

III. Dr. Jonathan Putnam (PW-4) did not take into account the aforesaid factors while selecting 52 comparable licensing agreements.

IV. Lava was provided copies of the aforesaid comparable agreements with the rates redacted. Thus, Lava had no opportunity to verify whether the rates mentioned in the alleged comparable licenses were in fact consistent with the rates offered to Lava or not.

779. *Per contra*, it is submitted on behalf of Ericsson that 52 licensing

agreements placed on record are comparable and do not discriminate between large entities and new entrants. It is further submitted that Lava has been offered royalty rates similar to the ones offered to similarly situated Indian entities.

16.14.2. JUDICIAL PRECEDENTS

780. In ***Unwired planet*** (supra), the argument of the defendant that every small new entrant should not be charged the same royalty as that of the established large entity was rejected and it was held that the FRAND rate must be the one that does not discriminate between established large entities and new entrants. The relevant extract from the said judgment is set out below:

> *"175. .... Different licensees will have differing levels of bargaining power. That is another way of saying their ability to resist hold up and their ability to hold out will vary. It would be unfair (and discriminatory) to assess what is and is not FRAND by reference to this and other characteristics of specific licensees. In my view,* ***it would not be FRAND, for example, for a small new entrant to the market to have to pay a higher royalty rate than an established large entity. Limiting comparable licences to those where Huawei or a similar company like Samsung is the licensee is therefore unjustified. In my judgment the FRAND rate ought to be generally non-discriminatory in that it is determined primarily by reference to the value of the patents being licensed and has the result that all licensees who need the same kind of licence will be charged the same kind of rate.***
>
> *(Emphasis supplied)*

781. While concluding, it was held by Justice Birss that the FRAND rate does not vary depending on the size of the licensee. The relevant paragraph is as under:

> *"806 .....*

(8) ***An appropriate way to determine a FRAND royalty is to determine a benchmark rate which is governed by the value of the patentee's portfolio. That will be fair, reasonable and generally non-discriminatory. The rate does not vary depending on the size of the licensee. It will eliminate hold-up and hold-out. Small new entrants are entitled to pay a royalty based on the same benchmark as established large entities.*** *"*

(Emphasis supplied)

782. The aforesaid finding was ultimately affirmed by the UK Supreme Court. The relevant observations of the UK Supreme Court are set out below:

"*121. First, Unwired submits that to interpret the non-discrimination obligation in the "general" sense for which it contends gives full effect to the non-discrimination limb of the FRAND undertaking.* ***Non-discrimination between licensees is achieved, because the FRAND rate is objectively determined based on the value of the portfolio and it does not take into account the characteristics of individual licensees. It satisfies the obligation to treat like cases alike, because the same rate is made available to all licensees who are similarly situated in the sense that they seek the same kind of licence.*** *We agree. This reflects our reasoning above.*

122. Secondly, Unwired submits that the non-discrimination limb of the FRAND undertaking should not be read in isolation so as to trump all other considerations; that is to say, as a separate free-standing obligation. ***Birss J and the Court of Appeal correctly read it as working together with the fair and reasonable limb of FRAND as part of a unitary concept. The role of the non-discrimination limb is to ensure that the fair and reasonable royalty is one which does not depend on any idiosyncratic characteristics of the licensee.*** *Huawei's approach, by contrast, would mean that the existence of a prior licence which the judge had expressly and legitimately held did not represent useful evidence of the value of the portfolio compelled Unwired to license its SEPs at the same rate, and therefore receive remuneration which was less than a fair and reasonable return for its portfolio. This would be to give the non-discrimination limb an unnecessarily extreme effect. Again, we agree. The conclusion for which Huawei contends cannot be justified with reference to the intended purposes of the ETSI licensing regime and would conflict with those purposes.*"

(Emphasis supplied)

783. The aforesaid observations would be fully applicable in the facts and circumstances of the present case. A FRAND rate cannot discriminate between licensees on the basis of scale of operations or date of entry in the market. Naturally, the cumulative burden of royalty would be less for an entity with small operations than for an entity with large scale operations even though the FRAND rate may be similar.

16.14.3. EVIDENCE LED BY THE PARTIES

784. Dr. Jonathan Putnam (PW-4) took into account comparable licensing agreements that were in existence when negotiations commenced between Ericsson and Lava in 2011 in relation to Ericsson's 2G and 3G SEPs, whether the licensee had any of its own patents to cross-license and whether parties were discussing a running royalty model or a lump sum model. The relevant extracts from the evidence of Dr. Jonathan Putnam (PW-4) are set out below:

> "*33. To assess whether the terms and conditions offered by Ericsson to Lava were FRAND, I took into account the aforesaid principles. This required:*
>
> *a. An inquiry as to whether transactions exist that Ericsson has entered into with any other parties that can be regarded as most comparable to the hypothetical Ericsson/Lava license. In my view, licenses Ericsson negotiated for its 2G and/or 3G essential patent portfolios that share the same fundamental characteristics with the hypothetical Ericsson/Lava license are "strongly comparable" to the hypothetical license because one party (Ericsson) is the same and the licensed patents are largely the same…*
>
> *b.* ***An inquiry as to whether an established royalty exists in the strongly comparable licenses as such established royalties are usually the best measure of a reasonable royalty for a given use of an invention because it removes the need to guess at the terms to***

> ***which parties would hypothetically agree.*** *As applied to the present case, this inquiry looks to Ericsson's comparable licenses for evidence as to "reasonable" terms and conditions.* ***Accordingly, Ericsson's comparable licenses constitute a firm foundation for the conclusion that the terms and conditions found in these agreements are "reasonable," as that term is applied to the licensing of Ericsson's 2G and 3G SEPs.***
>
> *34. In view of the aforesaid,* ***the best data available to determine the value of any given standard essential portfolio and whether the terms offered by a party are FRAND are "comparable" licenses. These agreements reflect the expectations, preferences, practices, and laws that constrain each party's demand for and supply of standard essential technology. Licenses may be structured differently, depending on each party's specific needs.***
>
> *38. For purposes of this case,* ***I have reviewed Ericsson's existing licenses under its 2G and/or 3G SEP portfolios and identified the most comparable licenses to the potential license with Lava.*** *As per my analysis of the ETSI database, Lava does not own any 2G or 3G SEPs under which Ericsson has potential exposure. This is consistent with my understanding that Lava has not presented any evidence of its own SEPs in this proceeding. Thus, any cross-license will not afford patent grant-back value to Ericsson. For this reason, and for the reasons I explained above, I have excluded from the universe of comparable licenses cross-licenses where both Ericsson and the licensee have meaningful exposure under each other's patents.*
>
> *40.* ***Effective Date. Ericsson first approached Lava in 2011 regarding negotiations for a potential license. For this reason, I included Ericsson agreements with an effective date after January 1, 2011. This period includes licenses that Ericsson entered into both before and after its initial divestments of a number of its SEP families in 2013.*** *Thus, in my analysis I have taken into consideration the license agreements that were in existence when negotiations commenced between Ericsson and Lava. I then analyzed the comparable licenses, with the intent to provide an opinion as to whether in my view the offers made by Ericsson to Lava between 2013 and 2015 were FRAND offers or not.*"
>
> *(Emphasis supplied)*

785. A specific question was put to Dr. Jonathan Putnam (PW-4) during cross-examination, with regard to who are similarly situated entities to Lava

in India. The relevant extraction is reproduced below:

> "***Q.76.*** *Who according to you are similarly situated entities vis-à-vis the Defendant in the Indian market?*
>
> ***A. In general similarly situated entities should not be limited to the Indian market. But to show that Ericsson has treated Lava similarly to other Indian firms, I prepared table 3 of my affidavit found on Page 29. Table 3 compares the 4 offers made to Lava with the court orders in the Micromax suit, which are based on Ericsson's licensees, and to Ericsson's licenses with [redacted] and [redacted] Those comparison show that Lava has been offered essentially identical terms to the terms paid by Ericsson's other Indian licensees, who are similarly situated to Lava in their patent position and product sales.***"
>
> *(Emphasis supplied)*

786. John Han (PW-1) was also specifically cross-examined on behalf of Lava in relation to similarly placed Indian companies, who were in competition with Lava at the relevant point of time. The relevant extracts from the cross-examination of John Han (PW-1) are set out below:

> "***Q.248.*** *Who are the licensees of the Plaintiff selling their products in India in competition with the Defendant?*
>
> ***A.*** [redacted] *and others.*
>
> ***Q.249.*** [redacted] *are the same manufacturers and brand owners. Is that correct?*
>
> ***A.*** *They are two separate legal entities owning the* [redacted]
>
> ***Q.368.*** *Can you give details of anyone agreement executed after 2013 which include 8 suit patents?*
>
> ***A.*** [redacted] *and many others.*
>
> ***Q.415.*** *Which of the agreements were signed in your presence?*
>
> ***A.*** *At least* [redacted] *were executed by me."*

787. Shankar Iyer (DW-4) questions the FRAND analysis done by Dr. Jonathan Putnam (PW-4) and states that FRAND cannot be determined on the basis of agreements executed by the patent owner with the other third-party licensees. He further states that since Dr. Jonathan Putnam (PW-4) has failed to take into account the sales volume in respect of each of the agreements, the identity of the product involved in respect of each agreement and the conditions under which these agreements were entered into. Hence, these agreements cannot be considered as comparable agreements. Shankar Iyer (DW-4) has deposed that there is no basis provided by Dr. Jonathan Putnam (PW-4) in support of his testimony as to how the licensees in the agreements filed by the Ericsson are similarly situated to Lava. Unless it is established that the two companies are similarly situated, offering the same rate to both may be discriminatory in itself. The relevant extracts from the affidavit of Shankar Iyer (DW-4) are set out below:

> "*17. I say that Dr. Putnam does not provide any information about the specifics of his "most comparable" agreements and licensees necessary to establish the licensees are similarly situated to Lava. In the un-redacted parts of the Putnam Report, there is no analysis of key characteristics of the "most comparable" licensees and no explanation as to why they are similarly situated to Lava. Notably:*
>
> *i. Dr. Putnam fails to identify the sales volumes associated with each agreement. For example, if a "most comparable" licensee does not sell phones in India or has very limited sales, one would expect the rates to reflect this, as volume of sales is an important determinant of F/RAND terms and a common feature found in F/RAND licenses.*
>
> *ii. Dr. Putnam fails to identify the products at issue in each agreement and assess whether the "most comparable" licensees are similarly situated to Lava in terms of their product offerings. For example, if an agreement identified by Dr. Putnam as comparable does not relate to*

cellular phones and tablets at issue in this case, the terms of such agreements would not be probative.

iii. Dr. Putnam fails to identify the conditions under which these agreements were entered into. For example, in evaluating whether an agreement is an appropriate comparable, one needs to take into account whether the agreement is a settlement agreement or is otherwise tied to litigation or threat of litigation.

18. I say that Dr. Putnam does not take into account such aforementioned considerations, rendering his opinions unreliable with respect to the comparability of these licenses to a hypothetical Lava license.

xxx xxx xxx

68. Even if an SEP owner proposes to one potential licensee royalty rates that are the same or similar to royalty rates agreed on by some of its other licensees, this does not ensure non-discrimination. Unless it is established that two companies are similarly situated, offering the same rate to both may be a discriminatory act in itself. Examining whether companies are similarly situated should take into account factors such as whether one company has more bargaining power due to the amount of its sales (which can be reflected in the form of volume discounts) and the comparability of the companies' products.

xxx xxx xxx

70. I say that in the current context where a holder of global SEPs like Ericsson is negotiating with a small, geographically-focused licensee like Lava, the non- discrimination offer should also take in account the target market of the licensee. In particular, Lava is not similarly situated to most smartphone manufacturers whose product offerings have global or, at least, transnational, scope. The overwhelming portion of Lava's portfolio of phone products – and associated price points – is targeted at the low disposable income population in India

xxx xxx xxx

73. A naïve observer may look at a group of licensees who agreed to similar rates and conclude that different licensees are getting similar terms and these terms are non-discriminatory, so they must be consistent with F/RAND. However, if those terms are not consistent with fairness and reasonableness, they still would not satisfy FRAND based on non-discrimination."

788. Dr. Jonathan Putnam (PW-4) in his cross-examination stated that he did not take into account the aforesaid factors like the market segment in

which Lava operates as Ericsson does not discriminate between parties based on such factors. The relevant extracts are set out below:

> "*Q.189. Is it correct that before giving your opinion in this case, you have not analysed the Indian market, the portfolio of products of the Defendant, the market segment in which the Defendant operates, price sensitivity of that market segment, profit margin of the Defendant or its competitors?*
>
> *A. No, as I have said,* ***I did not analyse these factors, because Ericsson's obligation is not to discriminate irrespective of these factors.*** *In addition, price sensitivity and profit can only be measured on the basis of the Defendant having sold without paying any royalties at all. Therefore, its price and profit margin are incorrect.*"
>
> *(Emphasis supplied)*

789. The aforesaid fact was also affirmed by John Han (PW-1) in his cross-examination, wherein he stated that Ericsson does not discriminate between existing players and new entrants. The relevant extracts are set out below:

> "*Q.456. What are the reasonable cost rates to the new entrants in the Market by Ericsson?*
>
> *A. If you are referring to Ericsson's FRAND terms,* ***I would like to first state that we do not distinguish between new entrants versus existing players.*** *As for Ericsson's current FRAND terms for any player without any grant back value, the 2G rates would be around* [redacted] *of the net selling price and for 3G that range would be* [redacted] *of the net selling price of the licensed product.*"
>
> *(Emphasis supplied)*

16.14.4. REDACTED COPIES OF THE AGREEMENTS AND AFFIDAVIT PROVIDED TO SHANKAR IYER (DW-4)

790. It is submitted on behalf of Ericsson that analysis of comparable agreements conducted by Shankar Iyer (DW-4) cannot be relied upon as he admitted in his affidavit that he did not have access to unredacted versions of the license agreements and the affidavit of Dr. Jonathan Putnam (PW-4).

The relevant extract from his affidavit is reproduced below:

> "*11. I say that for the purpose of my review of Dr. Putnam's Affidavit I have only been provided with a redacted copy of Dr. Putnam's Affidavit along with redacted copies of certain license agreements. I understand documents available to Dr. Putnam have not been available to me.* ***This severely handicaps my ability to render a complete opinion. Specifically, an un-redacted copy of Dr. Putnam's Affidavit and un-redacted and complete set of licensing agreements, which were references by Dr. Putnam to form his opinion, have not been available to me.*** *Accordingly, my opinions in this report are limited to and based upon the readable contents of the documents provided to me. I have requested the entirety of the documents that Dr. Putnam had the benefit to review along with his un-redacted Affidavit. If permitted by the Honourable Court, I intend to update my opinions at a future date if the same is made available to me.*"
>
> *(Emphasis supplied)*

791. In the aforesaid paragraph, Shankar Iyer (DW-4) has stated that he was only provided with the redacted copy of affidavit of Dr. Jonathan Putnam (PW-4) along with the redacted copies of several license agreements, which handicapped his ability to render complete opinion and he could not independently validate deposition of Dr. Jonathan Putnam (PW-4).

792. Dr. Shankar Iyer (DW-4) was also cross-examined in this regard. The relevant extracts are set out below:

> "*Q.115. Did you know that Lava had the choice of choosing you as an expert who would have had access to Ericsson's agreements but chose not to name you as a member of the confidentiality club. Are you further aware that two of Lava's named experts have had access to the agreements filed by Ericsson in this case?*
>
> *A. All I can affirm to is that I asked to review the entirety of Ericsson's licenses pertaining to the technologies at issue in this case and have not been provided the same. Obviously, as an independent expert, I am not privy to negotiations among counsel.*"

793. In terms of the judgment dated 1st March, 2016 passed by the

Predecessor Bench in the present case, whereby confidentiality club was constituted, each side was permitted to show confidential documents/ patent licence agreements to two external expert witnesses, who were to constitute part of the confidentiality club. Clearly, Shankar Iyer (DW-4) was not one of the persons, who was made part of the confidentiality club by Lava. Therefore, he was supplied redacted parts of affidavit of Dr. Jonathan Putnam (PW-4) as well as the redacted versions of various license agreements relied by him.

794. Since Shankar Iyer never examined the unredacted copies of the affidavit of Dr. Jonathan Putnam (PW-4) in relation to comparable licensing agreement analysis done by Dr. Jonathan Putnam (PW-4), he was not in a position to rebut the testimony of Dr. Jonathan Putnam (PW-4).

16.14.5. ANALYSIS AND FINDINGS

795. I have perused some of the comparable agreements placed on record by Ericsson.

796. In my considered view, the said licensing agreements are indeed comparable, inasmuch as they have been executed with the entities which were similarly placed to Lava and the license rates offered therein were almost identical to rates offered to Lava. This conclusion is further strengthened by the fact that some of the licensing agreements, which have been evaluated, were executed with the parties competing with Lava in the mobile handset market in India. It has sufficiently been proved on behalf of Ericsson that [redacted] were companies that were similarly placed

as Lava, selling mobile phones in India and therefore, the rates offered to these companies by Ericsson would be relevant for the determination of FRAND rates in relation to Lava.

16.15. WHETHER OFFERS MADE BY ERICSSON TO LAVA WERE WITHIN FRAND RANGE.

16.15.1. SUBMISSIONS ON BEHALF OF THE PARTIES

797. It is the case of Ericsson that it made at least four offers to Lava, since negotiations commenced in 2011. The first offer was made by Ericsson to Lava in April, 2013, when a non-binding term sheet containing royalty rates was shared by Ericsson with Lava. Subsequently, in August, 2014, during a meeting, Ericsson offered split rates to Lava, i.e., separate rates for India and the rest of the world. Once again, during a meeting that took place between both the parties on 23rd March, 2015, Ericsson offered revised split rates to Lava.

798. On the other hand, Lava disputes the position that offers were made by Ericsson to Lava in August, 2014 and March, 2015.

16.15.2. EVIDENCE LED BY THE PARTIES

799. It is pertinent to note that Sunil Bhalla (DW-3) stated in his affidavit that the only commercial offer that was made to Lava was in April, 2013. The relevant extract from the affidavit of Sunil Bhalla (DW-3) is set out below:

> "*12. I say that on 5 April, 2013, the Plaintiff shared with the Defendant a commercial offer in form of a term sheet, which included the royalty rates for the license proposed by the Plaintiff. The email dated 5 April, 2013 is*

*part of **Exhibit P-4** Colly at page 1617 to 1620. This term sheet was the only commercial offer received by the Defendant from the Plaintiff till the filing of the suit by Plaintiff on 19.03.2015."*

800. The aforesaid assertion of Sunil Bhalla (DW-3) was contradicted by Shankar Iyer (DW-4), who admitted in his affidavit that two offers were made by Ericsson in April, 2013 and March, 2015**.** The relevant extract from his affidavit is set out below:

"8. ***In April 2013, Ericsson made a proposal to Lava in form of a "Term Sheet for a Global Patent License Agreement ('GPLA')."*** *The proposal was for a world-wide, non-exclusive license for Ericsson's Standard Essential Patents ("SEPs") necessary in any country in the world, and specified royalty rates for GSM, GPRS, EDGE and 3G technologies, each specified as a percentage of the net selling price for each Lava product. The royalty rates from the Ericsson Term Sheet are shown in Table 1 below.* ***I understand that concurrent with the filing of the instant lawsuit in March 2015, counsel for Ericsson verbally communicated to counsel for Lava a second proposal…***"

(Emphasis supplied)

801. Ericsson has placed on record the order dated 19th March, 2013 passed in CS(OS) 442/2013 filed by Ericsson against the Micromax before this Court, wherein the following ad-interim arrangement was arrived at between the parties:

"3. Micromax shall then, pending final determination of royalties payable by the parties, agree to abide by the following interim payments as per term sheet enclosed with letter dated 05th November, 2012, purely as an ad-interim arrangement and subject to the final outcome of its negotiations with Ericsson.

A. For phones/devices capable of GSM - 1.25% of sale price.

B. For phones/devices capable of GPRS + GSM - 1.75% of sale price.

C. For phones/devices capable of EDGE + GPRS + GSM - 2% of sale price.

D. WCDMA/HSPA phones/devices, calling tablets - 2% of the sale price.

E. Dongles, data cards - USD 2.50*"*

802. Perusal of the aforesaid order shows that the royalty rates determined in the said order are identical to the ones that were offered by Ericsson to Lava vide its first offer of 5th April, 2013. In fact, a copy of the aforesaid order was annexed by Ericsson in its aforesaid communication.

803. Now a reference may be made to the judgment dated 12th November, 2014 passed in the aforesaid suit filed by Ericsson against Micromax. The relevant extracts from the said judgment are set out below:

"*2. The Defendants shall pending trial of the suit, pay the following rates of royalty directly to the Plaintiff for sales made in India from the date of filing of suit till 12.11.2015:*

i. ***For phones/devices capable of GSM - 0.8% of net selling price;***

ii. For phones/devices capable of GPRS + GSM - 0.8% of net selling price;

iii. For phones/devices capable of EDGE + GPRS + GSM - 1% of net selling price;

iv. WCDMA/HSPA phones/devices, calling tablets - 1% of the net selling price.

3. The Defendants shall pending trial in the suit, pay the following rates of royalty directly to the Plaintiff for sales made in India from 13.11.2015 to 12.11.2016:

i. ***For phones/devices capable of GSM - 0.8% of net selling price;***

ii. ***For phones/devices capable of GPRS + GSM - 0.8% of net selling price;***

iii. ***For phones/devices capable of EDGE + GPRS + GSM - 1.1% of net selling price;***

iv. ***WCDMA/HSPA phones/devices, calling tablets - 1.1% of the net selling price.***

4. The Defendants shall pending final trial in the suit, pay the following rates of royalty directly to the Plaintiff for sales made in India for the period from 13.11.2016 to 12.11.2020:

i. For phones/devices capable of GSM - 0.8% of net selling price;

ii. For phones/devices capable of GPRS + GSM - 1% of net selling price;

iii. For phones/devices capable of EDGE + GPRS + GSM - 1.3% of net selling price;

iv. WCDMA/HSPA phones/devices, calling tablets - 1.3% of the net selling price."

804. The March, 2015 offer that was made to Lava by Ericsson is almost identical to the royalty rates determined in the aforesaid order.

805. It is the case of Ericsson that in November, 2015, during the pendency of the present suits, Ericsson offered revised global rates to Lava. However, Lava denies that any such offer was made by Ericsson in November, 2015.

806. John Han (PW-1) in his affidavit has deposed that the November, 2015 offer was made orally during a meeting held with Lava's representatives, whereby revised global royalty rates were offered to Lava. He has further deposed that these offers reflected Ericsson's global rates that were applicable at that time. The relevant extract from the affidavit of John Han (PW-1) is set out below:

"70. Further in November 2015, in a meeting that I held with Lava's representatives, I offered the following revised rate to Lava

2G(GSM+GPRS+EDGE)	[redacted]
3G	[redacted]

Accordingly, Ericsson made multiple offers to Lava over a period of time. These offers reflect Ericsson's global rates that were applicable at the time of the offer."

807. Sunil Bhalla (DW-1) has admitted in his cross-examination that he attended a meeting along with one more representative of Lava, which was held with John Han (PW-1) and Harish Sharma in Ericsson's office in Hong Kong in the month of October or November, 2015. The relevant extracts from his cross-examination are set out below:

"***Q.139.*** *Was there a meeting in November, 2015 in Ericsson's office in Hong Kong attended by you and Mr. Ashok Aggarwal on behalf of Lava and Mr. John Han and Harish Sharma on behalf of Ericsson?*

A. Yes, this meeting was held in Ericsson's office between the four of us. But I cannot confirm if it was in the month of October or November, 2015 from the record available with me at present.

Q.140. *Why did you not disclose the factum of this meeting in your affidavit?*

A. *This meeting was held to discuss the possibility of a settlement between the parties through arbitration. The same was discussed with Mr. John in the month of October, 2015 also which is reflected in my affidavit. Since, there was no change in status in the November, 2015 meeting, it has not been mentioned in my affidavit.*"

(Emphasis supplied)

16.15.3. ANALYSIS AND FINDINGS

808. It is apposite to note that Lava failed to respond to any of the aforesaid offers were accepted by Lava. Even though all offers made by Ericsson were challenged by Lava as not being FRAND, no counter offer was ever made by Lava.

809. I have perused some of the license agreements filed in a sealed cover by Ericsson. I have also compared the rates provided in the agreements of Ericsson with the Indian entities such as [redacted], which are similarly placed Indian companies, who were also brand owners.

810. The royalty rates that were offered by Ericsson to Lava in March, 2015 were similar to the rates in the GPLA entered into by Ericsson with '[redacted]'.

811. In 2015, [redacted] and Ericsson re-negotiated the agreement that provided for a single global rate. The royalty rates offered to Lava in November, 2015 were based on the amended 2015 Agreement entered into between Ericsson and [redacted] Subsequently, the same rates were also accepted by [redacted].

812. Based on the outcome of my analysis, it is held that the rates offered by Ericsson to Lava are within the FRAND range.

17. WHETHER DAMAGES CAN BE GRANTED ONLY FOR THREE YEARS PRIOR TO FILING OF THE SUIT.

17.1. SUBMISSIONS ON BEHALF OF THE PARTIES

813. In this regard, Lava has made the following submissions:

I. The damages cannot be awarded to Ericsson for the period prior to March, 2012. As per Article 88 of the Limitation Act, 1963, the period of limitation for a suit based on infringement of patents is 3 years from the date of infringement. Admittedly, Ericsson's suit was

filed in March, 2015 and accordingly, no damages prior to March, 2012 can be awarded to Ericsson as the same would be barred by limitation.

II. Reliance placed by Ericsson on Section 11A(7) and Section 45(3) of the Patents Act, to argue that the same provide a different period of limitation for institution of suits for damages and for infringement is plainly misplaced.

III. While the Patents Act, 1970 is no doubt the special law in relation to patents, the same does not provide for a different period of limitation for instituting a suit for infringement. The limitation for filing such suits continues to be governed by the Limitation Act, 1963.

IV. Ericsson is not entitled to damages before information pertaining to Ericsson's patents as well as the applicable standards was provided to Lava, as per Section 111 of the Patents Act. The eight asserted suit patents were not identifiable in the list provided along with the email dated 1st November, 2011. The information pertaining to the 2G patents was provided by Ericsson to Lava through email dated 1st May, 2013 and the information pertaining to the 3G patents was provided to Lava on 8th May, 2013. Accordingly, Ericsson is not entitled to damages in respect of infringed 2G patents prior to 1st May, 2013 and in respect of infringed 3G patents prior to 8th May, 2013.

V. Without prejudice to the above, even as per Ericsson, Lava became aware of the existence of the suit patents and infringement thereof on 1st November, 2011. Thus, notwithstanding the effect of Section 11A and Section 45 of the Patents Act, no damages can be claimed by

Ericsson prior to 1st November, 2011.

814. *Per contra*, Ericsson has made the following submissions:

I. Section 45 of the Patents Act permits a patentee to claim remedies for acts conducted prior to grant of patent but after publication of the patent application.

II. Proviso to Section 11A(7) of the Patents Act specifically provides that an applicant shall have like privileges and rights as if a patent has been granted on the day of publication of the patent.

III. Lava's reliance on Limitation Act, 1963 is incorrect in view of the specific provisions like Section 11A(7) and Section 45 in the Patents Act.

IV. It is a settled position of law that special law prevails over general law.

17.2. LEGAL PROVISIONS

815. At this stage, a reference may be made to the following provisions of the Patents Act:

> *"**11A. Publication of applications -***
>
> *(7) On and from the date of publication of the application for patent and until the date of grant of a patent in respect of such application, **the applicant shall have the like privileges and rights as if a patent for the invention had been granted on the date of publication of the application**:*
>
> ***45. Date of patent.—** (1) Subject to the other provisions contained in this Act, every patent shall be dated as of the date on which the application for patent was filed.*
>
> *(2) The date of every patent shall be entered in the register.*

(3) Notwithstanding anything contained in this section, no suit or other proceeding shall be commenced or prosecuted in respect of an infringement committed before [the date of publication of the application].

111. Restriction on power of court to grant damages or account of profits for infringement.—*(1) In a suit for infringement of a patent, damages or an account of profits shall not be granted against the defendant who proves that at the date of the infringement he was not aware and had no reasonable grounds for believing that the patent existed.*

Explanation.—A person shall not be deemed to have been aware or to have had reasonable grounds for believing that a patent exists by reason only of the application to an article of the word "patent", "patented" or any word or words expressing or implying that a patent has been obtained for the article, unless the number of the patent accompanies the word or words in question."

(Emphasis supplied)

17.3. ANALYSIS AND FINDINGS

816. Section 11A (7) of the Patents Act categorically states that the rights of a patentee originate from the date of publication of the patent application. First proviso to Section 11(A)7 provides that the suit for infringement cannot be instituted before the date of grant of patent. Section 45 of the Patents Act provides that the suit can only be filed in respect of an infringement that took place after the date of publication of the patent application. Therefore, the position that emerges is that a suit for infringement can only be filed after the grant of the patent. However, the damages can be claimed from the date of publication of the patent application. The rationale behind this appears to be that the grant of patent may take considerable time and the patentee should not be denied his right to claim damages, in respect of infringement that occurs post publication of the patent. Thus, the period of limitation as prescribed under Article 88 of

the Schedule of Limitation Act, 1963 will not be applicable in the present case. In any event, it is a settled position of law that the provisions of special law, i.e., Patents Act would prevail over the provisions of general law, i.e., Limitation Act, 1963.

817. Lava seeks to take benefit of Section 111 of the Patents Act, which provides that the damages cannot be granted against a defendant if he was not aware or there were no grounds to believe that the patent existed. In this regard, Lava has submitted that the information pertaining to 2G/3G patents was provided to Lava by Ericsson only in May, 2013. I do not find merit in the aforesaid submission of Lava as Ericsson had duly provided details of its patents and had informed Lava of its infringing activities on 1st November, 2011. Further, it has already been held above that Lava did not negotiate with Ericsson in good faith and was an 'unwilling licensee' and therefore, despite negotiations commencing on 1st November, 2011, no License Agreement could be executed.

818. Applying the aforesaid position of law to the facts of the present case, there is no doubt that the publication of the eight suit patents took place between 1998 and 2000. However, Ericsson asserted its rights in respect of the aforesaid patents and its portfolio of SEPs for the first time in its email dated 1st November, 2011. It was in the said email that Ericsson informed Lava about its patents and asserted that Lava's products involve Ericsson's patents and hence, Lava should obtain the necessary license from Ericsson. Therefore, in my considered view, in the facts and circumstances of the present case, the relevant date for determining damages would be 1st November, 2011.

18. CALCULATION OF DAMAGES

819. I have already held that comparable licensing agreements provide the best possible means for determination of FRAND royalty rates. Therefore, in my considered view, the most appropriate FRAND rate to apply in the present case would be the rate offered by Ericsson to Lava in November, 2015, which is comparable to the rates negotiated by Ericsson with other similarly placed entities in India like [redacted] and [redacted].

820. As per November, 2015 offer, Ericsson offered two ranges of rates in respect of 2G/3G devices respectively. The rate for 2G devices was in the range of [redacted] of the net selling price and the rate for 3G devices was in the range of [redacted]. Taking into account the conduct of Lava and the fact that Lava did not negotiate in good faith with Ericsson, I propose to adopt the upper end of the range, i.e., [redacted] for 2G devices and [redacted] for 3G devices. At the same time, an important factor to consider is the validity of the portfolio of Ericsson's SEPs. In the present suit, one of the patents in the portfolio, IN 203034, titled '*Linear Predictive Analysis by Synthesis Encoding Method and Encoder*,' has been found to be invalid. This revocation would impact the overall valuation of the patent portfolio, as all the eight suit patents are representing the portfolio of patents which Ericsson is asserting. Accordingly, to adjust the royalty rates for the portfolio of patents asserted, I am applying the principle of preponderance of probabilities. Given that one out of the eight suit patents, which serve as a representative sample of the entire portfolio, has been invalidated, it can be reasonably inferred that proportionately 1/8th or 12.5% of the patents in the

portfolio of patents are likely to be invalid and consequently, 7/8th or 87.5% of the patents in the portfolio are likely to be valid. Therefore, the royalty rates would have to be adjusted proportionately to reflect this reduced strength of the portfolio, ensuring a fair and equitable licensing agreement. Therefore, the applicable revised rate would be [redacted]%[52] for 2G and [redacted]%[53] for 3G of the net selling price. Since Lava has not filed separate data for 2G and 3G devices, I have applied the average of the aforesaid rates, in terms of which, the final royalty rate would be 1.05%.[54]

821. As I have held above, since Ericsson first approached Lava to work out FRAND licensing terms on 1st November, 2011, Lava would be liable to pay royalties from 1st November, 2011. Considering that the last of the asserted suit patents representing the portfolio of patents, expired on 8th May, 2020, in my view, Lava would be liable to pay damages till the said date. For the entire period from 1st November, 2011 till 8th May, 2020, when the last suit patent expired, I propose to apply the same royalty rate.

822. As directed by the Division Bench in the order dated 22nd July, 2016 passed in FAO(OS)(COMM) 43/2016, Lava initially filed sales figures on an annual basis and thereafter on a quarterly basis. I have examined the said sales figures which were filed in a sealed cover by Lava during the pendency of the suit. Details of the said sales figures are set out below:

52 [redacted]
53 [redacted]
54 [redacted]

PERIOD	PERIOD	MOBILE	TABLET	DONGLE	TOTAL
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total		[redacted]	[redacted]	[redacted]	[redacted]

823. The aforesaid figures have been annualized for the relevant period in the table below:

Period	Total Sales
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

824. In the table above, taking into account the sales figures provided by Lava for the Financial Year 2011-12 and similarly taking into account the sales figures provided by Lava for the financial year 2020-2021, I have calculated the proportionate sales from 1st November, 2011 to 31st March, 2012 and 1st April, 2020 to 8th May, 2020 respectively.

825. To the aforesaid figures, I have applied the average FRAND rate of 1.05% as calculated above, to calculate the amount of damages payable by

Lava. The table showing calculation of damages from 1st November, 2011 to 8th May, 2020 is set out below:

Period	Total Sales	Royalty Rate	Damages
November'11-March'12	[redacted]	1.05%	[redacted]
April'12-March'13	[redacted]	1.05%	[redacted]
April'13-March'14	[redacted]	1.05%	[redacted]
April'14-March'15	[redacted]	1.05%	[redacted]
April'15-March'16	[redacted]	1.05%	[redacted]
April' 16-March'17	[redacted]	1.05%	[redacted]
April'17 -March'18	[redacted]	1.05%	[redacted]
April'18 -March'19	[redacted]	1.05%	[redacted]
April'19 -March'20	[redacted]	1.05%	[redacted]
April'20-8 May '20	[redacted]	1.05%	[redacted]
Total	[redacted]	**1.05%**	**₹2,440,763,990.27**

826. Therefore, Lava will be liable to pay damages to the tune of Rs.244,07,63,990/- (Two hundred forty-four crores seven lakhs sixty-three thousand nine hundred and ninety), which represents the royalties payable on FRAND rates.

19. COSTS

827. Ericsson presses for actual costs of litigation in the present suits.

19.1. LEGAL PRINCIPLES FOR DETERMINATION OF COSTS

828. The Supreme Court in ***Uflex Limited* v. *Government of Tamil Nadu and Others***, (2022) 1 SCC 165, has laid down the principles for determining

costs in commercial matters. The relevant observations of the Supreme Court are set out below:

> "*55. We may note that the common thread running through all these three cases is the reiteration of salutary principles: (i)* ***costs should ordinarily follow the event; (ii) realistic costs ought to be awarded keeping in view the ever-increasing litigation expenses****; and (iii) the costs should serve the purpose of curbing frivolous and vexatious litigation. [Report No. 240 of the Law Commission of India.]*
>
> *"56. We may note that this endeavour in India is not unique to our country and in a way adopts the principle prevalent in England of costs following the event. The position may be somewhat different in the United States but then there are different principles applicable where champerty is prevalent. No doubt in most of the countries like India the discretion is with the court. There has to be a proportionality to the costs and if they are unreasonable, the doubt would be resolved in favour of the paying party [UK Civil Procedure Rule 44.2.] . As per Halsbury's Laws of England, the discretion to award costs must be exercised judicially and in accordance with reason and justice. [Vol. 10, 4th Edn. (Para 15).] The following principles have been set out therein:*
>
> > *"****In deciding what order (if any) to make about costs, the court must have regard to all the circumstances, including:***
> >
> > ***(i) The conduct of all the parties****;*
> >
> > ***(ii) Whether a party has succeeded on part of his case, even if he has not been wholly successful; and***
> >
> > ***(iii) Any payment into court or admissible offer to settle made by a party which is drawn to the court's attentio****n.*
> >
> > *The conduct of the parties includes:*
> >
> > *(a)* ***Conduct before, as well as during, the proceedings and in particular the extent to which the parties followed any relevant pre-action protocol****;*
> >
> > *(b)* ***Whether it was reasonable for a party to raise, pursue or contest a particular allegation or issue****;*
> >
> > *(c) The manner in which a party has pursued or defended his case or a particular allegation or issue; and*
> >
> > *(d) Whether a claimant who has succeeded in his claim, in whole or in part, exaggerated his claim." [10th Vol. 4th Edn. (Para 17).]*
>
> *57. We may add that similar principles are followed in Australia, Hong Kong and Canada largely based on the common law principle. In fact in*

Canada, the Manitoba Law Commission Report analysed the "Costs Awards in Civil Litigation" and referred to six broad goals as under:

(a) indemnification — successful litigants ought to at least be partially indemnified against their legal costs;

(b) deterrence — potential litigants should carefully assess the merits of the claim and should refrain from taking any unnecessary legal actions;

(c) rules should be made decipherable and simple to understand;

(d) early settlement of disputes should be encouraged;

(e) the costs regime should facilitate access to justice; and

(f) there should be flexibility in rules to ensure that justice can be done. [Report No. 240 of the Law Commission of India.]

58. We have set forth the aforesaid so that there is appreciation of the principles that in carrying on commercial litigation, parties must weigh the commercial interests, which would include the consequences of the matter not receiving favourable consideration by the courts. *Mindless appeals should not be the rule. We are conscious that in the given facts of the case the respondents have succeeded before the Division Bench though they failed before the learned Single Judge. Suffice to say that all the parties before us are financially strong and took a commercial decision to carry this legal battle right up to this Court. They must, thus, face the consequences and costs of success or failure in the present proceedings."*

(Emphasis supplied)

829. In this regard, a reference may also be made to Section 35 of the CPC as applicable to the commercial disputes:

*"**35. Costs.**— (1) In relation to any Commercial dispute, the Court, notwithstanding anything contained in any other law for the time being in force or Rule, has the discretion to determine:*

(a) whether costs are payable by one party to another;
(b) the quantum of those costs; and
(c) when they are to be paid

*Explanation.—**For the purpose of clause (a), the expression "costs" shall mean reasonable costs relating to—***

(i) the fees and expenses of the witnesses incurred;
(ii) legal fees and expenses incurred;
(iii) any other expenses incurred in connection with the proceedings.

*(2) **If the Court decides to make an order for payment of costs, the***

general rule is that the unsuccessful party shall be ordered to pay the costs of the successful party*:*

Provided that the Court may make an order deviating from the general rule for reasons to be recorded in writing."

(Emphasis supplied)

830. A reference may also be made to Rule 2 of Chapter XXIII of the Delhi High Court (Original Side) Rules, 2018, which is set out below:

*"**2. Imposition of actual costs.** - In addition to imposition of costs, as provided in Rule 1 of this Chapter, **the Court shall award costs guided by and upto actual costs as borne by the parties, even if the same has not been quantified by parties, at the time of decreeing or dismissing the suit. In this behalf the Court will take into consideration all relevant factors including (but not restricted) the actual fees paid to the Advocates/ Senior Advocates; actual expenses for publication, citation etc.; actual costs incurred in prosecution and conduct of suit including but not limited to costs and expenses incurred for attending proceedings, procuring attendance of witnesses, experts etc.; execution of commissions; and all other legitimate expenses incurred by the party, which the Court orders to be paid to any party**."*

In addition to imposition of costs as above, the Court may also pass a decree for costs as provided in Sections 35-A and 35-B of the Code or under any applicable law."

(Emphasis supplied)

19.2. ANALYSIS AND FINDINGS

831. The Noida Suit and Ericsson's suit were instituted as far back in January, 2015 and March, 2015 respectively. Both the suits involved multiple hearings, wherein senior counsels appeared on behalf of both sides. Additionally, Local Commissioner was appointed by this Court to record evidence in both the matters. Evidence of various witnesses including expert witnesses was recorded by the Local Commissioner. Some of these witnesses were foreign nationals, who came to India to depose in relation to various issues that were framed in the two suits.

832. As discussed above, except to the extent that one of the suit patents has been declared invalid, Ericsson has substantially succeeded in both suits.

833. As noted earlier, Lava did not negotiate with Ericsson in good faith, which resulted in the present litigation. Prior to institution of the suits as well as during the pendency of the suits, Ericsson made several offers to Lava to settle the case, which was not accepted by Lava and neither any counter-offer was made by Lava.

834. Taking into account the aforesaid position, I am of the view that in the present facts and circumstances, Ericsson is entitled to recover actual costs from Lava.

835. In view of the above, for the purposes of calculation of actual costs, Ericsson shall file its bill of costs in terms of Rule 5 of Chapter XXIII of the Delhi High Court (Original Side) Rules, 2018 within four weeks. For this purpose, the representatives of the Ericsson shall appear before the Taxation Officer on 20th May, 2024, who shall determine the actual costs incurred by Ericsson in the present litigation.

836. Costs as determined by the Taxation Officer shall be paid by Lava to Ericsson within a period of six weeks from the date of determination.

20. RELIEF

837. A decree is accordingly passed in favour of Ericsson and against Lava in the following terms:

i. Recovery of sum of Rs. 244,07,63,990/- (Two hundred forty-four crores seven lakhs sixty-three thousand nine hundred and ninety only) towards damages, along with interest @ 5% per annum from the date

of this judgment till the realization of the said amount.

ii. Ericsson shall pay the additional court fees on the differential amount awarded in favour of Ericsson within three weeks.

iii. The Registry is directed to release the amount deposited by Lava before this Court in Fixed Deposit along with the accrued interest, after deduction of TDS, in favour of Ericsson. For the said purpose, the parties as also the Manager, Union Bank of India, Nehru Place Branch, shall appear before the Registrar General of the Court on 13th May, 2024 at 11:30 am. This amount shall be adjusted against the sum payable by Lava as per (i) above.

iv. The counter claim filed on behalf of Lava is allowed to the limited extent of revocation of the suit patent, being IN 203034 titled as '*Linear Predictive Analysis by Synthesis Encoding Method and Encoder*'.

v. Ericsson shall also be entitled to taxed costs in respect of both the suits.

838. Decree sheet be drawn up.

839. As seven out of eight suit patents have been found to be valid in accordance with Section 113 of the Patents Act, 1970 in the present suits, the Registry is directed to issue a Certificate of Validity of the complete specifications of the seven suit patents being IN 203036, IN 234157, IN 203686, IN 213723, IN 229632, IN 240471 and IN 241747.

840. The Registry is directed to supply a copy of this judgment to the office of the Controller General of Patents, Designs and Trademarks of India on email llc-ipo@gov.in for compliance of the directions in the judgment.

21. SUMMARY OF JUDGMENT

I. In light of the extensive nature of the judgment, in this section, I am including a summary of the judgement.

II. In the **Introductory Section**, I acknowledge the transformative impact of the evolution of mobile telecommunications in India, which has opened up access to information and digital services, leading to a more connected and digitally empowered society. This progress, has been supported by implementation of standards by Standard Setting Organisations (SSOs), which have facilitated the seamless integration of new technologies and the universal adoption of new technology in mobile technology.

III. In respect of the issues of ownership of suit patents and admissibility of the counter claim, I concluded that Ericsson established patent ownership and Lava's counter claim was admissible in light of the scheme of the Patents Act. Further, the prayer for a permanent injunction was not pressed due to the expiration of the term of all the suit patents asserted and existing interim orders.

IV. On the aspect of **Invalidity under Section 3(k)**, I have re-emphasised that those inventions focused solely on algorithms, mathematical methods, business methods, or computer programs per se are not patentable. However, an invention that integrates these elements to transform the functionality of a system or device, can be patentable if it meets all other requirements for

patentability. If the invention results in a further technical effect that transforms or enhances the functionality and effectiveness of a general-purpose computer, the invention should not be rejected as a 'computer program per se.

V. As regards the ground of **revocation on account of lack of novelty under Section 64(1)(e)**, taking into consideration various decisions, a '*Seven Stambhas Approach*' has been formulated, as a guidance for determination of novelty. The said approach acknowledges that novelty encompasses not just explicit novelty but also implicit novelty within a text. This approach aims to provide a structured framework for assessing novelty, ensuring a clear distinction between novelty and non-obviousness.

VI. In the **evaluation of the inventive step**, the various established tests that have been recognised in both Indian and UK legal precedents have been considered. These tests include the 'Obvious to try' approach, 'Problem/solution' approach, the 'Could-Would' Approach, and the 'Teaching Suggestion Motivation' (TSM) test.

VII. Both Lava and Ericsson presented arguments about the qualifications, independence and expertise of expert witnesses. However, I have rejected the contentions of both the parties, in which the credibility of witnesses has been challenged and considered the evidence presented by all the witnesses on merits.

VIII. With regards to ground of **sufficiency of disclosure in respect of invalidity under Section 64(1)(f)**, expert evidence was presented by both parties, in respect of the question of sufficiency of the suit

patents. I concluded that the suit patents when read with the complete specifications, sufficiently describe the inventions, when viewed from the standpoint of a person skilled in the art.

IX. Lava raised an objection of fraud being played on the Indian Patents Office in their counterclaim, however, Lava failed to provide requisite evidence of fraud or misrepresentation. I have recognised that to revoke a patent on the ground of fraud or misrepresentation, it is essential to conclusively prove deliberate or intentional misrepresentation to the Indian Patents Office.

X. I have carried out a detailed analysis in respect of the question of validity of the eight suit patents. The first patent asserted by Ericsson, i.e. **IN 203034**, has been found to be **invalid and liable to be revoked** both on grounds of non-patentable subject matter and lack of novelty.

XI. The remaining seven suit patents, **IN 203036, IN 234157, IN 203686, IN 213723, IN 229632, IN 240471 and IN 241747 have been held to be valid**, after examination on merits in respect of subject matter eligibility, novelty and inventive step.

XII. On the aspect of **declarations filed with the SSOs**, I have recognised that the purpose of giving declarations of essentiality is to bind patent owners to the FRAND commitment, ensuring that essential technology for maintaining interoperability is not withheld.

XIII. In respect of the challenge to the declarations filed before ETSI, I have held Ericsson's declarations at the **project/standard level**

are compliant with the ETSI IPR policy. Further, it has been recognised that the nature and timeline of declarations to ETSI is subject matter of the contractual relationship between Ericsson and ETSI and Lava has no locus to question the same.

XV. In respect of the issue of **Essentiality** of the suit patents, I have recognised that the fundamental principle of patent law dictates that once a patent is granted for a specific function or implementation method, another patent cannot be granted for the identical function or method. On the aspect of essentiality, I have held that Ericsson has established the essentiality of its suit patents through claim charts demonstrating alignment with the relevant standard, which have not been rebutted by Lava, thus proving the essentiality of the suit patents.

XVI. Lava placed reliance on the **Doctrine of Exhaustion**, a principle in patent law, which limits the rights of patent holders after the first authorised sale/import of a patented product, to claim immunity from patent infringement. In the context of the Doctrine of Exhaustion, I have observed that a person claiming the benefit of the defence of exhaustion, must provide clear and convincing evidence that the product was purchased in a legitimate manner i.e., where the patented product was sold by or with the consent of the patent holder, thereby exhausting the patent holder's rights to control the product's further sale or use. Consequently, I have held that Lava's reliance on the Doctrine of Exhaustion was untenable due to the admitted position that neither Lava possessed any

agreements or indemnities from component suppliers nor did Lava carry out any due diligence.

XVII. As regards the question of infringement of SEPs, I have recognised the application of the **two-step test for establishing infringement** of SEPs, which involves mapping the suit patent(s) to the standards and showing that the implementer's device also maps to the standard. Consequently, on account of compliance of Lava's devices with the standards, infringement of the suit patents has been held to be an inevitable outcome.

XVIII. On account of the Test Reports placed on record by Ericsson showing compliance of Lava's devices with the optional standards, the onus fell on Lava to not just claim the use of alternate technology, but also demonstrate the same, which it has failed to do.

XIX. In the section on **FRAND**, I have observed that it represents a voluntary commitment by an SEP owner to an SSO, in which the SEP owner agrees to adhere to the SSO's IPR Policy and make standardised technologies available on FRAND terms to willing licensees. The essence of a FRAND license is that it should be fair in its treatment of both parties, reasonable in its economic demands and non-discriminatory in its application across different licensees. The FRAND protocol was established to balance equities and the legitimate interests of both the patent owner and the licensee, ensuring that neither party has unjust bargaining power in negotiations.

XX. I have highlighted the necessity of **negotiating FRAND rates in Good Faith**, while holding that since SSOs do not assess patent validity or essentiality, alleged infringers have a right to challenge patents during or even after negotiations. At the same time, patent owners can seek legal remedies, including damages for past use, if infringers fail to respond in good faith to a FRAND offer.

XXI. Lava has been held to be an **Unwilling Licensee** due to its failure to negotiate with Ericsson in good faith, consistently delaying licensing negotiations, and failing to respond to offers or present any counteroffer. Additionally, Lava's lack of response to the court's specific query on willingness to accept the same royalty rates as Micromax further demonstrates its unwillingness to engage constructively in the licensing process.

XXII. In respect of damages, it has been recognised that Ericsson is entitled to receive **damages calculated based on the loss of royalty/license fees** it would have received had Lava executed a FRAND license agreement at the commencement of its business operations. This approach aligns with legal precedents and ensures that the patent owner is compensated for the royalties they would have earned through licensing.

XXIII. It has been held that standard-compliant nature of the devices indicates that they implement the SEPs. Therefore, it has been determined that **damages are payable for all devices that comply with the relevant standards**, **not just the tested devices**.

XXIV. As regards the contention of Lava that royalty should be calculated on the value of the chipset, I have held that in mobile devices, where telecommunication network connectivity is the core functionality, the **calculation of royalties at the end-product level is the most appropriate approach**, aligning with industry practices, economic efficiency, and legal precedents.

XXV. As regards Lava's conation that royalty should only be payable only for the eight suits patents and not the portfolio of SEPs, it has been held that **Licensing of the Entire Portfolio of SEPs is essential** for ensuring interoperability in the telecommunications industry. It is justified and balanced to require implementers to license the entire SEP portfolio, as this approach facilitates smooth technological progression and upholds principles of fairness and proportionality. Further, the approach of licensing individual patents from a portfolio has been held to be impractical due to potential administrative burdens, increased transaction costs, and legal complexities.

XXVI. In assessing damages, the **Comparable Licensing** approach has been recognised as the preferred method for determining FRAND royalty rates. This approach relies on FRAND rates negotiated between parties in similar circumstances, making it a reliable benchmark for determining royalties for a prospective licensee.

XXVII. As regards the **Top-Down** approach advocated by Lava, it has not provided requisite evidence/calculations to justify adopting a top-down approach for licensing. Additionally, it has been

admitted by Lava that it has not entered into any license agreements or paid any royalties in respect of the SEPs, further weakening its case for the adoption of the top-down methodology.

XXVIII. After a detailed analysis, it has been held that the SIPROLAB Licensing Program for WCDMA SEPs is irrelevant for the present suits.

XXIX. Lava has been unable to prove its allegations of **royalty stacking and hold-up** in its licensing negotiations with Ericsson. The necessity to provide concrete evidence of the licensor demanding higher royalty rates post-adoption of the standard to support such allegations has been emphasised. No evidence of hold-up has been presented, and Ericsson has made multiple offers over four years without receiving a counter-offer from Lava, indicating no occurrence of hold-up.

XXX. Based on the negotiation history, Lava's approach to the licensing negotiations has been characterised as a deliberate strategy of **Hold-Out**, where the implementer delays or avoids reaching an agreement. Such hold-out strategies result in the continuous use of patented technology without paying appropriate royalties, providing implementers with undue advantages and challenging the integrity of the FRAND framework.

XXXI. The licensing agreements filed by Ericsson in sealed cover have been adjudged to be comparable license agreements. I have held that these agreements were made with entities similarly placed to Lava and nearly identical license rates were offered to Lava. These

comparisons, combined with the fact that the rates offered to Lava were consistent with those accepted by other similarly situated entities, have led to the conclusion that the **rates offered by Ericsson to Lava fall within the FRAND range.**

XXXII. On the aspect of **Limitation**, I have held that, as per the scheme of the Patents Act, damages can be claimed from the date of publication of the patent application as the rights of the patentee originate from the date of publication. However, a suit for infringement can only be filed after the grant of the patent. Consequently, it was held that the period of limitation prescribed as per the Limitation Act will not be applicable, on account of '*generalia specialibus non derogant*', i.e., special law would prevail over general law. Lava's attempt to benefit from Section 111 of the Patents Act, which limits damages if the defendant was unaware of the patent, is rejected since Ericsson had informed Lava of its infringing activities on 1st November 2011.

XXXIII. For calculation of damages and determination of FRAND rate, Ericsson's November 2015 offer to Lava, which was similar to that offered to another similarly situated entity has been held to be the appropriate comparable license.

XXXIV. On account of revocation of one out of eight suit patents, the royalty rates for the portfolio of patents for which license is required has been adjusted to reflect the actual strength of the portfolio. As a result, the **FRAND royalty rate** applicable to Lava has been determined to be **1.05%** of the net selling price of the

devices sold by Lava. The period for which royalties are payable has been determined to be from 1st November 2011 to 8th May 2020.

XXXV. Decree is passed in favour of Ericsson for the recovery of damages amounting to **Rs. 244,07,63,990**/- (Two hundred forty-four crores seven lakhs sixty-three thousand nine hundred and ninety only), along with interest @ 5% per annum from the date of this judgment until the full realization of the said amount. In accordance with the legal provisions surrounding commercial litigation, **actual costs** are also awarded in favour of Ericsson.

XXXVI. Directions have been given to issue **Certificate(s) of Validity** of the Complete Specifications of the seven suit patents found to be valid, i.e., IN 203036, IN 234157, IN 203686, IN 213723, IN 229632, IN 240471 and IN 241747, to the Registry of the Court. A copy of the judgement, to be sent to the office of the CGPDTM for compliance of the action of revocation of IN 203034.

22. POSTSCRIPT

A. I would like to express my sincere appreciation to the learned senior counsels and learned counsels for both sides for the oral submissions as well as the comprehensive written note of arguments which were filed. It is noteworthy that both sides maintained commendable level of professionalism throughout these highly contested hearings, even with the significant financial implications involved.

B. I would also like to place on record the assistance provided by Mr. Aman Sinha, the Law Researcher for the Intellectual Property Division of the Court, in facilitating the understanding of the complex patents involved in this suit and FRAND licensing. His ability to contextualise these patents with real-world examples greatly helped me in the comprehension of the intricate technical and legal issues in the case. I would also like to acknowledge the contribution of my Law Researcher, Ms. Palak Batra, for her research, assistance and insightful inputs in the course of this case.

C. In the judgment I have reaffirmed the principles of patent law as they have evolved in India to encourage innovation, while aiming to ensure requisite protection for the intrinsic worth of inventions. In my considered view, this case has highlighted the importance of maintaining a balance between protecting fair access to standardised technologies and protecting intellectual property rights. Given the significant market for standardized products, it is hoped that in times to come India will become a leading neutral venue for global SEP resolution.

AMIT BANSAL, J.

MARCH 28, 2024
dk/sr/at/rt

[Redacted and uploaded on 3rd April, 2024]