

United States Court of Appeals for the Federal Circuit

2008-1199, -1271, -1272

BROADCOM CORPORATION,

Plaintiff-Appellee,

v.

QUALCOMM INCORPORATED,

Defendant-Appellant.

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Appealed from: United States District Court for the Central District of California

Judge James V. Selna

United States Court of Appeals for the Federal Circuit

2008-1199, -1271, -1272

BROADCOM CORPORATION,

Plaintiff-Appellee,

v.

QUALCOMM INCORPORATED,

Defendant-Appellant.

Appeal from the United States District Court for the Central District of California in case no. 05-CV-467, Judge James V. Selna.

DECIDED: September 24, 2008

Before LINN, FRIEDMAN, and PROST, Circuit Judges.

LINN, Circuit Judge.

Qualcomm Incorporated (“Qualcomm”) appeals from a jury’s determination that Qualcomm infringed U.S. Patents No. 6,847,686 (“the ’686 patent”), No. 5,657,317 (“the ’317 patent”), and No. 6,389,010 (“the ’010 patent”), owned by Broadcom Corporation (“Broadcom”). Qualcomm also appeals from the district court’s issuance of a permanent injunction against Qualcomm. Because the district court erred in its construction of claim 3 of the ’686 patent, we reverse the jury’s determination of infringement of that patent and conclude that claim 3, as properly construed, is invalid. Because the district court did not err in construing the claims of the ’317 patent, and because substantial evidence supports the jury’s determinations of infringement and

validity of the '317 and '010 patents, we affirm the judgment of infringement of the '317 and '010 patents, and the injunction as it pertains to those patents.

I. BACKGROUND

Broadcom and Qualcomm compete in the market for chipsets used in mobile radio devices such as cell phone handsets. The technology at issue in this appeal relates to wireless voice and data communications on cellular telephone networks. The relevant technology is currently found in so-called third-generation ("3G") baseband processor chips. Baseband processor chips enable a cell phone's basic communication functions, along with other features such as graphics, multimedia, data transfer, and custom applications. The 3G chips sold by Broadcom, Qualcomm, and others replace older and less capable second-generation ("2G") chips, which include code division multiple access ("CDMA") chips and global system for mobile communications ("GSM") chips. The 3G CDMA replacement is known as CDMA2000, while the 3G GSM replacement is known as wideband CDMA ("WCDMA"). These 3G technologies are generally incompatible with each other, and thus both cell phone handsets and cell phone service provider networks are designed to work with only one of these two competing standards. Both standards, however, provide enhanced functionality over their 2G predecessors, particularly in the area of multimedia and multiple network products.

The products accused of infringing Broadcom's patents include baseband chips designed to work in cell phones in conjunction with 3G networks, including both CDMA2000 and WCDMA, although this appeal primarily relates to CDMA2000 chips. Also at issue is Qualcomm's software, which Qualcomm has licensed exclusively to

Sprint. QChat allows the use of push-to-talk (“PTT”) technology much like a walkie-talkie on CDMA2000 networks. Although Broadcom markets 3G chips, it does not currently sell any CDMA2000 chips, it has not sold any WCDMA chips for use in United States cell phones, and it does not offer a chip implementing a PTT feature.

Broadcom’s ’686 patent relates to video compression technology on cell phone devices. Claim 3, the only claim at issue, depends from claim 1, and is directed to a “digital signal processor” (“DSP”). Broadcom accused Qualcomm’s WCDMA and CDMA2000 baseband processor chips of infringing this claim. The ’317 patent relates to technology allowing cell phones to simultaneously participate on multiple wireless networks using a single transceiver. The relevant claims on appeal are directed to “radio units” having “transceivers” capable of “simultaneous” participation on multiple RF networks. Broadcom asserted that Qualcomm’s CDMA2000 chips infringed these claims by interfacing with both the 1x network (for traditional voice communications) and the EV-DO network (for data and related applications including PTT functionality in QChat). Finally, the ’010 patent claims a “telephone” having circuitry allowing it to “selectively couple” to two networks having different bandwidth characteristics. Broadcom asserted the several claims of the ’010 patent against Qualcomm’s CDMA2000 chips implementing the QChat PTT feature. Broadcom argued that that traditional voice calls couple to the telephone network, while calls initiated with the QChat feature are routed through the Internet, a distinct network.

The district court issued a claim construction order prior to trial in which it construed the contested terms of Broadcom’s patents pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370, 372 (1996). Broadcom Corp. v. Qualcomm

Inc., No. 05-CV-467 (C.D. Cal. Sept. 11, 2006) (“Claim Construction Order”). Following a trial, the jury found that Qualcomm directly infringed and induced infringement of claim 3 of the '686 patent and claims 1, 6, 9, and 12 of the '317 patent, either literally or under the doctrine of equivalents; that Qualcomm directly infringed, induced infringement of, and contributed to the infringement of claims 1, 2, 3, and 7 of the '010 patent, either literally or under the doctrine of equivalents; and that all of these claims were not invalid. The jury further found that Qualcomm had willfully infringed all three patents in suit. It awarded damages of approximately \$20 million. Qualcomm filed post-trial motions for judgment as a matter of law under Rule 50(b) of the Federal Rules of Civil Procedure or a new trial under Rule 59(a). The district court denied relief, denying Qualcomm's motions in their entirety. Broadcom Corp. v. Qualcomm Inc., No. 05-CV-467 (C.D. Cal. Aug. 10, 2007) (“JMOL Opinion”).

Ten days after the district court's denial of Qualcomm's post-trial motions, this Court released its decision in In re Seagate Technology, LLC, 497 F.3d 1360 (Fed. Cir. 2007) (en banc). Given the potential impact of Seagate on the willfulness determination previously made by the jury, the district court sua sponte invited a motion for reconsideration of its denial of Qualcomm's request for a new trial on willfulness and of its award of enhanced damages. Upon considering the arguments presented, the district court vacated the willfulness verdict and directed Broadcom to file an election “indicating whether it wishe[d] to accept the liability and damages verdicts or proceed to a new trial on all issues, including willfulness.” Broadcom Corp. v. Qualcomm Inc., No. 05-CV-467, slip op. at 9 (C.D. Cal. Nov. 21, 2007). Broadcom elected to accept the liability and damage verdicts rather than proceed to a new trial on all issues.

The district court then held a bench trial on the topic of injunctive relief and subsequently entered a permanent injunction against Qualcomm on all three patents, although it provided “sunset” provisions allowing continued sales pursuant to a mandatory royalty through January 31, 2009. Broadcom Corp. v. Qualcomm Inc., No. 05-CV-467 (C.D. Cal. Dec. 31, 2007) (“Injunction Opinion”). On February 5, 2008, the district court issued an amended injunction, Broadcom Corp. v. Qualcomm Inc., No. 05-CV-467 (C.D. Cal. Feb. 5, 2008) (“First Amended Injunction”), and on March 13, 2008, it again amended and re-issued the injunction, Broadcom Corp. v. Qualcomm Inc., No. 05-CV-467 (C.D. Cal. Mar. 13, 2008) (“Second Amended Injunction”). Finally, on March 24, 2008, the district court entered judgment pursuant to Federal Rule of Civil Procedure 54(b). Broadcom Corp. v. Qualcomm Inc., No. 05-CV-467 (C.D. Cal. Mar. 24, 2008).

Qualcomm appealed from the First Amended Injunction, the Second Amended Injunction, and the Rule 54(b) judgment entering the jury’s infringement verdicts. We granted unopposed motions to consolidate these three appeals on April 1, 2008, and April 11, 2008. We have jurisdiction over the appeal from the Rule 54(b) judgment pursuant to 28 U.S.C. § 1295(a)(1), and we have jurisdiction over the appeals from the interlocutory injunctions pursuant to 28 U.S.C. § 1292(c)(1).

II. DISCUSSION

Qualcomm presents numerous arguments regarding claim construction, infringement, and validity, as well as various contentions regarding the necessity of a new trial and the propriety of the district court's permanent injunction. We address each in turn.

A. The '686 Patent

Claim 3, the only asserted claim of the '686 patent, depends from claim 1, the patent's only independent claim, which recites:

A digital signal processor for processing a multiple frame video digital signal, comprising:
a DSP controller,
a plurality of processing units connected to said DSP controller for processing said multiple frame video digital signal; and
at least one storage unit, wherein each of said processing units is connected to at least one of said at least one storage units, said DSP controller controlling said plurality of processing units, wherein said DSP controller, said plurality of processing units, and said at least one storage unit are on a single chip.

Dependent claim 3 additionally recites “[t]he digital signal processor according to claim 1 wherein each of said processing units operates according to a different program command.” Although the claims make no reference to a “global controller,” the district court construed the claim term “DSP controller controlling said plurality of processing units” as follows: “The DSP controller, either independently or under the direction of a global controller, distributes control instructions to be executed by the plurality of processing units. A global controller is required.” J.A. at 2251 (emphasis added). It is undisputed that the Texas Instruments TMS320C80 chip and its documentation (“C80 chip”) would invalidate claim 3 as an anticipatory reference if the claim is construed not to include a “global controller” limitation.

Qualcomm contends that the district court improperly imported the “global controller” limitation into claim 1 (and, thus, claim 3) of the ’686 patent and that the C80 chip anticipates this claim. Qualcomm argues that the claim language is directed solely to DSPs, and that the specification and figures of the patent clearly distinguish between DSPs and global controllers. Qualcomm had argued that the DSP controller term should be construed as “[u]nder the direction of a global controller, the DSP controller controls units that process data.” J.A. at 550. Broadcom responds that the district court merely construed the claim terms in light of the specification, which discusses how the “[g]lobal controller . . . controls and schedules . . . the digital signal processor,” ’686 patent col.7 ll.9-11, and that to ignore the “global controller” would render claim 1 invalid even with respect to generic prior art discussed in the specification. Claim construction is a question of law that we review de novo. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc).

We agree with Qualcomm. There is no basis for importing the “global controller” limitation into claim 1. The claims make no reference to an external global controller, and we find no justification for adding limitations related to the more general video encoding device discussed in the specification when the claims are written to encompass only a specific element of that device. The claims recite only three DSP elements, including a DSP controller, a plurality of processing units, and at least one storage unit. ’686 patent col.16 ll.6-21. The specification similarly provides that the DSP includes only these three components. E.g., id. col.4 ll.44-49 (“The digital signal processor includes a DSP controller, a plurality of processing units, . . . and at least one storage unit. . . . The DSP controller controls the plurality of processing units.”). The illustrations provided in the specification further bolster our conclusion that the global

controller is separate and distinct from the DSP. For example, Figure 7, reproduced below, places the global controller outside of the lines defining the DSP.

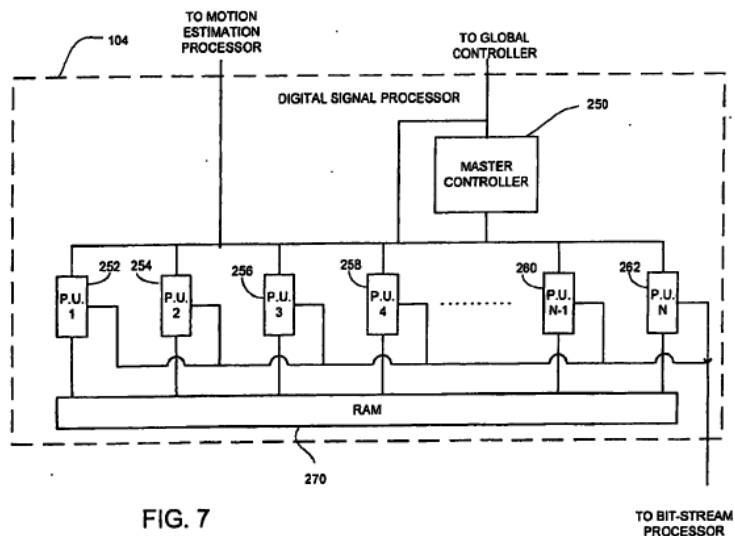


FIG. 7

Figure 8 similarly illustrates the global controller as lying outside the bounds of the DSP. Figures 3 and 4 also identify the global controller and the digital signal processor as discrete and separate components.

While the specification does contemplate the possibility of a global controller, the claims of the '686 patent are directed solely to the DSP. As this court has noted, “each claim does not necessarily cover every feature disclosed in the specification. When the claim addresses only some of the features disclosed in the specification, it is improper to limit the claim to other, unclaimed features.” Ventana Med. Sys., Inc. v. Biogenex Labs., Inc., 473 F.3d 1173, 1181 (Fed. Cir. 2006). While the '686 patent claims only the DSP, it is a continuation of another application—sharing the same specification—now issued as U.S. Patent No. 6,385,244 (“the '244 patent”). The '244 patent has two independent claims. One claims “a video encoding system including . . . a video encoding device . . . the video encoding device comprising: . . . a global controller . . .

[and] a digital signal processor, connected to said global controller.” ’244 patent claim 1. The other claims “[a] video camera comprising: . . . a video encoding device . . . comprising . . . a global controller . . . [and] a digital signal processor, connected to said global controller.” Id. claim 7. While the global controller limitation influences the scope of the ’244 patent claims, we find no basis for importing it to the DSP claims of the ’686 patent.

Broadcom also contends that the claim cannot be construed without the global controller limitation because claim 1 otherwise would be “self-invalidating” based on generic prior art disclosed in the specification. Broadcom points to Figure 2 of the ’686 patent—labeled “PRIOR ART”—to support this argument.

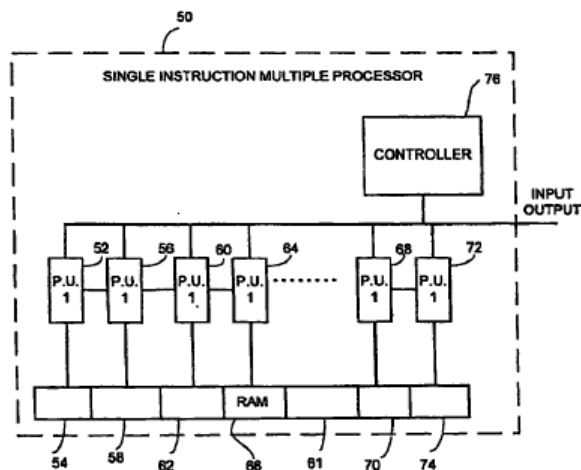


FIG. 2
PRIOR ART

“A patent is invalid as anticipated if every limitation in a claim is found in a single prior art reference.” Nystrom v. TREX Co., 424 F.3d 1136, 1149 (Fed. Cir. 2005). Because Broadcom has not demonstrated that “every limitation” of claim 1 is found in this reference, its self-invalidating argument must fail. For example, Broadcom does not even allege that the generic prior art DSP referenced in the patent is implemented “on a single chip” as required by the claims. Moreover, “[w]hile we have acknowledged the

maxim that claims should be construed to preserve their validity, we have not applied that principle broadly Instead, we have limited the maxim to cases in which the court concludes, after applying all the available tools of claim construction, that the claim is still ambiguous.” Phillips v. AWH Corp., 415 F.3d 1303, 1327 (Fed. Cir. 2005) (en banc) (internal citation and quotation marks omitted); see also Tate Access Floors, Inc. v. Interface Architectural Res., Inc., 279 F.3d 1357, 1372 (Fed. Cir. 2002) (noting that “where claim language is clear we must accord it full breadth even if the result is a claim that is clearly invalid”).

Accordingly, we modify the district court’s claim construction to remove the requirement of a “global controller,” reverse the jury verdict of infringement as to the ’686 patent, and hold claim 3 invalid as anticipated by the C80 chip. See Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc., 344 F.3d 1186, 1194-95 (Fed. Cir. 2003).

B. The ’317 Patent

The jury found that Qualcomm infringed claims 1, 6, 9, and 12 of the ’317 patent. These claims do not meaningfully differ for purposes of this appeal. Claim 1 recites, with disputed terms emphasized:

A radio unit for operation in a communication system having a plurality of RF communication networks comprising:
a transceiver capable of participating on the plurality of RF communication networks;
a memory device which stores a plurality of communication protocols, each communication protocol governing radio operation on one of the plurality of RF communication networks;
a control processor coupled to the transceiver and the memory device, the control processor selecting from the memory device ones of the plurality of communication protocols to enable the transceiver to simultaneously participate on

corresponding ones of the plurality of RF communication networks; and
the control processor managing the simultaneous use by the transceiver of the selected ones of the plurality of communication protocols.

Qualcomm argues that the district court improperly construed the “simultaneously participate” limitation in all of the relevant claims of the ’317 patent, that there is no evidence of infringement under a correct construction, and that the ’317 patent is invalid under the district court’s claim construction. It also argues that the district court erred in not construing the “networks” limitation, and that substantial evidence does not support the jury’s infringement verdict under a correct construction.

1. “Simultaneously Participate”

Claims 1, 6, 9, and 12 of the ’317 patent all require a radio unit with a transceiver that can “simultaneously participate” on two or more wireless networks. The district court construed this claim term as “[t]aking part in communications with two or more networks either actively or in sleep-mode during the same period of time.” Claim Construction Order at 12 (emphasis added). Qualcomm argues, as it did to the district court, that “simultaneously participate” requires the claimed transceiver to be capable of communicating on multiple networks at the same instant in time. Broadcom defends the district court’s claim construction as supported by the specification, which it contends distinguishes between “simultaneous” and “fully simultaneous.”

The district court reasoned that “because the ’317 patent claims a radio unit with a single transceiver, and because a single transceiver cannot achieve full communication with two networks at the same time, Qualcomm’s construction could mean that the patent would not perform its stated function. Accordingly, the Court

agree[d] with Broadcom that the construction ‘during the same period of time’ most accurately construes the meaning of the term simultaneous.” Claim Construction Order at 12; see Cordis Corp. v. Medtronic Ave, Inc., 511 F.3d 1157, 1174 (Fed. Cir. 2008) (noting that “a construction that renders the claimed invention inoperable should be viewed with extreme skepticism”).

The claim language itself provides little insight as to the meaning of “simultaneous,” and each party argues that the specification supports its own interpretation. Qualcomm contends that the specification distinguishes between “simultaneous participation,” for communications taking place at the same instant in time, and “multiple participation,” for interleaved communications taking place over the same period of time. See, e.g., ’317 patent col.12 ll.42-46 (“Although the use of a plurality of built-in radio transceivers could be used so as to permit simultaneous participation by a single device, factors of cost, size, power and weight make it desirable to only build-in a single radio transceiver capable of multiple participation.”). Broadcom argues that the specification distinguishes between “simultaneous” or “multiple” participation and “fully simultaneous” participation, and that only the latter denotes non-interleaved communications taking place at the same instant in time. See, e.g., id. col.13 ll.1-4 (“In communication environments wherein fully simultaneous participation does not exist or is not desired, transmitter circuitry might be shared for participation in both [networks].”). We do not find these arguments to be helpful because the use of these terms in the specification is inconsistent at best.

We turn then to Figure 34 of the ’317 patent, as reproduced below, which has been at the center of much debate, both at the district court and on appeal.

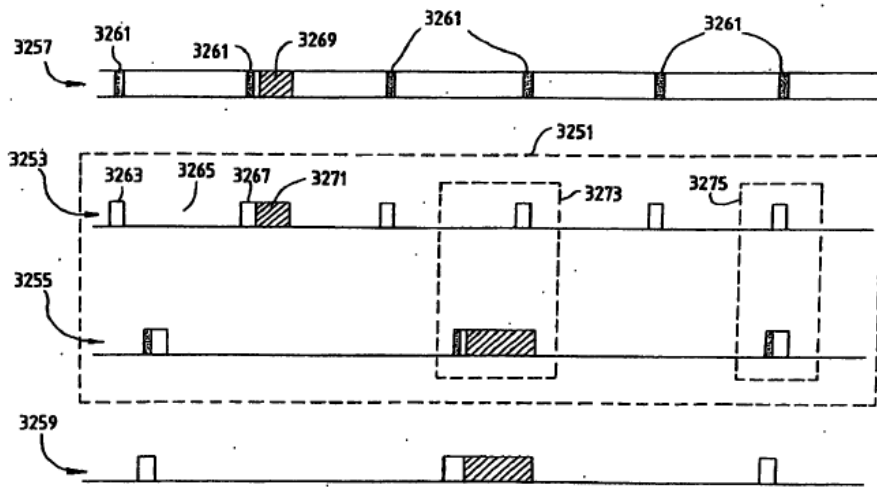


Fig. 34

The block labeled 3273 represents an instance of two networks, represented as timelines 3253 and 3255, seeking to communicate with the same device at the same time. The specification discussion pertaining to block 3273 provides the following: “Block 3273 . . . illustrates a situation where the master encounters a communication conflict If the master has two radio transceivers, the master can service both networks. If, however, the master only has one radio transceiver, the master chooses to service one network based on network priority considerations.” *Id.* col.53 ll.42-50. While this language indicates that multiple transceivers may be used to avoid such conflict (and the attendant interleaving process), the specification as a whole repeatedly clarifies that the invention is directed to wireless communications solutions utilizing a single transceiver. For example, in the section labeled “Technical Field,” the specification states that “[t]he present invention relates generally to local area networks used for transmitting and receiving information and more particularly to a singular radio using multiple communication protocols for servicing corresponding multiple radio local

area networks.” Id. col.1 l.65 – col.2 l.3 (emphasis added). Moreover, as the district court noted, “both parties concede that the patent discloses a device with one transceiver.” Claim Construction Order at 12. Based on this context, we agree with the district court that the claim term “simultaneous participation” refers to interleaved communications.

Because Qualcomm only argues that there can be no infringement under its proposed construction, but does not argue non-infringement under the district court’s construction, we affirm the jury’s infringement verdict.

Qualcomm further argues, however, that even under the district court’s construction of “simultaneously participate,” it introduced a prior art reference that anticipates the relevant claims of the ’317 patent. That reference, U.S. Patent No. 5,550,895 (“Burson”), discloses a system allowing a telephone to operate in both cordless and cellular networks. While the parties dispute whether or not this reference discloses “simultaneous participation” in these different networks, Broadcom additionally argued at trial that it could antedate the Burson reference, and thus that Burson is not prior art capable of anticipating the ’317 patent. Specifically, Broadcom argued that the September 1989 lab notebook of a deceased inventor, Ronald Mahany, demonstrated conception of the claimed invention, and that this invention was constructively reduced to practice in May 1993 and November 1993 patent applications. If true, these facts permit Broadcom to antedate the Burson reference, which was filed in December 1993—subsequent to both the lab notebook and the 1993 patent applications. See generally Mahurkar v. C.R. Bard, Inc., 79 F.3d 1572, 1577 (Fed. Cir. 1996). Having been presented with the deceased inventor’s lab notebook, the patent applications, and

the testimony of a co-inventor, a coworker, and Broadcom's expert, the jury rejected Qualcomm's invalidity contentions.

Qualcomm argues that neither the lab notebook nor the 1993 patent applications disclose every limitation of the asserted claims. Qualcomm relies on our recent holding in PowerOasis, Inc. v. T-Mobile USA, Inc., 522 F.3d 1299, 1305 (Fed. Cir. 2008) (holding that once a defendant established prior art anticipating the asserted claims, "the burden was on [the patentee] to come forward with evidence to the contrary"), and argues that Broadcom failed to carry its burden at trial in demonstrating entitlement to a filing date prior to that of the Burson reference. We disagree. The record shows that Broadcom's expert provided detailed testimony at trial explaining his basis for concluding that each limitation of the accused claims was present in the 1989 lab notebook, and that he had gone through the same analysis with respect to the 1993 patent applications. See J.A. at 1507-11. Although Qualcomm focuses on the 1993 patent applications on appeal, it failed to ask Broadcom's expert any questions about these applications at trial, and its own expert did not testify on the subject. Indeed, in rejecting Qualcomm's post-trial motions, the district court noted that Broadcom's witnesses "presented an unrebutted picture of Mahany's conception at least as early as September 1989 based on Mahany's notebooks and constructive reductions to practice in May 1993." JMOL Opinion at 9 (emphasis added). Therefore, based on the unrebutted evidence of record, we affirm the jury's verdict that the Burson reference does not invalidate the '317 patent as an anticipatory reference. See Johnston v. IVAC Corp., 885 F.2d 1574, 1581 (Fed. Cir. 1989) (noting that "[a]ttorneys' argument is no substitute for evidence").

2. "Networks"

Qualcomm further argues that the district court erroneously failed to construe the term “networks” and thus left an issue of claim construction to the jury. See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”). Qualcomm contends that “network” should be construed as “a plurality of network devices,” rather than “protocols,” and that no substantial evidence supports a finding of infringement because 1x and EV-DO are not separate networks, but merely distinct protocols. Broadcom responds that Qualcomm waived this argument by not presenting it to the district court until after the jury had returned a verdict. Qualcomm first raised this argument in its post-trial motions, and the district court held that “Qualcomm waived any claimed error by virtue of its failure to offer a proposed construction at or prior to trial.” JMOL Opinion at 2 n.1 (citing Abbott Labs. v. Syntron Bioresearch, Inc., 334 F.3d 1343, 1352 (Fed. Cir. 2003)).

We agree that Qualcomm cannot be allowed to create a new claim construction dispute following the close of the jury trial. “[A] party may not introduce new claim construction arguments on appeal or alter the scope of the claim construction positions it took below. Moreover, litigants waive their right to present new claim construction disputes if they are raised for the first time after trial.” Conoco, Inc. v. Energy & Env’tl. Int’l, L.C., 460 F.3d 1349, 1358-59 (Fed. Cir. 2006) (internal citations omitted). Qualcomm’s eleventh-hour attempt to litigate a newly minted claim construction controversy falls squarely within our holding in Eli Lilly & Company v. Aradigm Corporation, where a party “never requested that the district court construe any terms in [the relevant claim] and never offered a construction of [that claim],” but rather “[o]nly

after the presentation of all of the evidence to the jury . . . even suggest[ed] that claim construction might be helpful to determine the proper scope of the claimed invention.” 376 F.3d 1352, 1360 (Fed. Cir. 2004). As in Eli Lilly, we hold that Qualcomm has waived its right to request a construction of “networks” and that Qualcomm has thereby implicitly conceded that the meanings of “networks” is clear and not in need of construction. Id. Qualcomm’s reliance on our recent holding in O2 Micro is misplaced. Unlike in O2 Micro, where the parties disputed the proper construction of a term at a pre-trial Markman hearing, 521 F.3d at 1362, Qualcomm here has failed to offer its proposed construction of “networks” at or prior to trial, and we reject such arguments raised for the first time after the jury verdict.

C. The '010 Patent

Qualcomm also argues that substantial evidence does not support the jury’s verdict of infringement with respect to the '010 patent. The jury found that Qualcomm directly infringed, induced infringement of, and contributed to the infringement of claims 1, 2, 3, and 7 of the '010 patent. Claim 1 is representative and recites, with the relevant portion emphasized:

A telephone for use with a first network having a predetermined allocated bandwidth and a second network having a variable bandwidth, the telephone comprising:
an interface circuit that selectively couples to the first and second networks, the first and second networks operating substantially independent of one another;
a user interface;
processing circuitry, coupled to the user interface and the interface circuit, that directs the interface circuit to select one of the first and second networks;
a microphone capable of being selectively coupled to the first and second networks via the interface circuit; and
an analog to digital converter that is coupled by the interface circuit between the microphone and the second network under the

control of the processing circuitry when the second network is selected;
wherein the processing circuitry responds to the user interface to determine which of the first and second networks to select.

The accused products include CDMA2000 cell phones with the QChat PTT feature. Using this technology, cell phone users can choose to either place a regular voice call, which is routed to the public switched telephone network (“PSTN”) through the 1x network, or they may use the PTT—i.e., QChat—feature, which routes calls through the Internet using the EV-DO network when the user pushes a separate QChat button on the phone. This QChat PTT feature allows the cell phone to be used like a walkie-talkie. At trial, Broadcom successfully argued that these facts demonstrate that users of these phones selectively couple to the PSTN and the Internet—the “first and second networks” for purposes of this patent.

On appeal, Qualcomm argues that allegedly infringing cell phones using the QChat software do not “selectively couple” to either the PSTN or to the Internet because these phones do not “couple” to any network through a physical electrical connection, but rather communicate wirelessly and exclusively with the CDMA2000 infrastructure through either the 1x or EV-DO protocols. According to Qualcomm, it is then the CDMA2000 network equipment that “selectively couples” with either the PSTN or the Internet. It contends that because the claims require “an interface circuit that selectively couples” to both networks, and because the circuits inside the cell phones only prepare data and voice packets for transmission, there can be no infringement.

Broadcom responds that the circuitry in the phone is the beginning of the electrical pathway to either network (the PSTN or the Internet) and that the presence of intermediaries between the cell phone and the destination networks should not affect

infringement because the '010 patent does not require a direct connection. It further notes that the patent itself explicitly contemplates the use of wireless networks. See, e.g., '010 patent col.1 ll.41-44 (noting that “this invention relates to the intelligent routing of packetized voice communication between telephones and radio terminals through wireless and hardwired channels in a data processing network” (emphasis added)); id. col.2 ll.52-56 (“An object of the invention is to provide a method and apparatus wherein seamless voice and data communication is provided among both roaming devices within wireless portions of a communication network and stationary devices within hardwired portions of the network.” (emphasis added)). Even if the claims required a direct or physical connection, however, Broadcom also argues that it presented substantial evidence of infringement under the doctrine of equivalents.

The term “selectively couples” was not construed by the district court because the parties agreed to let the ordinary meaning control. Infringement was presented to a jury, whose verdict we review for substantial evidence. See Dawn Equip. Co. v. Ky. Farms Inc., 140 F.3d 1009, 1014 (Fed. Cir. 1998). “In reviewing factual issues for substantial evidence, the inquiry is whether a reasonable jury, given the record before it viewed as a whole, could have arrived at the conclusion it did.” Id. Here, the jury was presented with more than adequate evidence upon which it could have concluded that phones incorporating Qualcomm’s QChat software included “an interface circuit that selectively couples” to either the PSTN or the Internet. Undisputed testimony at trial established that phones using the QChat software distinguish between digitalized voice data being sent to the PSTN and to the Internet by packaging data into “voice frames” for traditional phone calls over the PSTN or by packing this data into “voice packets” for transmission over the Internet. E.g., J.A. at 2106-07. It is further undisputed “that the

chip differentiates between voice frames and voice packets in determining which network to communicate with.” JMOL Opinion at 15. Qualcomm’s own expert admitted that “[t]here is an interface circuit inside the phone, so the interface circuit inside the phone itself does this framing or packetizing, and sends it out over a single air interface using two different protocols.” J.A. at 2107. Broadcom’s expert explained to the jury that “[s]elective coupling . . . doesn’t mean that it has to be directly connected. . . . It just means that the coupling is electrically prepared within that interface circuit so that by the time the work of the network begins they can go to a proper destination.” Id. at 1393-94.

Although Broadcom’s expert stated that “selectively couple” means “connected electrically,” that is, that “[t]here is an electrical pathway to either the first or the second network,” id. at 1373, he also testified that “the coupling . . . doesn’t mean that it has to attach the [sic] connect physically right next to each other,” id. at 1397. He further testified that “the interface circuit is within the phone” and that it “is electrically coupled to the first and the second network” where these networks are the PSTN and the Internet. Id. Taken as a whole, this record provides substantial evidence to support a reasonable jury’s conclusion that Qualcomm infringed the ’010 patent.

In so holding, we reject Qualcomm’s additional contentions that Broadcom has presented a post-trial claim construction in contravention of our holding in Hewlett-Packard Company v. Mustek Systems, Incorporated, 340 F.3d 1314, 1320-21 (Fed. Cir. 2003). As we discussed in connection with the “network” limitation of the ’317 patent, supra, we agree that “where the parties and the district court elect to provide the jury only with the claim language itself, and do not provide an interpretation of the language in the light of the specification and the prosecution history, it is too late at the JMOL

stage to argue for or adopt a new and more detailed interpretation of the claim language and test the jury verdict by that new and more detailed interpretation.” Hewlett-Packard, 340 F.3d at 1321. Unlike the patentee in Hewlett-Packard, however, Broadcom has not argued for a new claim interpretation. The evidence shows that users of the QChat feature press a specific button for the express purpose of establishing a PTT connection with another user. In doing so, QChat users expressly choose whether to connect through the Internet using the PTT feature, or to place traditional voice calls through the PSTN. Qualcomm has not provided convincing evidence that the ordinary meaning of “selectively couples” requires a direct or physical connection, and the jury was entitled to credit the substantial evidence discussed above, as general as it may be, in rendering a verdict in favor of Broadcom.

D. New Trial

Qualcomm argues that the pre-Seagate jury instructions, which prompted the district court to set aside the willfulness verdict based essentially on Qualcomm’s not having obtained non-infringement opinion letters, also require us to overturn the indirect infringement verdicts predicated on specific intent necessary to find inducement under DSU Medical Corporation v. JMS Company, 471 F.3d 1293 (Fed. Cir. 2006) (en banc in relevant part). Qualcomm contends that it did not obtain non-infringement opinions because it had procured invalidity opinions for each relevant patent, although it elected not to waive attorney-client privilege and rely on those opinions. Qualcomm also argues that the indirect infringement verdicts are unsupported by substantial evidence. In the event we accept these contentions, Qualcomm further asserts that we must vacate the damages awards related to the ’317 and ’010 patents because the damages were based solely on indirect infringement activities. Finally, it argues that because damages

and infringement issues have interwoven factual underpinnings, retrial should be permitted with respect to all issues.

Broadcom responds that the district court emphasized the same DSU specific intent standard on which Qualcomm relies, and that the disputed instructions regarding opinion-of-counsel letters properly identified such evidence as one factor to consider within the totality of the circumstances. Broadcom contends that opinion-of-counsel letters remain relevant to the intent inquiry of our inducement precedent, and that Seagate addressed neither the admissibility of evidence concerning an alleged infringer's failure to obtain non-infringement opinions, nor the standard for establishing intent to induce infringement. Broadcom further argues that circumstantial evidence in the record provides substantial evidence to support the jury's verdict of induced infringement.

"Legal standards given to the jury are reviewed without deference to the trial court, whereas the jury's resolution of factual disputes are reviewed to determine whether there is substantial evidence to support them." Dawn Equip., 140 F.3d at 1014. "This court reviews the legal sufficiency of jury instructions on an issue of patent law without deference to the district court. This Court reviews jury instructions in their entirety and only orders a new trial when errors in the instructions as a whole clearly mislead the jury." DSU, 471 F.3d at 1304 (internal quotation marks and citation omitted). We turn first to the legal standard.

"In order to prevail on an inducement claim, the patentee must establish 'first that there has been direct infringement, and second that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another's

infringement.” ACCO Brands, Inc. v. ABA Locks Mfr. Co., 501 F.3d 1307, 1312 (Fed. Cir. 2007) (quoting Minn. Mining & Mfg. Co. v. Chemque, Inc., 303 F.3d 1294, 1304-05 (Fed. Cir. 2002)). The relevant standard for establishing the intent element of inducement was clarified by this Court in DSU, 471 F.3d at 1304-06 (en banc in relevant part). In DSU, we upheld a jury instruction providing that “[t]he defendant must have intended to cause the acts that constitute the direct infringement and must have known or should have known tha[t] its action would cause the direct infringement.” Id. at 1305. In so doing, we held that “inducement requires evidence of culpable conduct, directed to encouraging another’s infringement, not merely that the inducer had knowledge of the direct infringer’s activities.” Id. at 1306 (citing Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd., 545 U.S. 913, 936-37 (2005)). We further noted that “[t]he plaintiff has the burden of showing that the alleged infringer’s actions induced infringing acts and that he knew or should have known his actions would induce actual infringements.” DSU, 471 F.3d at 1306 (quoting Manville Sales Corp. v. Paramount Sys., Inc., 917 F.2d 544, 553 (Fed. Cir. 1990)).

In this case, the district court instructed the jury, inter alia, as follows:

In order to establish active inducement of infringement, it is not sufficient that the company that is allegedly induced to infringe itself directly infringes the claim. Nor is it sufficient that QUALCOMM was aware of the act(s) that allegedly constitute the direct infringement. Rather you must find that QUALCOMM specifically intended to cause direct infringement of the '317, '010, and/or '686 patents, in order to find inducement of infringement. That is, you must find QUALCOMM is aware of the patent, knows or should have known that the encouraged acts constitute infringement of the patent, and has an intent to cause the encouraged acts.

J.A. at 2194-95 (emphases added). This instruction is entirely consistent with our guidance in DSU. Qualcomm objects, however, to the instruction that followed it:

When considering whether Qualcomm knew of should have known that the induced actions would constitute infringement, in the totality of the circumstances, you may consider all of the circumstances, including whether or not Qualcomm obtained the advice of a competent lawyer. I will explain the significance of advice of counsel in more detail in a moment.

Id. at 2195 (emphasis added). Following this instruction, the district court instructed the jury as to contributory infringement, and then, in the context of instructions pertaining to willfulness, the district court instructed the jury as follows:

In considering whether QUALCOMM acted in good faith, you should consider all the circumstances, including whether or not QUALCOMM obtained and followed the advice of a competent lawyer with regard to infringement. The absence of a lawyer's opinion, by itself, is insufficient to support a finding of willfulness, and you may not assume that merely because a party did not obtain an opinion of counsel, the opinion would have been unfavorable. However, you may consider whether QUALCOMM sought a legal opinion as one factor in assessing whether, under the totality of the circumstances, any infringement by QUALCOMM was willful.

Id. at 2199-2200 (emphasis added). This instruction comports with our holding in Knorr-Bremse Systeme Fuer Nutzfahrzeuge, GmbH v. Dana Corp., where we held that there is not "a legal duty upon a potential infringer to consult with counsel, such that failure to do so will provide an inference or evidentiary presumption that such opinion would have been negative." 383 F.3d 1337, 1345 (Fed. Cir. 2004) (en banc).

Qualcomm argues, however, that the district court erred in allowing the inducement verdicts to stand in light of its instruction to consider failure to obtain an opinion of counsel as a factor in determining whether Qualcomm had the requisite level of intent to induce infringement of Broadcom's patents. Qualcomm's argument essentially rests on the proposition that Seagate altered the standard for establishing the intent element of inducement. Qualcomm contends that because in Seagate we

“abandon[ed] the affirmative duty of due care” to avoid infringement and “reemphasize[d] that there is no affirmative obligation to obtain opinion of counsel,” 497 F.3d at 1371, and because specific intent is a stricter standard than the “objective recklessness” standard adopted in Seagate, evidence not probative of willful infringement cannot be probative of specific intent to induce infringement. That is, Qualcomm argues that opinion-of-counsel evidence is no longer relevant in determining the intent of an alleged infringer in the inducement context. We disagree.

Although Qualcomm is correct that there is no affirmative duty to seek opinion of counsel regarding infringement, and that it is improper to allow an “adverse inference or evidentiary presumption that such an opinion would have been unfavorable,” Knorr-Bremse, 383 F.3d at 1346, it is incorrect in arguing that Seagate altered the state of mind requirement for inducement. Our en banc holding in DSU remains the relevant authority on that point. Despite Qualcomm’s assertion that the intent standard for inducement is higher than that for willful infringement, a lack of culpability for willful infringement does not compel a finding of non-infringement under an inducement theory. Qualcomm’s argument reflects a misunderstanding of our holding in DSU.

While inducement “requires more than just intent to cause the acts that produce direct infringement,” and also requires “that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another’s infringement,” DSU, 471 F.3d at 1306, this intent may be established through circumstantial evidence, see id. Moreover, “[t]he requisite intent to induce infringement may be inferred from all of the circumstances.” Water Techs. Corp. v. Calco, Ltd., 850 F.2d 660, 669 (Fed. Cir. 1988). Additionally, we noted in DSU that this intent may be established where an

alleged infringer who “knew or should have known his actions would induce actual infringements,” is shown to have induced infringing acts through his actions. 471 F.3d at 1306 (emphasis added) (adopting the same two-part test articulated in Manville, 917 F.2d at 553). That is, the “affirmative intent to cause direct infringement,” id., required by DSU may be shown—just as the jury was instructed in DSU itself—by establishing first that the defendant “intended to cause the acts that constitute the direct infringement,” and second that the defendant “kn[ew] or should have known [that] its action would cause the direct infringement,” DSU, 471 F.3d at 1305. Because opinion-of-counsel evidence, along with other factors, may reflect whether the accused infringer “knew or should have known” that its actions would cause another to directly infringe, we hold that such evidence remains relevant to the second prong of the intent analysis. Moreover, we disagree with Qualcomm’s argument and further hold that the failure to procure such an opinion may be probative of intent in this context. It would be manifestly unfair to allow opinion-of-counsel evidence to serve an exculpatory function, as was the case in DSU itself, see 471 F.3d at 1307, and yet not permit patentees to identify failures to procure such advice as circumstantial evidence of intent to infringe. Accordingly, we find no legal error in the district court’s jury instructions as they relate to inducement.

Thus, the district court did not err in instructing the jury to consider “all of the circumstances,” nor in instructing the jury to consider—as one factor—whether Qualcomm sought the advice of counsel as to non-infringement. Even if the instructions had been legally incorrect, Qualcomm failed to suggest any alternative instructions. To the extent that Qualcomm argues that the district court should have stressed other

factors relevant to Qualcomm's intent to induce infringement, it should have suggested such instructions to the district court. See NTP, Inc. v. Research In Motion, Ltd., 418 F.3d 1282, 1311-12 (Fed. Cir. 2005) (noting that altering a jury verdict based on erroneous jury instructions requires a party to demonstrate, inter alia, that "it requested alternative instructions that would have remedied the error").

Furthermore, we agree with Broadcom that substantial evidence supports the jury's verdict of induced infringement. Qualcomm seems to argue that the jury's verdict cannot stand because Broadcom failed to produce direct evidence of intent to induce infringement. That is not the law. "A patentee may prove direct infringement or inducement of infringement by either direct or circumstantial evidence. There is no requirement that direct evidence be introduced, nor is a jury's preference for circumstantial evidence over direct evidence unreasonable per se." Liquid Dynamics Corp. v. Vaughan Co., 449 F.3d 1209, 1219 (Fed. Cir. 2006) (internal citation omitted). Moreover, "[t]he drawing of inferences, particularly in respect of an intent-implicating question . . . is peculiarly within the province of the fact finder that observed the witnesses." Rolls-Royce Ltd. v. GTE Valeron Corp., 800 F.2d 1101, 1110 (Fed. Cir. 1986); see also Fuji Photo Film Co. v. Jazz Photo Corp., 394 F.3d 1368, 1378 (Fed. Cir. 2005) (declining to disturb jury's verdict because intent to induce infringement "is a factual determination particularly within the province of the trier of fact").

Qualcomm does not dispute that it was on notice of Broadcom's patents and infringement contentions. And it concedes that it "worked closely with its customers to develop and support the accused products, and that Qualcomm did not make changes to those products or give its customers [instructions regarding how to avoid

infringement] after this lawsuit was filed.” Appellant’s Supplemental Br. at 20-21. Qualcomm also fails to identify evidence in the record to counter the district court’s related observations pertaining to willfulness: “[T]he totality of the circumstances presented in the evidence supports the jury’s findings: a failure to investigate, a failure to explore design around approaches, a failure to take remedial steps—and, of course, a failure to seek legal advice. This was sufficient for the jury to infer a lack of good faith.” JMOL Opinion at 8. Although Qualcomm stresses that it did obtain opinions of counsel regarding invalidity of the patents in suit, it concedes that the district court properly excluded this fact from evidence in light of Qualcomm’s decision not to waive privilege with respect to these opinions.

Taken as a whole, this record provides substantial evidence to support the jury’s verdict and is consistent with our precedent. See, e.g., Golden Blount, Inc. v. Robert H. Peterson Co., 438 F.3d 1354, 1364 n.4 (Fed. Cir. 2006) (noting that it was “undisputed that Peterson had notice of the patent . . . and that Peterson provided [an] instruction sheet to customers directing them to perform specific acts leading to the assembly of infringing devices, from which the district court could draw an inference of intent”); Mentor H/S, Inc. v. Med. Device Alliance, Inc., 244 F.3d 1365, 1379 (Fed. Cir. 2001) (upholding a jury verdict of induced infringement where the defendant was aware of the patent yet chose to continue selling products designed specifically for use in an infringing manner, where it was apparent that the jury discredited the defendant’s assertion that it relied upon a non-infringement opinion letter in good faith). Thus, we will not disturb the jury’s inference that Qualcomm possessed the specific intent necessary to induce the infringement of Broadcom’s patents.

Because we do not agree that a new trial on inducement is warranted, we need not consider Qualcomm's arguments regarding liability and damages issues allegedly interwoven with the inducement claim.

E. Permanent Injunction

Finally, Qualcomm argues that Broadcom is not entitled to the permanent injunction issued by the district court. Qualcomm asks us to vacate the injunction against Qualcomm CDMA2000 products based on the four-factor test outlined in eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006). Qualcomm argues that because Broadcom makes WCDMA chips, not CDMA2000 products like Qualcomm, it could not have established irreparable injury from Qualcomm's sale of CDMA2000 chips. Similar arguments are made with respect to the QChat software, because Broadcom does not offer a PTT product. Qualcomm contends that Broadcom's license agreement with Verizon demonstrates that monetary remedies may adequately compensate it for infringement injuries. It further argues that the district court clearly erred in balancing the hardships because the injunction will disrupt Qualcomm's ongoing business model with CDMA carriers and because the sunset provisions do not allow sufficient time to develop design-around technology. Finally, Qualcomm contends that the public interest factor should weigh in its favor because of the risk to downstream carriers that rely on Qualcomm's CDMA2000 technology, especially carriers like Sprint that will suffer significant disadvantages as compared to Verizon, which has a license with Broadcom. An amicus brief filed by Sprint presents similar arguments, and primarily contends that the district court should have considered an ongoing royalty in product areas in which Broadcom does not participate, such as PTT technology and CDMA2000 chips in general. See Paice LLC v. Toyota Motor Corp., 504 F.3d 1293, 1314 (Fed. Cir. 2007)

(noting that “[u]nder some circumstances, awarding an ongoing royalty for patent infringement in lieu of an injunction may be appropriate”).

Broadcom responds that the district court took the factors identified by Qualcomm into account and found persuasive several public statements by Qualcomm and its downstream customers indicating that design-arounds were in the works, suggesting that the impact of the injunction was not critical. Broadcom argues that—irrespective of whether it sells identical products or chipsets under the same protocols—it competes indirectly with Qualcomm based on the nature of the market, and that Qualcomm has admitted that fact in other contexts. It contends that its business model of generally not licensing its patent portfolio favors injunctive relief, and that its license with Verizon was designed to ameliorate the impact of an injunction and in any case cannot be compared to a license with a direct competitor like Qualcomm. It also argues that sunset provisions’ allowance of infringement for up to twenty months after the jury verdict adequately addresses concerns related to the balance of hardships and public interest.

“[W]e review a district court’s decision to grant an injunction and the scope of that injunction for abuse of discretion.” Joy Techs., Inc. v. Flakt, Inc., 6 F.3d 770, 772 (Fed. Cir. 1993).

According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief. A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

eBay, 547 U.S. at 391. Here, the district court provided a well-reasoned and comprehensive opinion addressing injunctive relief, in which it accounted for the unique issues presented by the various patents and the infringing products and each of the factors re-affirmed in eBay. We address each factor in turn.

1. Irreparable Injury

Qualcomm argues that because Broadcom does not sell or plan to sell CDMA2000 chips, it cannot allege harm resulting from Qualcomm's CDMA200 chip sales and that Broadcom's arguments on this point amount to no more than speculative, unsubstantiated assertions of harm. Similarly, Qualcomm argues that Broadcom's lack of a PTT product precludes a finding of irreparable injury stemming from the sale of products featuring the QChat software. Qualcomm also argues that Broadcom's license to Verizon—a CDMA carrier—undermines its claim of irreparable injury.

Broadcom argues that Qualcomm itself has admitted that it competes indirectly with Broadcom, despite offering different technology in its chipsets. Broadcom also contends that the district court correctly considered Broadcom's general policy of not licensing its patents and the harm that would ensue from a compulsory license to its most significant competitor. Broadcom further argues that it entered into a license agreement with Verizon, in part, to minimize the potential impact of an injunction to third parties or consumers while Qualcomm designs around Broadcom's patents.

The district court found that this factor weighed in favor of an injunction with respect to both the '317 and '010 patents. Injunction Opinion at 10, 15. It remains an open question “whether there remains a rebuttable presumption of irreparable harm following eBay,” Amado v. Microsoft Corp., 517 F.3d 1353, 1359 n.1 (Fed. Cir. 2008),

but the district court did not abuse its discretion in finding irreparable injury here even if Broadcom benefits from no such presumption. The district court explained that the evidence at trial demonstrated that

[t]he market for baseband chips is unlike the typical market for consumer goods where competitors compete for each consumer sale, and the competition is instantaneous and on-going. . . . Competition for sales is not on a unit-by-unit basis, but rather competition is characterized by competing for “design wins” for the development and production of cell phones which will embody the proposed chip. . . . In this kind of a market, the exclusion has a competitive effect on a firm even if it does not have an immediately available product.

Injunction Opinion at 5-6. And as identified by Broadcom, Qualcomm has previously conceded this indirect competition. E.g., J.A. at 7785 n.7 (“Any cell phone customer who has chosen between, e.g., Cingular (GSM) and Verizon (CDMA) service knows that handsets and thus chipsets do compete and thus ‘substitute’ across standards.”).

Thus, Broadcom provided evidence of irreparable harm, despite the fact that it does not currently practice the claimed inventions. This result is consistent with eBay, in which the Supreme Court cautioned that “traditional equitable principles do not permit such broad classifications” as presuming that a patentee cannot establish irreparable harm based on a patentee’s “willingness to license its patents” or “its lack of commercial activity in practicing the patents.” 547 U.S. at 393; see also Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1547 (Fed. Cir. 1995) (en banc) (noting that “[t]here is no requirement in this country that a patentee make, use, or sell its patented invention” (citing Cont’l Paper Bag Co. v. E. Paper Bag Co., 210 U.S. 405, 424-30 (1908))). Although we recently upheld a district court’s denial of a permanent injunction where the patentee “had attempted to prove irreparable injury by alleging irreparable harm to his exclusive licensee, rather than himself,” we noted that “patent owners that license their

patents rather than practice them ‘may be able to satisfy the traditional four-factor test’ for a permanent injunction.” Voda v. Cordis Corp., 536 F.3d 1311, 1329 (Fed. Cir. 2008) (first emphasis added) (quoting eBay, 547 U.S. at 393). Reliance on Voda is misplaced in this case because Broadcom does not rely on harm to others, but rather alleges that its own commercial activities will be irreparably injured by Qualcomm’s infringing activity. As such, the district court did not abuse its discretion in finding that allowing Qualcomm to sell CMDA2000 chips implementing Broadcom’s patented features would harm Broadcom’s efforts to market WCDMA solutions. See Injunction Opinion at 15.

2. Lack of Adequate Remedy at Law

As with the irreparable injury prong of the analysis, the district court found that this prong weighed in favor of an injunction with respect to all of the infringed patents. Id. at 11, 17. Qualcomm relies primarily on the Verizon license agreement as evidence that Broadcom can be adequately compensated by monetary damages. Broadcom responds that the Verizon agreement provided many non-monetary benefits to Broadcom, such as the formation of a strategic business alliance, and that a license to Qualcomm’s customer is of limited probative value as to its willingness to enter into a similar such agreement with its direct competitor.

We agree with Broadcom that the district court did not abuse its discretion here, particularly in light of its findings that “the structural nature of a ‘design win’ market favors a finding that monetary damages are inadequate.” Id. at 16. We also agree that the Verizon license has little bearing on the effect of a compulsory license to a direct competitor, particularly in light of these market realities. Additionally, while Broadcom’s

damages expert testified that any comparison of Qualcomm's lost profits based on an injunction to Broadcom's potential gain would be "almost pure speculation at this point," J.A. at 3217, this difficulty in estimating monetary damages reinforces the inadequacy of a remedy at law. Cf. Jacobsen v. Katzer, 2008 WL 3395772, at *6 (Fed. Cir. Aug 13, 2008) (noting, in the copyright license context, that "because a calculation of damages is inherently speculative, these types of license restrictions might well be rendered meaningless absent the ability to enforce through injunctive relief").

3. Balance of Hardships

The district court acknowledged the harm inflicted on Qualcomm through a permanent injunction, but held that "with a sunset provision which ameliorates the negative effects on Qualcomm, the balance of hardships favors Broadcom" with respect to the '317 patent. Injunction Opinion at 16. It found this factor to be neutral regarding the '010 patent. Id. at 10. At the outset, we note that "[o]ne who elects to build a business on a product found to infringe cannot be heard to complain if an injunction against continuing infringement destroys the business so elected." Windsurfing Int'l, Inc. v. AMF, Inc., 782 F.2d 995, 1003 n.12 (Fed. Cir. 1986). We agree with the district court that Qualcomm should not be permitted to prevail on a theory "that successful exploitation of infringing technology shields a party from injunctive relief," Injunction Opinion at 16, but in any event we find this factor to be neutral at best in light of the district court's carefully constructed sunset provisions. The district court provided for a twenty-month sunset provision from the date of the May 2007 jury verdict. See id. at 12, 18. This does not amount to an abuse of discretion, particularly in light of the district court's finding that "the time line from a 'win' to actually bringing the product to the

consumer is about 18 months,” id. at 5, and in light of the fact that Qualcomm could have—and in fact may have—begun design-around efforts upon receipt of the complaint, which Broadcom filed more than two years prior to the jury verdict.

4. Public Interest

The district court found that although it is generally in the public interest to uphold patent rights, see generally Rite-Hite, 56 F.3d at 1547, “an immediate permanent injunction would adversely affect the public” with respect to the ’010 patent, Injunction Opinion at 9, and that “an immediate permanent injunction would adversely affect network carriers and handset manufacturers that currently employ chips which infringe the ’317 Patent in their products,” id. at 17. However, the district court held that the aforementioned sunset provisions “balance[] the policy of protecting the patentee’s rights against the desirability of avoiding immediate market disruptions.” Id. at 18. We agree that the sunset provisions mitigate the harm to the public and that the district court did not abuse its discretion in fashioning a remedy that protects Broadcom’s rights while allowing Qualcomm time to develop non-infringing substitutes. See Verizon Servs. Corp. v. Vonage Holdings Corp., 503 F.3d 1295, 1311 n.12 (Fed. Cir. 2007) (noting that a sunset provision would have allowed time for an infringer to implement non-infringing substitutes).

* * *

In sum, the district court did not abuse its discretion in issuing the permanent injunction against Qualcomm. However, we reverse the injunction and damages award as they pertain to the ’686 patent and remand to the district court so that the injunction and damages may be adjusted in light of our reversal of the jury verdict of infringement.

III. CONCLUSION

For the above reasons, we conclude that the district court erred in construing claim 3 of the '686 patent, which we hold is invalid under the proper construction; that substantial evidence supports the jury's findings of infringement and validity as to the '317 and '010 patents; and that the district court did not abuse its discretion in issuing a permanent injunction. Thus, its judgment is

AFFIRMED-IN-PART, REVERSED-IN-PART, and REMANDED.