United States Court of Appeals for the Federal Circuit

ERICSSON, INC., TELEFONAKTIEBOLAGET LM ERICSSON, AND WI-FI ONE, LLC,
Plaintiffs-Appellees,

v.

D-LINK SYSTEMS, INC., NETGEAR, INC., ACER, INC., ACER AMERICA CORPORATION, AND GATEWAY, INC.,
Defendants-Appellants,

AND

DELL, INC.,
Defendant-Appellant,

AND

TOSHIBA AMERICA INFORMATION SYSTEMS, INC. AND TOSHIBA CORPORATION,
Defendants-Appellants,

AND

INTEL CORPORATION,
Intervenor-Appellant,

AND

BELKIN INTERNATIONAL, INC.,
Defendant.

2013-1625, -1631, -1632, -1633

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Appeals from the United States District Court for the Eastern District of Texas in No. 10-CV-0473, Judge Leonard Davis.

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Decided: December 4, 2014

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Before O'MALLEY, TARANTO, and HUGHES, *Circuit Judges.*

Opinion for the court filed by *Circuit Judge* O'MALLEY.

Opinion dissenting in part filed by *Circuit Judge* TARANTO.

O'MALLEY, *Circuit Judge.*

Ericsson, Inc. & Telefonaktiebolaget LM Ericsson (collectively, "Ericsson") brought suit against D-Link Systems, Inc.; Netgear, Inc.; Acer, Inc.; Acer America Corp.; Gateway, Inc.; Dell, Inc.; Toshiba America Information Systems, Inc.; and Toshiba Corp., with Intel Corp. intervening (collectively, "D-Link"), in the United States District Court for the Eastern District of Texas, alleging infringement of, *inter alia*, certain claims from U.S. Patent Nos. 6,424,625 ("the '625 patent"); 6,466,568 ("the '568 patent"); and 6,772,215 ("the '215 patent"). All of the patents at issue generally relate to Wi-Fi technology employed by electronic devices to wirelessly access the Internet. Ericsson alleged that all of the patents at issue were essential to the Wi-Fi standard, which would mean that all Wi-Fi-capable devices infringe Ericsson's patents.

The case progressed to a jury trial, where the jury found that D-Link infringed the asserted claims of the three patents and assigned roughly $10 million in damages—approximately 15 cents per infringing device. After post-trial motions, the district court upheld the jury's infringement and validity findings and refused to grant a new trial based on an alleged violation of the "entire market value rule" ("EMVR") and allegedly deficient jury instructions regarding the standard-setting context and Ericsson's "reasonable and non-discriminatory" licensing obligations derived from that context. For the reasons explained below, we *affirm-in-part*, *reverse-in-part*, *vacate-in-part*, and *remand*.

I. BACKGROUND

A. Technology and Standards Background

Interoperability is an essential requirement for many electronic devices. For example, if a user brings her laptop to a local coffee shop, she expects that her laptop will charge when she plugs it in and that she will be able to access the Internet when she connects to the coffee shop's wireless network. For the user to be able to charge her laptop, the plug must be in the correct shape and the laptop charger must be able to accept the voltage output of the outlet. For the user to be able to connect to the Internet, her laptop must know, *inter alia*, what frequency to search for the wireless signal, what messages to send to the network to set up a connection, and how to interpret the messages sent from the network. Though most users take for granted that their electronic devices will be able to charge and connect to the wireless Internet anywhere, interoperability does not happen automatically. Because of the multitude of devices, device designers, and manufacturers, there must be an established standard mode of operation to ensure compatibility among all of these different devices.

Standards development organizations ("SDOs") publish standards, which are lists of technical requirements. Compliance with these technical requirements ensures interoperability among compliant devices. Of course, at least a critical mass of device developers must adopt the standard in order to ensure mass interoperability.[1] Relevant to this case, the Institute of Electrical and Electronics Engineers, Inc. ("IEEE") publishes the 802.11 standards, more commonly known as "Wi-Fi." Br. of Amici Curiae Institute of Electrical and Electronics Engineers, Inc. ("IEEE Br.") at 1–2. The 802.11 standard is the prevailing wireless internet standard and has already reached widespread adoption. A device is considered 802.11-compliant if it adheres to the IEEE's technological requirements stated in the 802.11 standard. Requiring all 802.11-compliant devices to operate in a certain way ensures that every compliant device can communicate with all other 802.11-compliant devices.[2]

For example, an 802.11-compliant laptop will be able to establish a connection with an 802.11-compliant router. The 802.11 standards also govern how subsequent data is passed between the laptop and the router once that

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[1]   A single standard will often emerge even if initially there are competing standards. For example, the Blu-ray standard won out over the HD DVD standard in the high-definition optical disc war. Martin Fackler, *Toshiba Acknowledges Defeat as Blu-ray Wins Format Battle*, N.Y. TIMES, February 20, 2008, at C1.

[2]   The 802.11 standard is not a static set of requirements. Indeed, it has been updated multiple times. When the 802.11 standard is updated, it is given a letter to indicate the version of the standard, e.g., 802.11(g). Devices are typically compliant with a specific version of the 802.11 standard, indicated by the letter. This case specifically addresses the 802.11(n) standard.

connection is established. This includes, *inter alia*, data formatting, prioritization, error handling, and flow control.

Importantly for this case, data files are not sent between a router and a laptop in a single transmission. For example, if a laptop user wants to download a video, the router does not send the entire file in a single huge transmission. Instead, each data file is broken into "packets," where each packet is sent in a different transmission. Small files may only require a single packet, whereas large files, e.g., video and sound, may require thousands of packets. The receiving device then reassembles the file out of the packets. The data from the file in the packet is called the "payload." Because packets may be lost or arrive out of order, the 802.11 standard provides ways to handle these errors. For example, each packet has a "header" that is sent to the receiving device with the packet. The header contains, *inter alia*, a sequence number so the receiving device knows the order in which to reassemble the payload of the packets.

Creating some standards, like IEEE's 802.11 standard, is a complicated process that involves the collaboration and can involve cooperation of a number of interested parties. IEEE Br. 4–12. Due to the collaborative nature of this process, the chosen standard may include technology developed by a number of different parties. Sometimes that technology is covered by patents. Because the standard *requires* that devices utilize specific technology, compliant devices *necessarily* infringe certain claims in patents that cover technology incorporated into the standard. These patents are called "standard essential patents" ("SEPs"). IEEE Br. 13–14.

SEPs pose two potential problems that could inhibit widespread adoption of the standard: patent hold-up and royalty stacking. Patent hold-up exists when the holder of a SEP demands excessive royalties after companies are

locked into using a standard. Royalty stacking can arise when a standard implicates numerous patents, perhaps hundreds, if not thousands. If companies are forced to pay royalties to all SEP holders, the royalties will "stack" on top of each other and may become excessive in the aggregate. To help alleviate these potential concerns, SDOs often seek assurances from patent owners before publishing the standard. IEEE, for example, asks SEP owners to pledge that they will grant licenses to an unrestricted number of applicants on "reasonable, and non-discriminatory" ("RAND") terms. IEEE Br. at 16–18.

B. Ericsson's SEPs

Ericsson has asserted that all of the patents at issue are SEPs for IEEE's 802.11(n) standard. Ericsson promised to offer licenses for all of its 802.11(n) SEPs at a RAND rate via letters of assurance to the IEEE. In its letters, Ericsson pledged to "grant a license under reasonable rates to an unrestricted number of applicants on a worldwide basis with reasonable terms and conditions that are demonstrably free of unfair discrimination." Joint Appendix ("J.A.") 17253. The parties agree that this commitment is binding on Ericsson. *See also* IEEE Br. 19–20.

1. The '568 Patent

The '568 patent, titled "Multi-Rate Radio-communication Systems and Terminals," describes prioritizing packets based on the type of payload in the packet. The prioritization of packets is important because networks all have a bandwidth limitation. Bandwidth refers to the amount of data that can be sent across the network at one time. When a network receives multiple requests at the same time, it must be able to respond to all of the requests in a timely fashion. Due to the network's bandwidth limitation, however, the messages cannot be sent all at once. Though networks can deal with the bandwidth limitation problem in different ways, each method

involves dividing the available bandwidth among the outstanding requests.

The '568 patent explains that networks transmit a variety of different types of payloads, including "voice, video, and data." According to the '568 patent, networks in the prior art did not have the ability to prioritize certain types of data over others. Because certain types of transmissions are less preferable when delayed—e.g., voice calling—the '568 patent discloses transmitting the type of transmission as part of the header. This would allow the network to dedicate more bandwidth to the higher priority transmission types, thereby sending those packets more quickly.

Claims 1 and 5 are at issue in this appeal. Claim 1 is representative:

> 1. A communications station comprising:
>
> a processor for arranging information for transmission including providing at least one first field in which payload information is disposed and providing at least one second field, separate from said first field, which includes *a service type identifier which identifies a type of payload information* provided in said at least one first field; and
>
> a transmitter for transmitting information received from said processor including said at least one first field and said at least one second field.

'568 patent col. 13 ll. 11–21 (emphasis added).

2. The '215 Patent

As described above, files are broken into packets, which are sent to the receiving device with sequence numbers so the receiving device can reassemble the payload in the correct order. Packets, however, are often lost or corrupted during transmission. To ensure that the receiver receives the payload in those lost or corrupted

packets, the transmitter will have to resend those packets. For the transmitter to know which packets need to be resent, the receiving device must tell the transmitting device which packets it did not receive or are corrupted. This may be done using an "Automatic Repeat Request" ("ARQ") protocol. In an ARQ protocol, the receiving device will send a "feedback response" to the transmitting device. Though feedback response messages can be in different formats, the feedback response will generally indicate which packets, if any, are missing or corrupted. The transmitting device will then retransmit those missing packets.

Although ARQ protocols existed in the prior art, the '215 patent, titled "Method for Minimizing Feedback Responses in ARQ Protocols," asserts that those prior art ARQ protocols wasted bandwidth because they were "static" and not adaptable. By making the feedback response type dynamic, the '215 patent discloses that the response could be formatted in the most efficient response type. For example, if 1 packet out of 100 is missing, just the missing packet number could be sent. Conversely, if 50 out of 100 packets are missing, the response could be a bitmap with a bit set to one to indicate the missing packets, instead of a list of all 50 missing packet numbers. To solve this alleged deficiency in the prior art, the '215 patent discloses adding a "type identifier field" ("TIF") to the feedback response that identifies the format of that feedback response. This would allow the receiver to choose dynamically between different types of feedback responses based on which response would be most efficient, e.g., a list of packet numbers or a bitmap.

Claim 1 is the independent claim at issue:

1. A method for minimizing feedback responses in an ARQ protocol, comprising the steps of:

sending a plurality of first data units over a communication link;

receiving said plurality of first data units; and

responsive to the receiving step, constructing a message field for a second data unit, said message field including a type identifier field and at least one of a sequence number field, a length field, and a content field.

'215 patent col. 10 ll. 19–28 (emphasis added).

3. The '625 Patent

Due to technical limitations, prior art receiving devices used a limited "reception window" for keeping track of which packets it had received. Because this reception window was finite, if the receiving device received a packet outside of the window, it would not accept the packet. The window would not move forward until it received all of the packets in the current window. This process ensures that the receiver will receive all of the missing packets. For certain "delay sensitive applications," however, a 0% packet loss rate is not required and significantly delayed packets provide no benefit—e.g., "telephony, video conferencing, and delay sensitive control systems." '625 patent col. 3 ll. 51–53.

According to the '625 patent, prior art transmitting devices had no way to tell the receiving device to ignore unnecessary, missing packets and shift the receiving window forward. The '625 patent discloses adding a way for the transmitting device to force the receiving device to accept packets that may be out of its reception window. This will also shift the reception window forward and the receiving device will forget about the delayed or lost packets that would no longer provide any benefit.

Claim 1 is at issue in this appeal:

1. A method for discarding packets in a data network employing a packet transfer protocol includ-

ing an automatic repeat request scheme, comprising the steps of:

a *transmitter* in the data network *commanding a receiver* in the data network to a) *receive* at least one packet having a sequence number that is not consecutive with a sequence number of a previously received packet and b) *release any expectation* of receiving outstanding packets having sequence numbers prior to the at least one packet; and

the transmitter discarding all packets for which acknowledgment has not been received, and which have sequence numbers prior to the at least one packet.

'625 patent col. 10 ll. 13–26 (emphases added).

C. The Accused Products

The accused infringers in this case produce a variety of electronic devices, including laptop computers and routers ("the end products"), which incorporate 802.11(n) wireless chips made by Intel. Because all of these end products incorporate 802.11(n)-compliant chips, they must be capable of the functionality mandated by the 802.11(n) standard.

For example, the standard requires that, in the header of an 802.11(n)-compliant packet, there must be a traffic identifier ("TID") field that indicates the priority of the data. This TID field has a value from 0–7, which indicates its priority. Packages with higher priority typically will be sent more quickly or given more bandwidth than those with lower priority. And the standard explains that one use of this TID identifier is to associate particular values with particular types of information inside packages—to correspond to a particular kind of payload—as indicated in the following table giving an example:

Table 9-1—UP-to-AC mappings

Priority	UP (Same as 802.1D user priority)	802.1D designation	AC	Designation (informative)
Lowest	1	BK	AC_BK	Background
	2	—	AC_BK	Background
	0	BE	AC_BE	Best Effort
	3	EE	AC_BE	Best Effort
	4	CL	AC_VI	Video
Highest	5	VI	AC_VI	Video
	6	VO	AC_VO	Voice
	7	NC	AC_VO	Voice

J.A. 15781. In this table, each priority is given an informative "Designation." For example, priority levels 4 and 5 are given the designation "Video."

For further examples of required functionality, the 802.11(n) standard also requires feedback response headers to include information about the type of feedback response in the BlockAck field:

Table 7-6k—BlockAck frame variant encoding

Multi-TID subfield value	Compressed Bitmap subfield value	BlockAck frame variant
0	0	Basic BlockAck
0	1	Compressed BlockAck
1	0	Reserved
1	1	Multi-TID BlockAck

J.A. 16778. The 802.11(n) standard allows three different types of feedback responses: Basic BlockAck, Compressed BlockAck, and Multi-TID BlockAck. Sending this information as part of the header is mandatory for interoperability between devices.

All 802.11(n)-compliant devices, moreover, must be capable of accepting any packets they receive. In other words, 802.11(n)-compliant devices do not use a limited reception window. The receiver is just programmed to receive automatically all packets, regardless of the packet's sequence number.

D. The Dell-Ericsson AB Agreement

Dell argues on appeal that it has a license to practice the patents at issue based on its prior agreement with Ericsson AB. Ericsson AB is a Swedish manufacturing and development subsidiary of LM Ericsson. LM Ericsson is the Swedish parent corporation of Ericsson AB and owns the patents-in-suit. LM Ericsson and its North American subsidiary, Ericsson, Inc., are the two plaintiffs-appellees in the suit.

On February 13, 2008, Ericsson AB and Dell executed a Master Purchase Agreement ("MPA"), under which Ericsson AB would provide Dell with mobile broadband products for three years from the date of execution of the MPA. Ericsson AB is the only named "supplier" listed in the MPA, as well as the only signatory to the MPA aside from Dell. The MPA also separately defined Ericsson AB's "Affiliates." At issue in this appeal, Section 12.1 of the MPA, entitled "Dispute Resolution," stated that "*[s]upplier* will not commence any lawsuit or seek any judicial order affecting Dell or add Dell as a party to any pending legal or administrative proceeding that is not directly related to Dell's purchase of Products or that may prevent Dell from shipping any Dell or third-party products." J.A. 6348 (emphasis added).

E. Procedural History

On September 14, 2010, Ericsson filed suit in the United States District Court for the Eastern District of Texas, accusing D-Link of infringing nine patents that, according to Ericsson, were essential to the 802.11(n)

wireless standard. Intel, the wireless internet chip sup-
plier for the accused products, intervened. On March 8,
2013, the magistrate judge issued a claim construction
order, which the district court judge adopted. *Ericsson
Inc. v. D-Link Corp.* ("*Claim Construction Order*"), No.
6:10-cv-473, 2013 WL 949378 (E.D. Tex. Mar. 8, 2013).
Shortly before trial, the trial judge denied D-Link's mo-
tion to exclude the testimony of Ericsson's damages
expert, over D-Link's argument that the testimony violat-
ed the EMVR. Prior to trial, the court also granted sum-
mary judgment against Dell, rejecting its argument that
it had a license based on the MPA.

Although the parties were forced to narrow the case
for trial, Ericsson still accused D-Link of infringing 5
different patents at trial. On June 13, 2013, after a 7-day
jury trial, the jury found that D-Link infringed the assert-
ed claims in three of Ericsson's patents—the '568, '215,
and '625 patents. The jury also found that the '625 patent
was valid over a prior art publication ("the Petras refer-
ence"). As past damages for that infringement, the jury
awarded Ericsson approximately $10 million—roughly 15
cents per infringing device. After the jury trial, the trial
court conducted a separate bench trial regarding several
RAND issues.[3]

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[3]   At the bench trial, D-Link asked the district court
to: (1) determine an appropriate RAND rate, (2) find that
Ericsson breached its RAND agreement by refusing to
license Intel, and (3) find that Ericsson is not entitled to
an injunction. D-Link concedes that it proffered evidence
to the trial court regarding Ericsson's RAND obligations
that it did not offer to the jury, despite its argument to
the jury that any royalty rate chosen must be reflective of
those RAND obligations. It is unclear why D-Link made
this choice, particularly because D-Link refused to be
bound by any court-determined royalty rate. Once the

Following the bench trial, D-Link filed a motion for judgment as a matter of law ("JMOL") and a new trial, arguing that the jury's findings of infringement and no invalidity, as well as its damages award, were not supported by substantial evidence. D-Link further contended that Ericsson's expert violated the EMVR by relying on licenses that were based on the value of the end products. D-Link asserted, moreover, that the jury was inadequately instructed regarding Ericsson's RAND obligation.

The trial court denied D-Link's post-trial motions, finding that substantial evidence supported: (1) the jury's findings of infringement; (2) the validity of the '625 patent; and (3) the jury's $10 million award. The judge also concluded that Ericsson's damages testimony was not inconsistent with the EMVR and that the jury instruction regarding Ericsson's RAND obligations was adequate. The judge further found that, based on the jury's award, 15 cents per product was an appropriate ongoing RAND rate for the three infringed patents. *Ericsson Inc. v. D-Link Corp.* ("*JMOL Order*"), No. 6:10-cv-473, 2013 WL 4046225 (E.D. Tex. Aug. 6, 2013). According to the trial court, moreover, Ericsson did not violate its RAND obligations by offering Intel a license at the rate of 50 cents per unit. In fact, the court concluded that it was Intel that violated its obligation to negotiate a royalty rate in good faith. *Id.* at *16.

D-Link timely appealed to this court. We have jurisdiction under 28 U.S.C. § 1295(a)(1) (2012).

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jury had set the RAND rate, the judge rejected D-Link's invitation to separately determine the award at the bench trial. D-Link does not appeal that ruling, arguing only that the jury was not adequately instructed about Ericsson's RAND obligations, not that the court should have made that decision.

II. DISCUSSION

On appeal, D-Link raises a number of issues: (1) whether the jury had substantial evidence to find that D-Link infringed claims 1 and 5 of the '568 patent; (2) whether the district court properly construed the term "responsive to the receiving step, constructing a message field for a second data unit, said message field including a type identifier field" in the '215 patent, and, if the district court correctly construed that term, whether the jury had substantial evidence to find that D-Link infringed claims 1 and 2 of the '215 patent; (3) whether the jury had substantial evidence to find that D-Link infringed claim 1 of the '625 patent and that the Petras reference did not anticipate the '625 patent; (4) whether Ericsson's damages theory was presented in violation of the EMVR; (5) whether the jury was instructed properly regarding Ericsson's RAND obligations; and (6) whether Dell had a license to practice the patents at issue based on its agreement with Ericsson AB. We address each issue in turn.

A. Infringement

We first address D-Link's challenges to the infringement findings. We review the trial court's decision on a motion for JMOL under the law of the regional circuit, in this case, the Fifth Circuit. *Verizon Servs. Corp. v. Cox Fibernet Va., Inc.*, 602 F.3d 1325, 1331 (Fed. Cir. 2010). The Fifth Circuit reviews the denial of a motion for JMOL de novo, but the "jury's verdict can only be overturned if there is no legally sufficient evidentiary basis for a reasonable jury to find as the jury did." *Miller v. Raytheon Co.*, 716 F.3d 138, 144 (5th Cir. 2013). We review issues of patent law applying this court's case law. Claim construction is an issue of law reviewed de novo. *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 744 F.3d 1272, 1276–77 (Fed. Cir. 2014) (en banc). Infringement and anticipation are issues of fact reviewed for

substantial evidence. *01 Communique Lab., Inc. v. Log-MeIn, Inc.*, 687 F.3d 1292, 1296 (Fed. Cir. 2012); *In re Montgomery*, 677 F.3d 1375, 1379 (Fed. Cir. 2012).

1. The '568 Patent

D-Link contends that the jury did not have substantial evidence to find infringement of the asserted claims of the '568 patent, specifically with respect to the "service type identifier which identifies a type of payload information" limitation. Neither party challenges the district court's construction of that limitation as "an identifier that identifies the type of information conveyed in the payload. Examples of types of information include, but are not limited to, video, voice, data, and multimedia." *Claim Construction Order*, 2013 WL 949378, at *11.

To prove literal infringement, the patentee must show that the accused device contains *each and every limitation* of the asserted claims. *Presidio Components, Inc. v. Am. Tech. Ceramics, Corp.*, 702 F.3d 1351, 1358 (Fed. Cir. 2012).

Before the jury, Ericsson relied on the TID field value in the 802.11(n) standard to meet the service type identifier limitation. Ericsson's expert testified that each TID field contains an integer that establishes a priority of service. According to Ericsson's expert, each TID value may be assigned an "informative" designation: Background, Best Effort, Video, or Voice. Ericsson's expert further stated that devices need to implement the TID field in order to be compliant with the 802.11(n) standard. Ericsson's expert pointed to several programs that "take advantage" of the "informative" use of the TID capability to assign TID values to payloads of a particular type. J.A. 1395–96 (testifying that CSipSimple, Skype, Ekiga, and Windows Media take advantage of the TID capability). Ericsson also presented an Intel document, recommending that developers utilize the TID field based on the

informative designation categories described by the 802.11(n) standard.

D-Link's expert, on the other side, countered that the TID designations are used to prioritize packets, but do not *identify* the type of information contained in the payload's packet, e.g., a text email can be sent using the Video designation. D-Link's expert testified that the he ran tests on video and voice programs that did not assign different TID numbers for video and voice data. In other words, the program assigned a TID designation of zero, regardless of the type of data in the payload. On cross examination, however, D-Link's expert admitted that he also observed *some* traffic in which the TID designation *did* correspond to the content of the payload. Indeed, when presented with his own expert report, D-Link's expert admitted that at least one program—Ekiga, a video conferencing program—used the video TID designation for its packets with a video payload. In fact, D-Link's own expert testified that Ekiga was "using the ['568] invention." J.A. 1568 ("A. Ekiga is using the invention, you said? Q. Yes. That's what you tested, right? A. Yes.").

The jury, using the district court's construction for service type identifier, found that D-Link infringed claims 1 and 5 of the '568 patent. The district court denied D-Link's subsequent JMOL motion, explaining that D-Link's evidence that the TID designation does not always correspond to the payload is, "[a]t best, . . . evidence show[ing] [its] products can be configured in a non-infringing manner." *JMOL Order*, 2013 WL 4046225, at *6.

On appeal, D-Link first argues that, under the district court's proper construction, the service type identifier must "*identif[y]* the type of information conveyed in the payload." *Claim Construction Order*, 2013 WL 949378, at *11 (emphasis added). D-Link insists that the TID field relates only to priority and does not *identify* the payload of the packet. D-Link asserts that Ericsson's infringe-

ment contentions for the '568 patent are thus premised on the mere "capability of infringement." According to D-Link, it was an error for the judge to instruct the jury that "[a]n accused system or product directly infringes a claim if it is reasonably capable of satisfying the claim elements even though it may also be capable of non-infringing modes of operation." Appellants' Br. 35. D-Link argues that mere capability does not constitute infringement unless the claim language is "drawn to capability." Appellants' Br. 36 (citing *Finjan, Inc. v. Secure Computing, Corp.*, 626 F.3d 1197, 1204 (Fed. Cir. 2010); *Ball Aerosol & Specialty Container, Inc. v. Limited Brands, Inc.*, 555 F.3d 984, 994 (Fed. Cir. 2009)). D-Link asserts, moreover, that Ericsson failed to show any programs that actually assign TID values according to their informative designations, e.g., voice and video.

Ericsson responds that the jury's finding of infringement of the asserted claims of the '568 patent was supported by substantial evidence, including testimony by Ericsson's expert and the chart showing the informative designations presented to the jury. Ericsson further contends that D-link's own technical expert's tests revealed traffic that corresponded to the correct TID designations. Ericsson also points to Intel's instruction manual that urges developers to use the correct TID designations for the various types of data. According to Ericsson, moreover, this court has repeatedly held that a product infringes if it is reasonably capable of satisfying the claimed elements. For example, Ericsson argues that, in *Finjan*, this court "held that where an apparatus claim is styled as a component 'for' performing some function, the claim is drawn to capability and the reasonable capability test applies." Appellees' Br. 33 (citing *Finjan*, 626 F.3d at 1204–05).

We are unpersuaded by D-Link's argument that the jury did not have substantial evidence to find infringement of claims 1 and 5 of the '568 patent. We recognize

that the evidence showed that the TID field does not always identify its payload type. Indeed, D-Link's expert's testimony that many programs did not utilize the TID field according to the informative designations was unchallenged. D-Link's expert, however, also admitted that at least one video calling program "us[ed] the invention." J.A. 1568. Furthermore, Ericsson's expert testified as to several examples of programs running on the accused devices where the TID field indicated the type of payload.

We understand that the TID field may be inherently only a priority field. But that field necessarily has the capability to be used to identify the payload type, as shown by the informative example in the standard and by the proof that it was in fact so used by some device users. Crucially, this capability satisfies the patent claim language here, which means all accused devices could be found by the jury to infringe.

In *Fantasy Sports Properties, Inc. v. Sportsline.com, Inc.*, 287 F.3d 1108 (Fed. Cir. 2002), we held that software for playing fantasy football could infringe a claim covering a "computer for playing football." 287 F.3d at 1118. Though a user must install and activate functions in the software to infringe the claims, the *Fantasy Sports* opinion explained that the user is only activating means that are already present in the underlying software. *Id.* In *Ball Aerosol*, on the other hand, the patent claimed an apparatus arranged in a certain manner. We reversed a grant of summary judgment of infringement because the claims were not drawn to capability and there was no evidence that the accused device "was ever placed in the infringing configuration." 555 F.3d at 995.

In *Finjan*, we found that the system claims at issue described "capabilities," without describing any software components that must be "active" or "enabled." For example, the claim language in *Finjan* required "a logical

engine *for preventing* execution" and "a communications engine *for obtaining* a Downloadable." *Finjan*, 626 F.3d at 1204–05 (emphases added in opinion). In *Finjan*, we found that, in order for the accused system to infringe, the logical engine only needed to be *reasonably capable* of "preventing execution" and the communications engine only needed to be *reasonably capable* of "obtaining a Downloadable." *Id.* Our court explained further in *Versata*, that, "[w]hile 'a device does not infringe simply because it is possible to alter it in a way that would satisfy all the limitations of a patent claim,' . . . an accused product 'may be found to infringe if it is reasonably capable of satisfying the claim limitation.'" *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1262 (Fed. Cir. 2013) (quoting *Finjan*, 626 F.3d at 1204). In *Versata*, we found that the patentee presented evidence that, if a user followed the accused infringer's own instructions, the system would operate in an infringing manner. *Id.* at 1263. In sum, when the asserted claims recite capability, our case law supports finding infringement by a "reasonably capable" accused device on a case-by-case basis particularly where, as here, there is evidence that the accused device is *actually used* in an infringing manner and can be so used without significant alterations. *See* J.A. 1568 ("A. Ekiga is using the invention, you said? Q. Yes. That's what you tested, right? A. Yes."); *see also Ball Aerosol*, 555 F.3d at 995.

The asserted claims of the '568 patent are most similar to the claim at issue in *Finjan*. Both use language reciting capability, as opposed to actual operation. *Compare Finjan*, 626 F.3d at 1204–05 (system claims reciting "a logical engine *for preventing* execution" and "a communications engine *for obtaining* a Downloadable" (emphases added)), *with* '568 patent col. 13 ll. 12–18 ("a processor *for arranging information* for transmission . . . which identifies a type of payload information . . . ." (emphasis added)). Accordingly, just as the accused system in *Fin-*

jan only needed to have components that are reasonably capable of "preventing execution" and "obtaining a Downloadable" to infringe, *Finjan*, 626 F.3d at 1204–05, D-Link's products only need to have a component that is reasonably capable of "arranging information for transmission . . . which identifies a type of payload information . . . ." '568 patent col. 13 ll. 12–18. Furthermore, similar to the evidence the patentee presented in *Versata*, Ericsson presented evidence that Intel—the 802.11-compliant chip producer—instructed developers to use the TID field in an infringing manner. *See Versata*, 717 F.3d at 1263. We therefore find that the jury could properly base its infringement finding on the reasonable capability of the unmodified accused devices.

For the foregoing reasons, we hold that substantial evidence supports the jury's finding that D-Link infringed claims 1 and 5 of the '568 patent.

2. The '215 Patent

D-Link challenges the district court's construction of the term "responsive to the receiving step, constructing a message field for a second data unit, said message field including a type identifier field" in the '215 patent. Even if we affirm the district court's construction of that term, according to D-Link, the jury did not have substantial evidence to find infringement of claims 1 and 2 of the '215 patent. We first consider the proper scope of the claims before comparing the construed claims to the accused devices. *See Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1129 (Fed. Cir. 2011).

a. Claim Construction

Generally, claim terms should be given their ordinary and customary meaning to a person having ordinary skill in the art at the time of the effective date of the patent application. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). To ascertain the scope and

meaning of the asserted claims, we look to the words of the claims themselves, the specification, the prosecution history, and any relevant extrinsic evidence. *Id.* at 1315–17. This inquiry typically begins and ends with the intrinsic evidence. In fact, the specification is the single best guide to the meaning of the claim terms; it is usually dispositive. *Id.* at 1318 ("[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive . . . ." (internal citations omitted)).

D-Link challenges the district court's construction of "responsive to the receiving step, constructing a message field for a second data unit, said message field including a type identifier field" as "responsive to the receiving step, generating a message field including a field that identifies the message type of the feedback response message from a number of different message types." *Claim Construction Order*, 2013 WL 949378, at *4–6. D-Link argues that the district court should have adopted its proposed construction: "responsive to the receiving step, generating a message field including a field identifying the type of feedback response *that is selected from multiple available feedback* responses *in order to minimize the size or number of feedback responses.*" *Id.* at *4 (emphasis added). In essence, D-Link contends that the "type identifier field" must be used to "select[] from multiple available feedback responses" and "minimize the size or number of feedback responses." *Id.*

D-Link asserts that, because the entire specification of the '215 patent emphasizes that the point of the invention is to *select* the feedback response that *minimizes* the size or number of feedback responses, we must limit the scope of the claims to capture the scope of the actual invention. Ericsson responds that the district court properly excluded the two extraneous limitations—selecting and minimizing—in its construction. Because none of the language cited by D-Link amounts to a clear disavowal of the claim scope, Ericsson contends that we

should not read limitations from the specification into the claims.

We agree with Ericsson that D-Link's proposed construction improperly reads limitations from the specification into the claims. Although the claims must be read in light of the specification, it is important that we "avoid importing limitations from the specification into the claims." *Phillips*, 415 F.3d at 1323. We recognize that there is a fine distinction between these two concepts, but we must, as always, draw this distinction from the point of a view of a person of ordinary skill in the art. *Id*. Although the '215 patent envisions that the type identifier field be used to select the most efficient format of feedback response, the specification never requires the selection of the feedback response type that minimizes the size or number of feedback responses. *See id*. at 1326–27 ("The fact that the written description of the [] patent sets forth multiple objectives to be served by the baffles recited in the claims confirms that the term 'baffles' should not be read restrictively to require that the baffles in each case serve all of the recited functions."). The type identifier field actually serves another purpose—one distinct from the proposed selecting and minimizing functions—it must *identify* the type of feedback response. This purpose is encompassed by the district court's construction. Although the type identifier field may be used to select and minimize, a person of ordinary skill would not read those limitations into the claims when the field has another purpose as well.

D-Link relies on *Metabolite Laboratories, Inc. v. Laboratory Corp. of America Holdings*, 370 F.3d 1354 (Fed. Cir. 2004) to argue that we should use the preamble of the asserted claim to limit our construction. In *Metabolite*, we stated that "[a] preamble may provide context for claim construction, particularly, where as here, that preamble's statement of intended use forms the basis for distinguishing the prior art *in the patent's prosecution history*." 370

F.3d at 1362 (emphasis added). D-Link omits the italicized part of the *Metabolite* quote in its briefs, likely because the selection and minimization requirements were not used as the basis for distinguishing the prior art in the prosecution history of the '215 patent. Indeed, the addition of the type identifier field, which *identifies* the type of feedback response, is a sufficient basis for distinguishing the prior art. This is reflected in the district court's correct construction because the message field must "includ[e] a field that *identifies* the message type of the feedback response message from a number of different message types." *Claim Construction Order*, 2013 WL 949378, at *4 (emphasis added).

We therefore hold that the district court correctly did not read the additional limitations D-Link identifies into the "type identifier field" term of the '215 patent; we adopt the district court's construction.

b. Infringement

D-Link argues that, even under the district court's construction, the jury did not have substantial evidence to find that the accused devices met the "responsive to the receiving step, constructing a message field for a second data unit, said message field including a type identifier field" step in the asserted claims of the '215 patent.

A method claim is directly infringed when someone practices every step of the patented method. *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 576 F.3d 1348, 1359 (Fed. Cir. 2009). In order to prove induced infringement, the patentee must show that the alleged infringer performs, or induces another party to perform, every single step in the method. *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 572 U.S. __, 134 S. Ct. 2111, 2117 (2014). Inducement requires that the alleged infringer "knowingly induced infringement and possessed specific intent to encourage another's infringement." *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1306 (Fed. Cir. 2006).

At trial, Ericsson presented evidence in the form of expert testimony that all 802.11(n)-compliant products, including the accused products, must send an appropriate response in the BlockAck field. Furthermore, Ericsson presented evidence that the BlockAck field must indicate one of three different feedback response types. D-Link, to the contrary, presented evidence that, although the accused devices send messages that contained the Block-Ack field, the accused products only use one type of feed-back response type. D-Link argued that, because its products only use a single feedback response, the accused product could not satisfy the "from a number of different message types" limitation.

The jury found that D-Link infringed claims 1 and 2 of the '215 patent. In denying D-Link's subsequent JMOL motion, the district court explained that whether the use of a single feedback response meets the "from a number of different message types" limitation is precisely the type of factual question that is to be resolved by a jury. The district court clarified that the jury was authorized to find direct infringement of a method claim by D-Link if its products automatically perform the disputed steps without user modification. *JMOL Order*, 2013 WL 4046225, at *9 (citing *SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1331 (Fed. Cir. 2010)). The district court reasoned that, because the accused products performed the claimed method when operated by D-Link's customers without any modification, a finding of direct infringement was justified. Regarding indirect infringement, the district court found that Ericsson had presented substantial evidence that D-Link possessed the requisite intent because they continued to sell 802.11(n)-compliant devices even after receiving notice of the patents.

On appeal, D-Link argues that, under the district court's construction, the feedback response message type must be generated "from a number of *different* message types." *Claim Construction Order*, 2013 WL 949378, at *4

(emphasis added).   According to D-Link, because the accused products always send a single type of feedback response, a jury did not have substantial evidence to find infringement.   D-Link further asserts that, under Federal Circuit law, a party that sells a product containing instructions to perform a patented method does not directly infringe the method. Appellants' Br. 46–47 (citing *Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 709 F.3d 1348, 1362 (Fed. Cir. 2013); *Ricoh Co. v. Quanta Comp. Inc.*, 550 F.3d 1325 (Fed. Cir. 2008)).   Regarding induced infringement, moreover, D-Link contends that Ericsson did not present sufficient facts from which a jury could conclude that it knew the induced acts constituted infringement.   According to D-Link, knowledge of the patents plus advertising compliance with 802.11(n) is not enough evidence upon which to base a finding of induced infringement.

Ericsson responds that the claim language does not require that the accused products send multiple types of feedback responses, only that they have a field that "identifies the message type."   According to Ericsson, because the accused products must utilize the BlockAck field to be compliant with the 802.11(n) standard, the jury had substantial evidence to find infringement. According to Ericsson, moreover, the *Ricoh* case relied on by D-Link applies only to software, not to "hard-wired" devices that will automatically perform the infringing steps. Ericsson asserts that, like the accused products in *SiRF*, D-Link designs the accused products to perform the method steps automatically whenever the products are used. According to Ericsson, substantial evidence supports the finding of induced infringement, including evidence that D-Link advertises 802.11(n) compliance and submits its products for interoperability testing and certification.

We must address two different issues: (1) whether the jury had substantial evidence to find that the BlockAck field was selected "from a number of *different* message

types" and (2) whether the jury had substantial evidence to find direct or indirect infringement by D-Link. First, we agree with the district court and Ericsson that the jury had substantial evidence to find that using the BlockAck field meets the "from a number of different message types" step. *Claim Construction Order*, 2013 WL 949378, at *4. Nothing in the court's proper construction requires that multiple different feedback response types actually be used. Indeed, we have already rejected D-Link's proposed construction that would have added this requirement. At trial, Ericsson presented evidence that the 802.11(n) standard allows multiple types of feedback responses. It is undisputed, moreover, that the accused devices send the code identifying the feedback response type in the BlockAck field, as required by the 802.11(n) standard. Although the accused devices only use one type of feedback response, the jury had substantial evidence to find that the accused devices can perform the method claimed in the '215 patent. Indeed, this is precisely the type of factual dispute that a jury should be resolving.

Because the asserted claim is a method claim, however, the accused devices must also *actually perform* that method. *See Cardiac Pacemakers*, 576 F.3d at 1359. Although the jury was instructed on both direct and indirect infringement, the verdict form only indicated that the jury found that D-Link infringed claims 1 and 2 of the '215 patent. In other words, the verdict did not distinguish between direct and indirect infringement. For the reasons explained below, we must address both D-Link's direct and indirect infringement arguments.

The district court relied on *SiRF* to conclude that the jury properly found that D-Link *directly* infringed the method claim by selling the accused products. In *SiRF*, this court affirmed the International Trade Commission's finding that the manufacturer of GPS systems *directly* infringed the asserted method claims. *SiRF*, 601 F.3d at 1331. The method claims at issue in *SiRF* required some,

but not all, of the steps of the claim to be executed by a satellite, which was controlled by the accused infringers. The remaining steps were then automatically performed by the accused GPS products, which were in possession of the end users. *Id*. at 1329–30. In *SiRF*, accordingly, we concluded that, on these facts, it was the accused infringers that performed all the steps required for direct infringement, not the customers who possessed the GPS products. *Id*. at 1331.

In *Ricoh*, on the other hand, we held "that a party that sells or offers to sell software containing instructions to perform a patented method does not infringe the patent under § 271(a)." *Ricoh*, 550 F.3d at 1335. The *Ricoh* court explained that there is a difference between the instructions contained in software and the process within the meaning of § 271(a). Our other decisions echo the idea from *Ricoh* that the direct infringer must *actually* perform the steps in the method claim. *See, e.g.*, *Aristocrat Techs.*, 709 F.3d at 1362 (noting that to prove direct infringement the patentee must show "each and every step of the method or process was performed" by either the accused infringer personally or "through another acting under [the accused infringer's] direction or control"); *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1307 (Fed Cir. 2012) ("[F]or a party to be liable for direct patent infringement under 35 U.S.C. § 271(a), that party must commit all the acts necessary to infringe the patent, either personally or vicariously."), *overruled on other grounds*, 134 S. Ct. 2111; *Travel Sentry, Inc. v. Tropp*, 497 F. App'x 958, 965 (Fed. Cir. 2012) (holding that a party is liable for direct infringement of a method claim only if that party exercises "control or direction" over the performance of each step of the claim, including those the party does not itself perform); *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1317 (Fed. Cir. 2009) (finding sale of software alone does not directly infringe method claims of patent and seller can only be

liable for infringement as contributor and/or inducer); *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311 (Fed. Cir. 2006) ("Method claims are only infringed when the claimed process is performed, not by the sale of an apparatus that is capable of infringing use.").

Contrary to Ericsson's assertions, our decision in *SiRF* did not create direct infringement liability whenever an alleged infringer sells a product that is capable of executing the infringing method. Our decision in *SiRF* is not applicable here because all of the steps of the method in claims 1 and 2 of the '215 patent are performed on the end product, which is controlled by a third party. *See SiRF*, 601 F.3d at 1331. Unlike the method in *SiRF*, there are no steps automatically performed by equipment controlled by D-Link. In fact, none of our decisions have found direct infringement of a method claim by sales of an end user product which performs the entire method, and we decline to do so here. Because Ericsson cannot point to any evidence in the record that D-Link performed the infringing steps, or that any of its customers were under its direction or control, the jury did not have substantial evidence to find *direct* infringement of claims 1 and 2 of the '215 patent.

Importantly, however, the district court did not instruct the jury that D-Link could directly infringe a method claim if the accused products were used to execute the patented steps. D-Link does not dispute the legal propriety of the direct infringement instructions. This means that, if the jury found direct infringement, it was a factual error, not a legal error. Although we think that it would have been a factual error for the jury to find direct infringement of the method claims by D-Link itself, that error is not enough to set aside the jury verdict because the jury's finding also could have been premised on indirect infringement. *See i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 849 (Fed. Cir. 2010) (stating that a general verdict will not be set aside "'simply because the jury

might have decided on a ground that was supported by insufficient evidence,'" but rather jury verdict should be upheld if there is sufficient evidence to support any of the plaintiff's alternative factual theories) (quoting *Walther v. Lone Star Gas Co.*, 952 F.2d 119, 126 (5th Cir. 1992)); *cf. Griffin v. United States*, 502 U.S. 46 (1991) (holding that a general verdict should be invalidated when one of the possible bases was based on *legal* error).

We agree with the district court and Ericsson that the jury had substantial evidence to find that D-Link induced infringement of claims 1 and 2 of the '215 patent. Ericsson presented evidence that D-Link knew about the patents and knew that the patents potentially were essential to the 802.11(n) standard—a standard with which D-Link intentionally complied. D-Link countered by presenting evidence that it did not think its actions constituted infringement of any of the claims of the '215 patent. Making findings of fact by weighing evidence— such as the evidence presented by the parties regarding induced infringement—is the role of the jury. Questions of intent are quintessential jury questions. *See Allen Organ Co. v. Kimball Int'l, Inc.*, 839 F.2d 1556, 1567 (Fed. Cir. 1988) ("Intent is a factual determination particularly within the province of the trier of fact."). We cannot say that the jury did not have substantial evidence to find induced infringement and we decline to supplant the jury's factual findings with our own. *E.g.*, *Lucent*, 580 F.3d at 1323 ("Having perused the evidence, we agree with Microsoft that the evidence is not strong, but we are not persuaded that the jury was unreasonable in finding that Microsoft possessed the requisite intent to induce at least one user of its products to infringe the claimed methods.").

For these reasons, we affirm the jury's finding of infringement of claims 1 and 2 of the '215 patent.

3. The '625 Patent

D-Link argues on appeal that the jury did not have substantial evidence to find that the accused devices infringed claim 1 of the '625 patent or find the patent valid over the Petras prior art reference. We examine each of the jury's findings in turn.

a. Infringement

At trial, Ericsson argued that every transmitted data packet acts as its own "command to receive" from the transmitter. Ericsson's expert testified that all 802.11(n)-compliant receivers automatically accept all packets, even if those packets are out of order. Ericsson contended that this was just like an embodiment of the '625 patent where every packet is commanding the receiver to accept an out-of-order packet. D-Link countered that, because the normal operation of 802.11(n)-compliant receivers is to accept *all* packets, there is no "command to receive" from the transmitter. D-Link insisted that Ericsson failed to present any evidence that a normal packet will release the receiver from expectations of receiving outstanding packets.

The jury found that D-Link infringed claim 1 of the '625 patent. The district court refused to grant D-Link's request for a JMOL, explaining that the jury was entitled to credit Ericsson's expert over D-Link's expert.

D-Link argues on appeal that the accused products are already programmed to accept all valid data packets and do not need to be commanded by the transmitter to accept out-of-order packets. D-Link contends that this means the jury's finding is not supported by substantial evidence. According to D-Link, Ericsson's expert admitted that regular packet transmissions could not act as a command to receive because the receivers already had the ability to receive the packets. D-Link explains that,

because the receiver already had the ability to receive, the transmitter did not command the receiver to do anything.

Ericsson responds that its expert testified at trial that the accused products met each and every limitation of the claims in the '625 patent. According to Ericsson, the fact that a receiver must receive a packet from the transmitter, even if out of order, qualifies the message as a "command to receive." Ericsson emphasizes that the patent conceived of an embodiment where the "command to receive" is sent with every single message.

We agree with D-Link that the jury did not have substantial evidence to find that the accused products infringe claim 1 of the '625 patent. The asserted claim of the '625 patent requires that "a *transmitter . . . command*[] a receiver . . . to a) receive at least one packet . . . and b) release any expectation of receiving outstanding packets. . . ." '625 patent col. 10 ll. 16–21 (emphases added). But there is no evidence in the record that it is the *transmitter* in the accused devices that *commands* the receiver to receive the out-of-order packets and release expectations of receiving earlier packets. Instead, all of Ericsson's evidence confirms that the receiver automatically handles out-of-order packets. In other words, the transmitter does not command the receiver to do anything. The receiver just operates as programmed to handle out-of-order packets, regardless of the messages that the transmitter sends. Indeed, Ericsson's expert admitted that the receivers already have the ability to accept all packets. J.A. 1412–13 ("Question: If a receiver could receive a packet that a transmitter was sending to it, is it correct that you would not need the command to receive in the '625 patent to command or force the receiver to receive the packet? Answer: I mean, that almost seems like a tautology. If it could receive, then would you need to insist that it receives it? No, because it could already receive it."). In other words, the transmitter does not command the receiver to accept the packets.

Because no reasonable jury could have found that the accused products meet each and every limitation of claim 1 of the '625 patent, we reverse the district court's refusal to grant JMOL of no infringement as to that patent.

b. Invalidity

D-Link argued at trial that the Petras reference, a prior art publication, anticipated claim 1 of the '625 patent. A claim is anticipated only if each and every limitation is found either expressly or inherently in a single prior art reference. *Whitserve, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 21 (Fed. Cir. 2012). Because patents are presumed valid, anticipation must be proven by clear and convincing evidence. *Id.*

The Petras reference discloses one type of ARQ protocol where the transmitter can send a "discard message" to the receiver. The discard message informs the receiver that a message will not be resent. The following figure from Petras is illustrative:
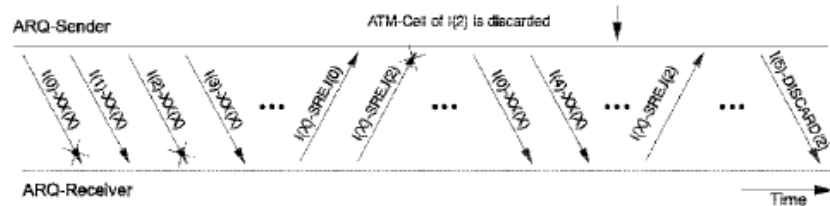
J.A. 15041. In this figure, the transmitter first sends packets 0–3 to the receiver before the receiver sends back its first feedback responses. Due to delay and packet loss, when the transmitter is first notified that the receiver did not receive packet number 2—the second I(X)-SREJ(2) message—the transmitter has already deleted packet 2. The transmitter will then inform the receiver that it can ignore packet number 2 by sending the discard packet message—the I(5)-DISCARD(2) message.

At trial, D-Link argued that a discard message acts as the "command to receive" from the transmitter. Ericsson's expert testified against this theory, explaining that the discard messages were not commands to receive; discard messages were merely notifications that the transmitter had discarded a packet. The jury found that Petras did not anticipate the '625 patent, and the district court refused to overturn that finding.

On appeal, D-Link argues that Petras discloses sending a discard message, which "commands" the receiver to stop waiting for delayed packets and shift its reception window forward to receive later packets. Ericsson responds that substantial evidence supports the jury's finding of no anticipation, pointing to its expert's testimony that packet discard messages were well known in the prior art. Ericsson also asserts that D-Link's expert testimony was inconsistent, so the jury was correct to discredit his testimony.

We agree with the district court and Ericsson that substantial evidence supports the jury's finding that Petras did not anticipate the '625 patent. D-Link's arguments on appeal essentially ask us to credit its position on discard messages over Ericsson's. We decline to do so. Both parties presented expert testimony regarding whether Petras anticipates the '625 patent, and we see no reason why the jury was not entitled to credit Ericsson's evidence over D-Link's evidence. We therefore see no reason to disturb the jury's verdict.

B. Damages

Having affirmed infringement with respect to two patents, we must also address the damages issues raised by D-Link. As explained below, we vacate the jury's damages award and remand for further proceedings consistent with this opinion.

We review decisions on motions for a new trial and the admission of expert testimony under the law of the regional circuit. *Verizon*, 602 F.3d at 1331. The Fifth Circuit reviews the denial of a new trial motion for abuse of discretion, reversing only if there is an "an absolute absence of evidence to support the jury's verdict." *Duff v. Werner Enters., Inc.*, 489 F.3d 727, 729 (5th Cir. 2007). The Fifth Circuit reviews the trial court's admission or exclusion of expert testimony for an abuse of discretion. *Snap-Drape, Inc. v. Comm'r*, 98 F.3d 194, 197 (5th Cir. 1996).

We review de novo the legal sufficiency of a jury instruction on an issue of patent law. *Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1363 (Fed. Cir. 2004). A jury verdict will be set aside only if the jury instructions were "legally erroneous" and the "errors had prejudicial effect." *Id.*

1. Admissibility of License Evidence

Before trial, D-Link moved to exclude certain testimony by Ericsson's damages expert, arguing that it violated the EMVR. Specifically, D-Link argued that, because the damages calculations were, in part, based on licenses which were themselves tied to the entire value of the licensed products, even though the technology being licensed related to only a component of those products, the testimony was impermissible as a matter of law. In denying that motion, the district court explained that Ericsson's expert's reference to those prior licenses was not improper because the expert properly apportioned any damages calculations based on those licenses to account for the value of the patents at issue. D-Link noted its objection to this line of testimony at trial by entering a continuing objection to Ericsson's expert's testimony to the extent it was predicated on or made any reference to these licenses. J.A. 1437–38 at 4:37–5:13. At trial, both Ericsson and D-Link then referred to the value

of laptops generally. J.A. 1325 at 11:24–12:21; J.A. 1332 at 37:22–38:11. After the jury found infringement and awarded Ericsson 15 cents per infringing device, D-Link moved for JMOL and for a new trial, arguing that the admission of this expert testimony violated the EMVR. The district court denied both motions.

On appeal, D-Link argues that the district court prejudicially erred by: (1) not excluding Ericsson's damages expert's testimony on the challenged licenses, and (2) allowing Ericsson's counsel to compare the cost of the end product to the requested royalty at trial. According to D-Link, because Ericsson did not dispute that the asserted claims are practiced entirely by the Wi-Fi chips—not by other components of the accused end products—Ericsson should never have been allowed to base its damages award or its arguments at trial on the price of the end products.

Ericsson responds that the jury award of 15 cents per infringing product is consistent with comparable Ericsson licenses, insisting that our court has found comparable licenses to be the best evidence of a reasonable royalty rate. Ericsson further argues that the jury award is consistent with "industry norms" and in accord with its damages expert's testimony. According to Ericsson, its expert conducted a rigorous analysis, which separated the value of the patents at issue from any other patents covered by the licenses he referenced. Because of this apportionment, Ericsson asserts that neither its damages calculation nor its expert's reference to actual industry licenses was improper, under the EMVR or otherwise. With respect to counsel's reference to the cost of laptops at trial, Ericsson argues that D-Link never objected to these references, and made similar references itself.

We conclude that the district court properly admitted evidence of the licenses to which D-Link objects and that any objection to counsel's references to the cost of items

incorporating the allegedly infringing chips was waived. While a number of our cases have referred to the concept of an entire market value "rule," the legal standard actually has two parts, which are different in character. There is one substantive legal rule, and there is a separate evidentiary principle; the latter assisting in reliably implementing the rule when—in a case involving a per-unit royalty—the jury is asked to choose a royalty base as the starting point for calculating a reasonable royalty award.

As we explained recently in *VirnetX, Inc. v. Cisco Systems, Inc.*, 767 F.3d 1308 (Fed. Cir. 2014), where multi-component 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.

Our cases have added to that governing legal rule an important evidentiary principle. The point of the evidentiary principle is to help our jury system reliably implement the substantive statutory requirement of apportionment of royalty damages to the invention's value. The principle, applicable specifically to the choice of a royalty base, is that, where a multi-component product is at issue and the patented feature is not the item which imbues the combination of the other features with value, care must be taken to avoid misleading the jury by placing undue emphasis on the value of the entire product. It is not that an appropriately apportioned royalty award could never be fashioned by starting with the entire market value of a multi-component product—by, for instance, dramatically reducing the royalty rate to be applied in those cases—it is that reliance on the entire market value might mislead the jury, who may be less equipped to understand the extent to which the royalty rate would need to do the work in such instances. *See LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 67, 68 (Fed. Cir. 2012) (barring the use of too high a royalty base—even if mathematically offset by a "'low enough royalty rate'"—because such a base "carries a considerable risk" of misleading a jury into overcompensating, stating that such a base "'cannot help but skew the damages horizon for the jury'" and "make a patentee's proffered damages amount appear modest by comparison" (quoting *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1320 (Fed. Cir. 2011))). Thus, where the entire value of a machine as a marketable article is "properly and legally attributable to the patented feature," the damages owed to the patentee may be calculated by

reference to that value. *Id.* Where it is not, however, courts must insist on a more realistic starting point for the royalty calculations by juries—often, the smallest salable unit and, at times, even less. *VirnetX*, 767 F.3d at 1327–28.

We apply these concepts to a challenge to expert testimony regarding licenses in which royalties were set by reference to the value of an end product. We conclude that the expert testimony about which D-Link complains violated neither the rule from *Garretson* regarding apportionment, nor the evidentiary principle demanding an appropriate balance between the probative value of admittedly relevant damages evidence and the prejudicial impact of such evidence caused by the potential to mislead the jury into awarding an unduly high royalty. We find, accordingly, that the district court did not err by failing to exercise its discretion under Federal Rule of Evidence 403 to exclude the license testimony at issue here. *Uniloc*, 632 F.3d at 1320; *see LaserDynamics*, 694 F.3d at 77–78 (finding that the district court abused its discretion by failing to exclude a license under Federal Rule of Evidence 403).

This court has recognized that licenses may be presented to the jury to help the jury decide an appropriate royalty award. *See, e.g.*, *Monsanto Co. v. McFarling*, 488 F.3d 973, 978 (Fed. Cir. 2007) ("An established royalty is usually the best measure of a 'reasonable' royalty for a given use of an invention . . . ."); *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (finding that "royalties received by the patentee for the licensing of the patent in suit" is a relevant factor for the jury to consider). Prior licenses, however, are almost never perfectly analogous to the infringement action. *VirnetX*, 767 F.3d at 1330. For example, allegedly comparable licenses may cover more patents than are at issue in the action, include cross-licensing terms, cover foreign intellectual property rights, or, as here, be calculated as

some percentage of the value of a multi-component product. Testimony relying on licenses must account for such distinguishing facts when invoking them to value the patented invention. Recognizing that constraint, however, the fact that a license is not perfectly analogous generally goes to the weight of the evidence, not its admissibility. *See Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1326 (Fed. Cir. 2014) ("Here, whether these licenses are sufficiently comparable such that Motorola's calculation is a reasonable royalty goes to the weight of the evidence, not its admissibility."); *accord ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1333 (Fed. Cir. 2012) ("Although we may not have decided these evidentiary issues the same way had we presided over the trial, the district court did not abuse its discretion."). In each case, district courts must assess the extent to which the proffered testimony, evidence, and arguments would skew unfairly the jury's ability to apportion the damages to account only for the value attributable to the infringing features.

As the testimony at trial established, licenses are generally negotiated without consideration of the EMVR, and this was specifically true with respect to the Ericsson licenses relating to the technology at issue. Making real world, relevant licenses inadmissible on the grounds D-Link urges would often make it impossible for a patentee to resort to license-based evidence. Such evidence is relevant and reliable, however, where the damages testimony regarding those licenses takes into account the very types of apportionment principles contemplated in *Garretson*. In short, where expert testimony explains to the jury the need to discount reliance on a given license to account only for the value attributed to the licensed technology, as it did here, the mere fact that licenses predicated on the value of a multi-component product are referenced in that analysis—and the district court exer-

cises its discretion not to exclude such evidence—is not reversible error.[4]

We do conclude, however, that, when licenses based on the value of a multi-component product are admitted, or even referenced in expert testimony, the court should give a cautionary instruction regarding the limited purposes for which such testimony is proffered if the accused infringer requests the instruction. The court should also ensure that the instructions fully explain the need to apportion the ultimate royalty award to the incremental value of the patented feature from the overall product. As to the first, while D-Link did ask for a generic instruction on the EMVR, it did not ask for an instruction specifically referencing the licenses or the testimony relating thereto about which it objected. On the second, while the court told the jury about the *Georgia-Pacific* factors—which do take the concepts of apportionment into account to some extent—it did not separately caution the jury about the importance of apportionment.[5] As explained in Section B.2 below, we need not determine whether D-Link preserved its objections to these instructions or, if it did, whether it was prejudiced by the instructions actually given on these issues, because we vacate the damages award for other reasons.

As noted, D-Link also argues that the district court prejudicially erred by allowing Ericsson's counsel to

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[4]   Because D-Link does not challenge the methodology used by Ericsson's damages expert, we need not consider the propriety of his apportionment analysis. *See Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 597 (1993).

[5]   While factors 9 and 13 of the *Georgia-Pacific* factors allude to apportionment concepts, we believe a separate instruction culled from *Garretson* would be preferable in future cases.

reference the total cost of a laptop when discussing the requested royalty rate. We find that D-Link waived this argument. D-Link's continuing objection only applied to Ericsson's expert's reference to the prior licenses. *See* J.A. 1437–38 at 4:37–5:13. Nowhere in the record does D-Link object to counsel's reference to the market value of a laptop at trial. In fact, D-Link actually referred to the value of its own end products on crossexamination. And D-Link failed to raise this issue in its post-trial motions. *See* J.A. 1332 at 37:22–38:11. We see no prejudice or injustice that would require us to address this issue for the first time on appeal and we therefore decline to do so. *See Novo Nordisk A/S v. Becton Dickinson & Co.*, 304 F.3d 1216, 1220 (Fed. Cir. 2012) ("Although appellate tribunals are not prohibited from taking remedial action when it is apparent that prejudice or unfairness entered the trial and the interest of justice requires, 'counsel for the defense cannot as a rule remain silent, interpose no objections, and after a verdict has been returned seize for the first time on the point that the comments to the jury were prejudicial.'" (quoting *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 238–39 (1940))).

2. The District Court's RAND Jury Instruction

Because Ericsson was obligated to license the patents at issue on RAND terms, D-Link asked the district court to instruct the jury on that RAND obligation. Among other things, D-Link requested that the district court instruct the jury regarding the dangers of patent hold-up and royalty stacking in RAND-related contexts. Rather than adopt the language D-Link proposed, the district court granted D-Link's request only in part. The court added a sixteenth factor to the 15 *Georgia-Pacific* factors on which it instructed the jury, telling the jury that it "may consider . . . Ericsson's obligation to license its technology on RAND terms." J.A. 226. After the jury returned its infringement verdict and assigned damages, the district court denied D-Link's motions for JMOL and a

new trial based on its failure to provide more detailed instructions on RAND issues.

On appeal, D-link argues that enforcing RAND commitments is critical to preserving the benefits of standards and must be considered in any damages award. According to D-Link, the district court reversibly erred by giving the jury the customary *Georgia-Pacific* factors because many of those either are not applicable, or may be misleading, in the RAND context. D-Link further contends that the district court erred by refusing to instruct the jury to consider patent hold-up and royalty stacking.

Ericsson responds that the district court did not err in refusing to instruct the jury about patent hold-up and royalty stacking because the *Georgia-Pacific* factors already encompassed these concerns, and to the extent they did not, the inclusion of a "sixteenth" factor referring to Ericsson's RAND obligations was sufficient. According to Ericsson, a jury instruction regarding patent hold-up or royalty stacking would have been inappropriate because D-Link failed to present any evidence regarding either patent hold-up or royalty stacking to the jury. We agree with both D-Link and Ericsson, to some extent.

This is an issue of first impression for us. To our knowledge, only three other courts have considered the issue of appropriate RAND royalty rates—all district courts. *See Realtek Semiconductor, Corp. v. LSI Corp.*, No. C-12-3451, 2014 WL 2738216, at *5–6 (N.D. Cal. June 16, 2014); *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11 C 9308, 2013 WL 5593609 (N.D. Ill. Oct. 3, 2013); *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217 (W.D. Wash. Apr. 25, 2013).[6]

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[6]   The issue in *Microsoft* was whether Motorola had breached its contractual obligation to offer a RAND

license to Microsoft. Because the jury needed to determine whether Motorola's offer letters were in fact RAND offers, the *Microsoft* court analyzed the facts to find a range of appropriate values. In doing so, the court created a modified set of *Georgia-Pacific* factors to consider when the patents are encumbered by RAND contracts, noting that a number of the unmodified factors do not adequately address the RAND situation. *Microsoft*, 2013 WL 2111217, at *18–20.

In *Innovatio*, the parties asked the district court to calculate the appropriate RAND royalty rate for a group of 802.11 SEPs. The *Innovatio* court largely adopted the methodology used in *Microsoft*, but made a few modifications. *Innovatio*, 2013 WL 5593609, at *6–7. The *Innovatio* court presented the concepts relevant to a RAND rate, including patent hold-up, royalty stacking, and incentivizing inventors to participate in the standard-setting process. The court then explained that, based on these considerations, the royalty rate: (1) must distinguish between the intrinsic value of the technology and the value of the standardization of that technology; (2) take into account what part of the standard the patent actually covers; and (3) must be high enough to ensure that innovators have appropriate incentive to invest in future developments and contribute their inventions to the standard-setting process. *Id*. at *8–12.

In *Realtek*, the district court upheld the jury's patent infringement damages award in a RAND patent case, explaining that the jury's award was supported by substantial evidence. *Realtek*, 2014 WL 2738216, at *5–6. The *Realtek* court's jury instruction informed the jury it "should not consider LSI's advantage resulting from the standard's adoption, if any. However, you may consider any advantage resulting from the technology's superiority." *Realtek Semiconductor, Corp. v. LSI Corp.* ("*Realtek Jury Instruction*"), No. C-12-3451, ECF No. 267, 21 (N.D.

a. The district court's use of the *Georgia-Pacific* factors

Although we have never described the *Georgia-Pacific* factors as a talisman for royalty rate calculations, district courts regularly turn to this 15-factor list when fashioning their jury instructions. Indeed, courts often parrot all 15 factors to the jury, even if some of those factors clearly are not relevant to the case at hand. And, often, damages experts resort to the factors to justify urging an increase or a decrease in a royalty calculation, with little explanation as to why they do so, and little reference to the facts of record. *See WhitServe, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 31–32 (Fed. Cir. 2012) ("We do not require that witnesses use any or all of the *Georgia-Pacific* factors when testifying about damages in patent cases. If they choose to use them, however, reciting each factor and making a conclusory remark about its impact on the damages calculation before moving on does no more than tell the jury what factors a damages analysis could take into consideration."). In this case, the district court included all 15 *Georgia-Pacific* factors in its damages instruction—over objection—without considering their relevance to the record created at trial.

In a case involving RAND-encumbered patents, many of the *Georgia-Pacific* factors simply are not relevant; many are even contrary to RAND principles. *See* Br. of Amici Curiae American Antitrust Institute ("AAI Br.") 11–20 (arguing that the *Georgia-Pacific* factors are not

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Cal. February 10, 2014). The *Realtek* court further instructed the jury to use a two-step approach to determine the RAND royalty rate: (1) "compar[e] the technical contribution of the two LSI patents to the technical contributions of other patents essential to the standard" and (2) "consider the contribution of the standard as a whole to the market value of Realtek's products utilizing the standard." *Id.* at 23.

appropriate for determining RAND royalties). For example, factor 4 is "[t]he licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly." *Georgia-Pacific*, 318 F. Supp. at 1120. Because of Ericsson's RAND commitment, however, it cannot have that kind of policy for maintaining a patent monopoly. *See Microsoft*, 2013 WL 2111217, at *18. Likewise, factor 5—"[t]he commercial relationship between the licensor and licensee"—is irrelevant because Ericsson must offer licenses at a *non-discriminatory* rate. *Georgia-Pacific*, 318 F. Supp. at 1120; *see Microsoft*, 2013 WL 2111217, at *18.

Several other *Georgia-Pacific* factors would at least need to be adjusted for RAND-encumbered patents— indeed, for SEP patents generally. For example, factor 8 accounts for an invention's "current popularity," which is likely inflated because a standard requires the use of the technology. *Georgia-Pacific*, 318 F. Supp. at 1120. Factor 9—"utility and advantages of the patented invention over the old modes or devices," J.A. 225—is also skewed for SEPs because the technology is used because it is essential, not necessarily because it is an improvement over the prior art. Factor 10, moreover, considers the commercial embodiment of the licensor, which is also irrelevant as the standard requires the use of the technology. Other factors may also need to be adapted on a case-by-case basis depending on the technology at issue. Consequently, the trial court must carefully consider the evidence presented in the case when crafting an appropriate jury instruction. In this case, the district court erred by instructing the jury on multiple *Georgia-Pacific* factors that are not relevant, or are misleading, on the record before it, includ-

ing, at least, factors 4, 5, 8, 9, and 10 of the *Georgia-Pacific* factors.[7]

Trial courts should also consider the patentee's actual RAND commitment in crafting the jury instruction. Ericsson agrees that it is under a binding obligation to license the patents at issue on the RAND terms it pledged to the IEEE. The district court should have turned to the actual RAND commitment at issue to determine how to instruct the jury. In this case, Ericsson promised that it would "grant a license under reasonable rates to an unrestricted number of applicants on a worldwide basis with reasonable terms and conditions that are demonstrably free of unfair discrimination." J.A. 17253. Rather than instruct the jury to consider "Ericsson's obligation to license its technology on RAND terms," J.A. 226, the trial court should have instructed the jury about Ericsson's *actual* RAND promises. "RAND terms" vary from case to case. A RAND commitment limits the market value to (what the patent owner can reasonably charge for use of) the patented technology. The court therefore must inform the jury what commitments have been made and of its obligation (not just option) to take those commitments into account when determining a royalty award.

To be clear, we do not hold that there is a modified version of the *Georgia-Pacific* factors that should be used for all RAND-encumbered patents. Indeed, to the extent D-Link argues that the trial court was required to give instructions that mirrored the analysis in *Innovatio* or *Microsoft*, we specifically reject that argument. *See* Oral Argument at 16:16, *Ericsson, Inc. v. D-Link Sys.*, Inc.,

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[7] Reference to irrelevant *Georgia-Pacific* factors would not—in most instances—be sufficiently prejudicial to warrant reversal. Here, however, we find the combination of errors in the jury instructions merit the remand we order.

2013-1625, available at http://oralarguments.cafc. uscourts.gov/default.aspx?fl=2013-1625.mp3 ("Our argument was the following on RAND and it doesn't rely upon any of the evidence that went in during the two hour jury wave portion. It relies upon the request for instructions, basically building on the *Innovatio* decision by Judge Holderman and the *Microsoft* decision by Judge Robart . . . .").[8] We believe it unwise to create a new set of *Georgia-Pacific*-like factors for all cases involving RAND-encumbered patents. Although we recognize the desire for bright line rules and the need for district courts to start somewhere, courts must consider the facts of record when instructing the jury and should avoid rote reference to any particular damages formula.

b. Apportionment analysis for SEPs

As with all patents, the royalty rate for SEPs must be apportioned to the value of the patented invention. *Garretson*, 111 U.S. at 121; *see also Westinghouse Elec. & Mfg. Co. v. Wagner Elec. & Mfg. Co.*, 225 U.S. 604, 617 (1912) ("[Plaintiff] was only entitled to recover such part of the commingled profits as was attributable to the use of its invention."). When dealing with SEPs, there are two special apportionment issues that arise. First, the patented feature must be apportioned from all of the unpatented features reflected in the standard. Second, the patentee's royalty must be premised on the value of the patented feature, not any value added by the standard's

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[8]   We express no opinion on the methodologies employed in these district court cases—which may yet come before this court—or on their applications to the facts at issue there. The facts in those cases, and the decision-makers involved, differ from those at issue here. We address only the record before us and what a jury must be instructed when RAND-encumbered patents are at issue and the jury is asked to set a RAND royalty rate.

adoption of the patented technology.   These steps are necessary to ensure that the royalty award is based on the incremental value that the patented *invention* adds to the product, not any value added by the standardization of that technology.[9]

Just like modern electronic devices, technological standards include multiple technologies. We know that patents often claim only small portions of multi-component products and we have precedent which covers apportionment of damages in those situations. *See, e.g.*, *Garretson*, 111 U.S. at 121; *Uniloc*, 632 F.3d at 1318; *Lucent*, 580 F.3d at 1336. Similarly, SEPs can, and, often do, claim only limited aspects of the overall standard.

For example, the 802.11 standard encompasses numerous technologies to enable devices to communicate with each other via wireless network connection. This includes, among many other things, technologies on link establishment, security protocols, error control, and flow control. By way of example, the '568 patent, at best, only covers the ability of the system to prioritize time-sensitive payloads by informing the system what type of data is in each transmission. This is only a small aspect of the 802.11(n) standard. Indeed, based on the record in this case, it is undisputed that some programs do not even take advantage of this 802.11(n) standard capability. The '215 patent, moreover, at best covers the ability to send different feedback response types. Again, based on the

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[9]   As we recognized in *VirnetX*, these tasks are not always easy and would be difficult to do with precision. We accept the fact that the jury should be told of its obligation to approximate the value added by the patented invention and that a degree of uncertainty in setting that value is permissible. *VirnetX*, 767 F.3d at 1328 (citing *Unisplay, S.A. v. Am. Elec. Sign Co.*, 69 F.3d 512, 517 (Fed. Cir. 1995)).

undisputed record, some 802.11(n) standard products do not use more than one type of feedback message.

Just as we apportion damages for a patent that covers a small part of a device, we must also apportion damages for SEPs that cover only a small part of a standard. In other words, a royalty award for a SEP must be apportioned to the value of the patented invention (or at least to the approximate value thereof), not the value of the standard as a whole. A jury must be instructed accordingly. Our decision does not suggest that all SEPs make up only a small part of the technology in the standard. Indeed, if a patentee can show that his invention makes up "the entire value of the" standard, an apportionment instruction probably would not be appropriate. *Garretson*, 111 U.S. at 121.

Turning to the value of a patent's standardization, we conclude that Supreme Court precedent also requires apportionment of the value of the patented technology from the value of its standardization. In *Garretson*, the Supreme Court made clear that, "[w]hen a *patent is for an improvement*, and not for an entirely new machine or contrivance, the patentee must show in what particulars his improvement has *added to the usefulness* of the machine or contrivance. He must separate its results distinctly from those of the other parts, so that the benefits derived from it may be distinctly seen and appreciated." *Garretson*, 111 U.S. at 121 (emphases added). In other words, the patent holder should only be compensated for the approximate incremental benefit derived from his invention.

This is particularly true for SEPs. When a technology is incorporated into a standard, it is typically chosen from among different options. Once incorporated and widely adopted, that technology is not always used because it is the best or the only option; it is used because its use is necessary to comply with the standard. In other words,

widespread adoption of standard essential technology is not entirely indicative of the added usefulness of an innovation over the prior art. *Id.* This is not meant to imply that SEPs never claim valuable technological contributions. We merely hold that the royalty for SEPs should reflect the approximate value of that technological contribution, not the value of its widespread adoption due to standardization.

Because SEP holders should only be compensated for the added benefit of their inventions, the jury must be told to differentiate the added benefit from any value the innovation gains because it has become standard essential. Although the jury, as the fact finder, should determine the appropriate value for that added benefit and may do so with some level of imprecision, we conclude that they must be told to consider the difference between the added value of the technological invention and the added value of that invention's standardization. Indeed, Ericsson admitted at oral argument that the value of standardization should not be incorporated into the royalty award. Oral Argument at 55:25 ("Q: You agree that it is error to allow [the jury] to include the value from the standardization? A: In the rate, not in the base. . . . The rate must be attributable to the value of the invention."). By way of example, the *Realtek* court instructed the jury that it "should not consider LSI's advantage resulting from the standard's adoption, if any. However, you may consider any advantage resulting from the technology's superiority." *Realtek Jury Instruction*, ECF No. 267, 21.

c. Instructions on patent hold-up and royalty stacking

D-Link argues that the jury should have been instructed on the concepts of patent hold-up and royalty stacking because it argues that the jury should know the mischief that can occur if RAND royalty rates are set too high. Many of the amicus briefs echo D-Link's concerns.

See AAI Br. 4–9; Br. of Amici Curiae Cisco Sys., Inc., et al. ("Cisco Br.") 14–19; Br. of Amici Curiae Broadcom Corp., et al. ("Broadcom Br.") 10–14.

In deciding whether to instruct the jury on patent hold-up and royalty stacking, again, we emphasize that the district court must consider the evidence on the record before it. The district court need not instruct the jury on hold-up or stacking unless the accused infringer presents actual evidence of hold-up or stacking. Certainly something more than a general argument that these phenomena are possibilities is necessary. Indeed, "a court should not instruct on a proposition of law about which there is no competent evidence." *See Nestier Corp. v. Menasha Corp.-Lewisystems Div.*, 739 F.2d 1576, 1579–80 (Fed. Cir. 1984); *see also* Br. of Amici Curiae Nokia Corp., et al. ("Nokia Br.") 9–12. Depending on the record, reference to such potential dangers may be neither necessary nor appropriate.

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-

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[10] One amicus suggests that the jury always should be told to place the date of the hypothetical negotiation as of the date of the adoption of the standard (if that date predates the infringement) so as to discount any value added by the standardization. *See, e.g.*, AAI Br. 13–16; *see also Microsoft*, 2013 WL 2111217, at *19 ("[T]he

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.

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parties to a hypothetical negotiation under a RAND commitment would consider alternatives that could have been written into the standard instead of the patented technology."). D-Link did not request any such instruction, however. Accordingly, we do not address whether shifting the timing of the hypothetical negotiation is either appropriate or necessary.

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In sum, we hold that, in all cases, a district court must instruct the jury *only* on factors that are relevant to the specific case at issue. There is no *Georgia-Pacific*-like list of factors that district courts can parrot for every case involving RAND-encumbered patents. The court should instruct the jury on the actual RAND commitment at issue and must be cautious not to instruct the jury on any factors that are *not* relevant to the record developed at trial. We further hold that district courts must make clear to the jury that any royalty award must be based on the incremental value of the invention, not the value of the standard as a whole or any increased value the patented feature gains from its inclusion in the standard. We also conclude that, if an accused infringer wants an instruction on patent hold-up and royalty stacking, it must provide evidence on the record of patent hold-up and royalty stacking in relation to both the RAND commitment at issue and the specific technology referenced therein.

As explained above, in this case, we find that the district court committed legal error in its jury instruction by: (1) failing to instruct the jury adequately regarding Ericsson's actual RAND commitment; (2) failing to instruct the jury that any royalty for the patented technology must be apportioned from the value of the standard as a whole; and (3) failing to instruct the jury that the RAND royalty rate must be based on the value of the invention, not any value added by the standardization of that invention— while instructing the jury to consider irrelevant *Georgia-Pacific* factors. We think that these errors collectively constitute prejudicial error. *See Eviron Prods., Inc. v. Furon Co.*, 215 F.3d 1261, 1265 (Fed. Cir. 2000) ("Prejudicial error is an error that, in the words of the Federal Rules of Civil Procedure, 'appears to the court inconsistent with substantial justice.'" (quoting Fed. R. Civ. P. 61)). We therefore vacate the jury's damages award and

remand for further proceedings consistent with this opinion. On remand, the court should also be careful to assure that the jury is properly instructed on the apportionment principles laid out in *Garretson* and on the proper evidentiary value of licenses tied to the entire value of a multi-component product. Because we vacate the jury's damages award, moreover, we also vacate the court's ongoing royalty award.

C. The Dell Agency Issue

Finally, Dell argues that the district court erred by granting summary judgment on Dell's claim that it was licensed under the MPA to practice the claims asserted against it. Because the MPA says it is governed by New York law, both Ericsson and Dell agree that New York agency law governs. The parties further agreed that, in order for Dell to have a license to practice the patents at issue based on the MPA, LM Ericsson, the parent company, must have been acting as an agent of its subsidiary, Ericsson AB, when it filed this lawsuit. The district court granted summary judgment because it found that this agency relationship did not exist as a matter of law.

The Fifth Circuit reviews summary judgment decisions de novo. *United States v. Caremark, Inc.*, 634 F.3d 808, 814 (5th Cir. 2011). Summary judgment is appropriate if, in viewing the evidence in a light most favorable to the non-moving party, the court finds that "there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a).

The existence of an agency relationship—where one party has legal authority to act for another—is a mixed question of law and fact. *See Cabrera v. Jakabovitz*, 24 F.3d 372, 385–86 (2d Cir. 1994) (applying New York law). In order to establish an agency relationship, the facts must show that: (1) the principal manifested intent to grant authority to the agent, and (2) the agent agreed or

consented to the agency relationship. *See Commercial Union Ins. Co. v. Alitalia Airlines, S.p.A.*, 347 F.3d 448, 462 (2d Cir. 2003) (citations omitted) (applying New York law). Further, the principal must retain control and direction over key aspects of the agent's actions. *See In re Shulman Transport Enters., Inc.*, 744 F.2d 293, 295 (2d Cir. 1984) (applying New York law); *Meese v. Miller*, 436 N.Y.S.2d 496, 499 (N.Y. App. Div. 1981). A principal cannot, moreover, grant authority to an agent if the principal does not itself possess the power granted. *See Mouawad Nat'l Co. v. Lazare Kaplan Int'l Inc.*, 476 F. Supp. 2d 414, 423 (S.D.N.Y. 2007) (applying New York Law).

On appeal, Dell argues that it presented sufficient evidence that Ericsson AB directed LM Ericsson to sue Dell, pointing to the fact that, even though the patents were assigned to LM Ericsson, the inventors of the patents were primarily Ericsson AB employees. Dell further contends that it presented evidence that Ericsson AB maintained control over key aspects of this litigation. Finally, Dell asserts that the district court improperly made factual inferences regarding the strength of Dell's arguments in favor of Ericsson, pointing to an alleged decision to sue Dell made by an Ericsson AB employee.

Ericsson responds that there is no material dispute of fact that LM Ericsson—the parent company and patent owner—is not an agent of Ericsson AB—the subsidiary company and signatory to the MPA. Ericsson asserts that Ericsson AB never had authority to sue Dell for infringement of these patents on its own. Ericsson insists that this means the alleged principal never had the authority it allegedly granted. According to Ericsson, even if an Ericsson AB employee helped make the decision to file the law suit, there is no evidence that he had the authority to file those suits.

We agree with Ericsson that Dell has failed to raise genuine issues of material fact regarding whether LM Ericsson is an agent of Ericsson AB. It is undisputed that LM Ericsson is the owner of the patents in suit. As the owner, it is LM Ericsson that has the authority to sue for infringement; no other entity need grant it the authority to sue. *See* 35 U.S.C. § 281 ("A patentee shall have remedy by civil action for infringement of his patent."). Even assuming that an Ericsson AB employee suggested suing Dell for infringement, LM Ericsson indisputably had that authority prior to any suggestion. *See Mouawad*, 476 F. Supp. 2d at 423 ("[T]he principal itself must possess the power that it is attempting to confer on the agent." (citing 3 Am. Jur. 2d Agency § 9 (2014))). Because LM Ericsson is not a signatory to the MPA, any license Dell might have thereunder does not excuse any acts of infringement involving the patents in suit.

For the foregoing reasons, we affirm the district court's conclusion that Dell does not, as a matter of law, have a license to practice the patents at issue under the MPA.

III. CONCLUSION

For the foregoing reasons, we affirm the infringement findings relating to the '568 and '215 patents, but reverse the infringement finding with respect to the '625 patent. We also affirm the jury's finding that the '625 patent was not invalid over the Petras reference. We vacate the jury's damages award and the ongoing royalty award and remand for proceedings consistent with this decision. With respect to Dell's appeal, we affirm the district court's grant of summary judgment to Ericsson on Dell's license defense.

Accordingly, we affirm-in-part, reverse-in-part, vacate-in-part, and remand for further proceedings.

**AFFIRMED IN PART, REVERSED IN PART,
VACATED IN PART, AND REMANDED**

United States Court of Appeals for the Federal Circuit

ERICSSON, INC., TELEFONAKTIEBOLAGET LM ERICSSON, AND WI-FI ONE, LLC,
Plaintiffs-Appellees,

v.

D-LINK SYSTEMS, INC., NETGEAR, INC., ACER, INC., ACER AMERICA CORPORATION, AND GATEWAY, INC.,
Defendants-Appellants,

AND

DELL, INC.,
Defendant-Appellant,

AND

TOSHIBA AMERICA INFORMATION SYSTEMS, INC. AND TOSHIBA CORPORATION,
Defendants-Appellants,

AND

INTEL CORPORATION,
Intervenor-Appellant,

AND

BELKIN INTERNATIONAL, INC.,
Defendant.

2013-1625, -1631, -1632, -1633

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Appeals from the United States District Court for the Eastern District of Texas in No. 10-CV-0473, Chief Judge Leonard Davis.

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TARANTO, *Circuit Judge*, dissenting-in-part.

I join all of the court's opinion except part II.A.2, which upholds the judgment of infringement of the '215 patent. I conclude that the district court incorrectly construed the '215 patent's claim language pertaining to the invention's message field. And there is no infringement under the construction that I think is correct. On this one issue, I respectfully dissent.

The dispute over the proper construction of claim 1 of the '215 patent involves two related issues. The first is whether the phrase "responsive to the receiving step, constructing a message field for a second data unit, said message field including a type identifier field" requires that the device "select" a message type depending on the received data—which requires that it have at least two message-type options it can select from. The second is whether the message field must be constructed specifically to minimize either the size or the quantity of feedback responses. It is undisputed that if the claims are read to require either selection or minimization, the accused devices do not infringe.

Selecting*.* I begin with the claim language. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Claim 1 requires the act of "constructing a message field" to be "responsive to the receiving step"— that is, responsive to "receiving said plurality of first data units." '215 Patent, col. 10, lines 23–26. At a minimum,

the "responsive" language allows, indeed suggests, selection or choice about what to include in the constructed message field, based on potentially varying characteristics of the data received. And the specification and Ericsson's own assertions during litigation not only confirm the requirement of choice but make clear what the choice is: it is a choice from a range of possible message types.

Claims must be interpreted in the context of the patent as a whole, and the specification is central to performing the interpretive task. *See Phillips*, 415 F.3d at 21 ("[T]he specification is the single best guide to the meaning of a disputed term . . . .") (internal quotation omitted). The specification of the '215 patent pervasively describes what Ericsson had invented as optimizing feedback responses through the receiver's choice among feedback-response message types—specifically to minimize the size of the responses and thereby increase efficiency. Even without regard to the more specific objective of minimizing, the receiver's optimizing task requires selecting.

Thus, the abstract describes constructing feedback responses "so as to optimize performance in accordance with certain criteria," with those criteria consisting of minimizing size and maximizing efficiency of the feedback responses. '215 Patent, abstract. The summary of the invention similarly teaches that the receiver constructs feedback response data units "so as to optimize system performance," with the optimization consisting of "minimizing [] size" while "maximizing the number of [sequence numbers]" included in a smaller-sized data unit. *Id.* col. 4, lines 48–53. Neither of the two stated optimization criteria may be met unless the receiver makes choices among a plurality of message types. Further, the specification describes the patent's advance over the prior art as reducing the "waste of bandwidth" and "unnecessary overhead" resulting from Automatic Repeat Request (ARQ) protocols that are "static in construction," *i.e.*, not varying as a function of the incoming data. *Id.* col. 3,

lines 46–47. And the four technical advantages specifically enumerated—saving bandwidth, minimizing overhead, increasing system capacity, and minimizing the number of feedback responses—derive from the invention's optimizing of feedback responses. *Id.* col. 4, lines 54–62. The specification nowhere discloses any contrary embodiment.

The claim language thus suggests a requirement of selecting, and the specification pervasively indicates that what is required is selecting among message types. Construing the claim to require receiver selecting is "the correct construction" because it "stays true to the claim language and most naturally aligns with the patent's description of the invention." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998), adopted by *Phillips*, 415 F.3d at 1316.

Ericsson's own statements about the invention confirm that the receiver's choosing among message types, in response to incoming data, is essential. During claim construction, in an apparent effort to prevent the additional "minimizing" requirement from being read into the claim, Ericsson conceded—indeed, repeatedly insisted in clear terms—that selecting among message types by the receiver was a required element of the invention. *See* J.A. 6473 ("[T]he invention is to build in choice at the receiver side of a type of feedback response."); J.A. 6475 (Given "the advantage . . . gained from incorporating this message field that allows a choice, does the advantage of minimizing the size or number of feedback responses necessarily have to be read in when it doesn't appear in the claim element[?]"); J.A. 6478 ("[T]he invention is, as expressed in the claims, giving the receiver a choice and constructing a message field that has a type identifier so it can express what it has chosen to use as a format for communicating the packets that have been dropped.").

For those reasons, I conclude, the method of claim 1 of the '215 patent claim requires that the receiver engage in

selection among message types in response to receipt of
data. It is undisputed that the accused devices do not do
so. Ericsson did not argue otherwise in its brief, and it
conceded the point at oral argument, stating: "[I]f the
court concludes that the receiver must make a choice, [the
'215 patent is] not infringed." Oral Argument at 34:45–
35:00, *Ericsson, Inc. v. D-Link Sys., Inc.*, No. 2013-1625.

Minimizing. Claim 1 of the '215 patent also requires
"minimizing feedback responses," as expressly stated in
the preamble. '215 Patent, col. 10, line 19. The presence
of that language indirectly reinforces the requirement of
selection: to minimize, choices must be made. But it also
adds to the selection requirement and independently
requires a judgment of non-infringement.

The "minimizing" language is a claim limitation un-
less the fact that it appears in the preamble makes it non-
limiting, as sometimes is true for preamble language. *See
Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289
F.3d 801, 808 (Fed. Cir. 2002). For claim 1, however, the
preamble must be limiting, as only the preamble gives
content to what the constructed message field is. *See
Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298,
1306 (Fed. Cir. 1999) (preamble is limiting when neces-
sary to "give life, meaning, and vitality" to the claim)
(internal quotation and citation omitted). The claim
recites constructing a "message field," but only in the
preamble does the claim indicate that the message field is
to be understood as a "feedback response[] in an ARQ
protocol." '215 Patent, col. 10, lines 19–20, 24–27. The
phrase "feedback response," appearing nowhere but the
preamble, is crucial to making sense of the rest of the
claim. *See Griffin v. Bertina*, 285 F.3d 1029, 1033 (Fed.
Cir. 2002) (holding as limiting a method claim's preamble
reciting "diagnosing an increased risk for thrombosis,"
where claim covering nucleic-acid tests performed on a
"test subject" was meaningless without understanding
that "[d]iagnosis is . . . the essence of [the] invention").

The construction proposed by Ericsson and adopted by the district court implicitly recognizes that the preamble is limiting. The adopted construction of the "responsive" step requires "including a field that identifies the *message type of the feedback response message.*" *Ericsson, Inc. v. D-Link Corp.*, No. 6:10-cv-473, 2013 WL 949378, at *5 (E.D. Tex. Mar. 8, 2013) (emphasis added). The phrase "feedback response," in the adopted claim construction, comes from nowhere in the claim except the preamble. Where the district court erred was in parsing the preamble to include only one phrase as limiting—"feedback responses"—while excluding the word "minimizing" that appears immediately before the phrase "feedback responses." I see no sound basis for that distinction.

Indeed, the specification, as described above, shows that the invention is centrally about minimizing such responses—which can be done either by minimizing the size of individual response messages (status protocol data units) or by minimizing the number of such messages by packing more information, *i.e.*, sequence numbers, into messages of fixed size. '215 Patent, col. 4, lines 49–54 (summary of the invention identifying precisely those two ways of "optimiz[ing] system performance"). Ericsson's only specific argument against the "minimizing" construction is to note the two ways of minimizing the specification identifies. Ericsson Br. at 39. But that is not an argument against D-Link's proposed construction—which covers both of those ways of minimizing. J.A. 5084 ("selected from multiple available feedback responses in order to minimize the size or number of feedback responses"). I conclude, therefore, that it was error for the district court to reject D-Link's "minimizing" claim construction.

It is undisputed that if claim 1 requires "minimizing," the accused devices do not infringe. Ericsson never argues otherwise in its brief. Ericsson Br. at 38–40. This is an additional ground for reversing the judgment of in-

fringement of the '215 patent, and requiring judgment of non-infringement instead.