

United States Court of Appeals for the Federal Circuit

2007-1545, 2008-1162

QUALCOMM INCORPORATED,

Plaintiff-Appellant,

v.

BROADCOM CORPORATION,

Defendant-Appellee.

Carter G. Phillips, Sidley Austin LLP, of Washington, DC, argued for plaintiff-appellant. With him on the brief were Stephen B. Kinnaird, Eric A. Shumsky, Peter S. Choi, and Ryan C. Morris. Of counsel on the brief were David B. Salmons, Bingham McCutchen LLP, of Washington, DC, and Richard S. Taffet, of New York, New York; William S. Boggs, Brian A. Foster, Timothy S. Blackford, and Stanley J. Panikowski, DLA Piper US LLP, of San Diego, California; and Evan R. Chesler and Peter T. Barbur, Cravath, Swaine & Moore LLP, of New York, New York.

William F. Lee, Wilmer Cutler Pickering Hale and Dorr LLP, of Boston, Massachusetts, argued for defendant-appellee. With him on the brief were John J. Regan, Vinita Ferrera, Kate Saxton, and Carrie H. Seares. Of counsel were Donald R. Steinberg and James L. Quarles, III, of Washington, DC.

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

Senior Judge Rudi M. Brewster

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QUALCOMM INCORPORATED,

Plaintiff-Appellant,

v.

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Defendant-Appellee.

Appeals from the United States District Court for the Southern District of California in case no. 05-CV-1958, Senior Judge Rudi M. Brewster.

DECIDED: December 1, 2008

Before MAYER, LOURIE, and PROST, Circuit Judges.

PROST, Circuit Judge.

This patent infringement case involves the consequence of silence in the face of a duty to disclose patents in a standards-setting organization (“SSO”). The district court concluded that Qualcomm breached its duty to disclose U.S. Patent Nos. 5,452,104 (“104 Patent”) and 5,576,767 (“767 Patent”) to the Joint Video Team (“JVT”) SSO. As a remedy, the district court ordered the ’104 and ’767 Patents (and related patents) unenforceable against the world. Additionally, based on both Qualcomm’s JVT misconduct and its litigation misconduct, the court determined that this was an exceptional case and awarded Broadcom its attorney fees. For the reasons set forth below, we affirm the district court’s determinations that Qualcomm had a duty to disclose the asserted patents to the JVT, that it breached this duty, and that the JVT

misconduct and litigation misconduct were proper bases for the court's exceptional case determination. Because the scope of the remedy of unenforceability as applying to the world was too broad, however, we vacate the unenforceability judgment and remand with instructions to enter an unenforceability remedy limited in scope to H.264-compliant products. Accordingly, we affirm-in-part (duty to disclose, breach of duty, exceptional case determination), vacate-in-part (unenforceability scope), and remand.

I. BACKGROUND

This case presents the question of whether Qualcomm waived its right to assert its patents by failing to disclose them to the JVT SSO. The asserted patents relate to video compression technology. The '104 Patent issued in 1995 and is entitled, "Adaptive Block Size Image Compression Method and System." The '767 Patent issued in 1996 and is entitled, "Interframe Video Encoding and Decoding System." Chong U. Lee, who was the Vice President of Technology at Qualcomm at the time of this litigation, is the named inventor of the '104 Patent, and he and Donald Pian are the named inventors of the '767 Patent. Qualcomm is the assignee of the '104 and '767 Patents.

In late 2001, the JVT was established as a joint project by two parent SSOs: (1) the Video Coding Experts Group ("VCEG") of the International Telecommunication Union Telecommunication Standardization Sector ("ITU-T"); and (2) the Moving Picture Experts Group ("MPEG") of the International Organization for Standardization ("ISO") and the International Electrotechnical Commission ("IEC"). The JVT was created to develop a single "technically aligned, fully interoperable" industry standard for video compression technology. Qualcomm Inc. v. Broadcom Corp., 539 F. Supp. 2d 1214,

1218 (S.D. Cal. 2007) ("Remedy Order") (quoting JVT Terms of Reference ("ToR")). The standard developed by the JVT was later named the H.264 standard. In May 2003, the ITU-T and ISO/IEC adopted and published the official H.264 standard.

Plaintiff Qualcomm is a member of the American National Standards Institute ("ANSI"), which is the United States representative member body in the ISO/IEC, and was an active dues-paying member for many years prior to 2001. It is also a member of the ITU-T and a participant in the JVT. Qualcomm did not disclose the '104 and '767 Patents to the JVT prior to release of the H.264 standard in May 2003.

On October 14, 2005, Qualcomm filed the present lawsuit against Broadcom in the United States District Court for the Southern District of California, claiming that Broadcom infringed the '104 and '767 Patents by making products compliant with the H.264 video compression standard. A jury trial was held from January 9, 2007, to January 26, 2007. The jury returned a unanimous verdict as to non-infringement and validity, finding that (1) Broadcom does not infringe the '104 and '767 Patents; and (2) the '104 and '767 Patents were not shown to be invalid. The jury also returned a unanimous advisory verdict as to the equitable issues, finding by clear and convincing evidence that (1) the '104 Patent is unenforceable due to inequitable conduct; and (2) the '104 and '767 Patents are unenforceable due to waiver.

On March 21, 2007, the district court entered an order (1) finding in favor of Qualcomm and against Broadcom on Broadcom's counterclaim of inequitable conduct as to the '104 Patent; (2) finding in favor of Broadcom and against Qualcomm on Broadcom's affirmative defense of waiver as to the '104 and '767 Patents; and (3) setting a hearing on an Order to Show Cause as to the appropriate remedy for

Qualcomm's waiver. The district court's conclusion that Qualcomm waived its rights to assert the '104 and '767 Patents was based on Qualcomm's conduct before the JVT.

Throughout discovery, motions practice, trial, and even post-trial, Qualcomm adamantly maintained that it did not participate in the JVT during development of the H.264 standard. Despite numerous requests for production and interrogatories requesting documents relating to Qualcomm's JVT participation prior to adoption of the H.264 standard, Qualcomm repeatedly represented to the court that it had no such documents or emails. On January 24, 2007, however, one of the last days of trial, a Qualcomm witness testified that she had emails that Qualcomm previously claimed did not exist. Later that day, Qualcomm produced twenty-one emails belonging to that witness. As the district court later discovered, these emails were just the "tip of the iceberg," as over two hundred thousand more pages of emails and electronic documents were produced post-trial. Remedy Order at 1245. The district court later determined that these documents and emails "indisputably demonstrate that Qualcomm participated in the JVT from as early as January 2002, that Qualcomm witnesses . . . and other engineers were all aware of and a part of this participation, and that Qualcomm knowingly attempted in trial to continue the concealment of evidence." Id.

On August 6, 2007, after a hearing on the Order to Show Cause, the district court entered an Order on Remedy for Finding of Waiver, ordering the '104 and '767 Patents (and their continuations, continuations-in-part, divisions, reissues, and any other derivatives thereof) unenforceable against the world. The district court concluded:

In light of all of the . . . evidence finally revealed, the eventual collapse of Qualcomm's concealment efforts exposes the carefully orchestrated plan and the deadly determination of Qualcomm to achieve its goal of holding hostage the entire industry desiring to practice the H.264 standard by

insulating its IPR from the JVT so that the JVT would lose the opportunity to mitigate, if not to avoid, Qualcomm's IPR in the development of the H.264 standard. Broadcom, ignorant of the existence of the '104 and '767 patents, designed and is in the process of manufacturing numerous H.264-compliant products.

Remedy Order at 1248.

On August 6, 2007, the district court also granted Broadcom's exceptional case motion, finding that this is "an exceptional case by clear and convincing evidence based on (1) Qualcomm's bad faith participation in the H.264-standard-setting body, the Joint Video Team ('JVT'); and (2) the litigation misconduct of Qualcomm through its employees, hired outside witnesses, and trial counsel during discovery, motions practice, trial, and post-trial proceedings." Qualcomm Inc. v. Broadcom Corp., No. 05-CV-1958, 2007 U.S. Dist. LEXIS 57122, at *7 (S.D. Cal. Aug. 6, 2007) ("Exceptional Case Order"). In conjunction with the exceptional case order, the district court granted Broadcom its attorney fees.

On October 12, 2007, the magistrate judge held a hearing to investigate Qualcomm's litigation misconduct. As a sanction, the magistrate judge ordered Qualcomm to pay Broadcom's attorney fees, offset by any amount Qualcomm pays associated with the exceptional case order. The magistrate judge also referred six Qualcomm attorneys to the California State Bar for investigation and possible sanctions. The magistrate judge further ordered Qualcomm and the sanctioned attorneys to participate in a comprehensive Case Review and Enforcement of Discovery Obligations ("CREDO") program. Qualcomm subsequently paid the sanction and participated in the CREDO program.

This appeal followed. We have jurisdiction under 28 U.S.C. § 1295(a).¹

II. DISCUSSION

By failing to disclose relevant intellectual property rights (“IPR”) to an SSO prior to the adoption of a standard, a “patent holder is in a position to ‘hold up’ industry participants from implementing the standard. Industry participants who have invested significant resources developing products and technologies that conform to the standard will find it prohibitively expensive to abandon their investment and switch to another standard.” Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 310 (3d Cir. 2007). In order to avoid “patent hold-up,” many SSOs require participants to disclose and/or give up IPR covering a standard. See Mark A. Lemley, Intellectual Property Rights and Standard-Setting Organizations, 90 Cal. L. Rev. 1889, 1902 (2002) (“Because many SSOs want the public to be free to use their standard, they will often require members to give up any IP protection that covers the standard.”).

In Rambus Inc. v. Infineon Technologies AG, this court considered the question of whether the plaintiff, Rambus, had a duty to disclose information about patents or patent applications to the Joint Electron Device Engineering Council (“JEDEC”), which is an SSO associated with the Electronic Industries Alliance (“EIA”). 318 F.3d 1081, 1096

¹ Broadcom claims that, as a result of Qualcomm’s failure to appeal the non-infringement judgment, we “may dismiss this appeal as moot, because it no longer presents any case or controversy between the parties.” Appellee’s Br. 1-2. As Qualcomm responds, however, the district court’s judgment on waiver rendered the asserted patents (and all related patents) unenforceable against the world, which has a broader scope than the judgment of non-infringement as to the asserted claims and the accused products in this case. Thus, Qualcomm’s failure to appeal the non-infringement judgment does not moot its appeal of the unenforceability judgment. Cf. Astra Aktiebolag v. Andrx Pharms., Inc. (In re Omeprazole Patent Litig.), 483 F.3d 1364, 1375 (Fed. Cir. 2007) (stating that an “inequitable conduct claim was not technically moot, because it would have rendered the entire . . . patent unenforceable, rather than just the claims that were held invalid”).

(Fed. Cir. 2003). It stated that, “[b]efore determining whether Rambus withheld information about patents or applications in the face of a duty to disclose, this court first must ascertain what duty Rambus owed JEDEC.” Id. In determining what duty, if any, Rambus owed JEDEC, our court considered both the language of the written EIA/JEDEC IPR policy and the members’ treatment of said language. Id. at 1098. It determined that the written policy did not impose a direct duty on members expressly requiring disclosure of IPR information. Id. “Nevertheless, because JEDEC members treated the language of [the policy] as imposing a disclosure duty, this court likewise treat[ed] this language as imposing a disclosure duty.” Id.

After considering evidence regarding the JEDEC members’ understanding of the JEDEC policy, this court determined that “Rambus’s duty to disclose extended only to claims in patents or applications that reasonably might be necessary to practice the standard.” Id. at 1100. Applying that rationale to the claims at issue and the evidence in the case, it stated that “[t]he record shows that Rambus’s claimed technology did not fall within the JEDEC disclosure duty.” Id. at 1104. Accordingly, this court concluded that “substantial evidence does not support the jury’s verdict that Rambus breached its duties under the EIA/JEDEC policy.” Id. at 1105.

In the present case, the district court considered whether Qualcomm had a duty to disclose the ’104 and ’767 Patents to the JVT prior to the release of the H.264 standard. The district court first analyzed the written JVT IPR policies, and concluded that, “[s]imilar to Rambus, the JVT IPR Policy and Guidelines provide no express requirement to disclose patents unless a member submits a technical proposal.” Qualcomm Inc. v. Broadcom Corp., No. 05-CV-1958, 2007 U.S. Dist. LEXIS 28211, at

*34 (S.D. Cal. Mar. 21, 2007) (“Waiver Order”). The court continued, “[i]nstead, ‘members/experts are encouraged to disclose as soon as possible IPR information (of their own or anyone else’s) associated with any standardization proposal (of their own or anyone else’s). Such information should be provided on a best effort basis.’” Id. (quoting JVT ToR subsection 3.2). The district court next considered the JVT participants’ treatment of the JVT IPR policies. The district court stated that, “[s]imilar to Rambus, despite the language of the IPR Policy merely encouraging participants to disclose patents to the JVT, the issue before the Court is whether JVT participants treated the IPR policy as imposing a duty of disclosure.” Id. at *38. The district court concluded, like Rambus, that JVT members treated the JVT IPR policies as imposing a duty of disclosure on participants apart from the submission of technical proposals. In order to determine whether Qualcomm breached its disclosure duty, the district court considered whether the ’104 and ’767 Patents “reasonably might be necessary” to practice the H.264 standard. Finally, having concluded that the asserted patents fell within the “reasonably might be necessary” standard, the district court determined that the proper remedy for said breach was to order the patents unenforceable against the world.

This appeal requires that we address the following questions relating to the district court’s judgment: (1) Existence of Disclosure Duty: Did Qualcomm, as a participant in the JVT, have a duty to disclose patents to the JVT prior to the release of the H.264 standard in May 2003; (2) Scope of Disclosure Duty: If so, what was the scope of its disclosure duty; (3) Breach: Did Qualcomm breach its disclosure duty by failing to disclose the ’104 and ’767 Patents; and (4) Remedy: If so, was it within the

district court's equitable authority to enter an unenforceability remedy based on the equitable defense of waiver in the SSO context?

A. Existence of Disclosure Duty

1. Standard of Review

We review questions of law de novo, Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc., 103 F.3d 1571, 1581 (Fed. Cir. 1997), and factual findings for clear error, Fed. R. Civ. P. 52(a). The existence of a disclosure duty is a legal question with factual underpinnings. See Rambus, 318 F.3d at 1087 n.3 (stating that the existence of a disclosure duty “may well be a legal question with factual underpinnings”). In the present case, one such factual underpinning is the JVT participants' understanding of the meaning of the JVT IPR policies.

2. Written Policies

Determining whether Qualcomm had a duty to disclose the '104 and '767 Patents to the JVT involves two questions. First, we must determine whether the written JVT IPR policies impose any disclosure obligations on participants (apart from the submission of technical proposals). Second, to the extent the written JVT IPR policies are ambiguous, we must determine whether the JVT participants understood the policies as imposing such obligations.

The district court first considered the written JVT IPR policies. Specifically, the district court considered the JVT ToR, which encompass patent and copyright IPR.² As

² Section 3 of the JVT ToR is entitled “IPR Policy & Guidelines.” J.A. 8175. Subsection 3.1, entitled “Basic IPR Principles,” states that the “JVT has agreed to the following basic principles” regarding IPR for the JVT codec:

- The JVT codec should have a simple royalty free “baseline” profile (both on the encoder and decoder) in order to promote the wide

implementation and use of the JVT codec. All implementations should have such a common baseline profile core, in order to allow minimal interoperability among all JVT codecs. The above requirement means that all technology applied in the baseline profile shall have no IPR, expired IPR, or valid but royalty-free IPR (according to Box 2.1 or 2.2.1 of the JVT Patent Disclosure form, as shown below).

- Special, more advanced profiles of the JVT standard may contain patents per Box 2.2 of the JVT Patent Disclosure form (reasonable terms and conditions).

J.A. 8176.

Subsection 3.2, entitled “Collection of IPR information during the standardization process,” reads:

According to the ITU-T and ISO/IEC IPR policy, members/experts are encouraged to disclose as soon as possible IPR information (of their own or anyone else’s) associated with any standardization proposal (of their own or anyone else’s). Such information should be provided on a best effort basis.

For collecting such information, JVT has decided to use its [sic] own Patent Declaration form—note that this is distinct from the ITU ISO IEC Patent Statement and Licensing Declaration that is to be submitted to the ISO Secretary General and ITU TSB Director when the contributed technology becomes part of the final standard.

Therefore, JVT requires all technical (algorithmic) proposals include the following:

Attached at the end of each technical contribution, a fully filled-out “JVT Patent Disclosure form” (as shown below). At the contribution stage, this form is for information only, and may be signed by an expert or left unsigned. The form must be included in the contribution to JVT.

Additionally, all submitted source code must include a written transfer of copyright in the form described in section 5 below.

Note that the submission of the JVT Patent Disclosure form at the proposal stage does not have the same formal status as the final IPR declaration to the ITU TSB and ISO/IEC, which must be done in the approval process for the ITU-T Recommendation and ISO/IEC International Standard.

Such information provided to the Chair | Rapporteur will be tabulated in a “IPR status list” (e.g. a simple Word table) of the information received. Information not currently relevant (e.g. if a proposed method was not accepted) will be removed from the “IPR status list” as early as possible.

The “IPR status list” is a living document of the JVT.

Id. (emphases removed).

the district court noted, the IPR disclosure provisions of the JVT IPR policies apply to Qualcomm, as a member of the ITU-T and participant in the JVT.

As the district court observed, it is clear from a review of the JVT IPR policies that identification of IPR by JVT participants is critical to the development of an effective industry standard. While more advanced profiles of the JVT standard may include patents on a reasonable terms and conditions basis, the goal of the JVT was to develop a royalty free “baseline” profile. See J.A. 8176 (“The JVT codec should have a simple royalty free ‘baseline’ profile.”). The district court recognized that “[t]he non-disclosure of a participant’s core patents in such a program could put the participant in a position in which it could literally block the use of the published H.264 standard by any company unless the company obtained a separate license from the participant.” Waiver Order at *60. As previously mentioned, however, the district court determined that the written JVT IPR policies “provide no express requirement to disclose patents unless a member submits a technical proposal.” Id. at *34.

On appeal, the threshold dispute between the parties is whether the written JVT IPR policies impose any disclosure duty on participants apart from the submission of technical proposals. Qualcomm argues that the written JVT IPR policies require disclosure only when a technical proposal is made, and that disclosure is merely encouraged from participants not submitting technical proposals. Broadcom, however, argues that the written policies of both the JVT and its parent organizations impose disclosure obligations on participants (apart from the submission of technical proposals). Additionally, Broadcom submits that, to the extent there is any ambiguity in the written policies, the understanding of the JVT participants controls.

One of the key inquiries regarding the meaning of the written JVT IPR policies centers on the following language of subsection 3.2 of the JVT ToR: “According to the ITU-T and ISO/IEC IPR policy, members/experts are encouraged to disclose as soon as possible IPR information (of their own or anyone else’s) associated with any standardization proposal (of their own or anyone else’s). Such information should be provided on a best effort basis.” J.A. 8176 (emphases added). Pointing to subsection 3.2, Qualcomm argues that the express language of the written JVT policies only requires disclosure when a technical proposal is made, and that disclosure is merely “encouraged” from participants not making technical proposals. Thus, Qualcomm argues that the district court erred in holding that Qualcomm waived patent rights by breaching an “unwritten” JVT disclosure duty. In addition to the language of subsection 3.2, Qualcomm points to the JVT patent disclosure form, which states: “JVT requires that all technical contributions be accompanied with this form. Anyone with knowledge of any patent affecting the use of JVT work, of their own or any other entity (‘third parties’), is strongly encouraged to submit this form as well.” J.A. 8179 (first, third, and fourth emphases added).

As Broadcom notes, however, subsection 3.2 expressly incorporates a “best effort[s]” standard. Appellee’s Br. 36; J.A. 8176 (stating that IPR “information should be provided on a best effort basis”). When asked at oral argument whether there is any evidence in the record that Qualcomm made any efforts, let alone best efforts, to disclose IPR information associated with any standardization proposal, Qualcomm responded, “No, we didn’t because we did not view that as imposing a duty on us.” Oral Arg. at 9:27, available at <http://oralarguments.cafc.uscourts.gov/mp3/2007-1545.mp3>.

On rebuttal, Qualcomm clarified this response by arguing that the use of best efforts is merely “encouraged,” not required. See Oral Arg. at 35:09, available at <http://oralarguments.cafc.uscourts.gov/mp3/2007-1545.mp3>; see also Appellant’s Br. 25 (“The use of best efforts to identify essential patents, like the disclosure thereof, is merely encouraged, not required.”).

We disagree with Qualcomm’s reading of subsection 3.2. While Qualcomm places much emphasis on the use of the word “encouraged” in subsection 3.2, we agree with Broadcom that, when considered in light of the relevant context, this language applies to the timing of the disclosure (i.e., “encouraged to disclose as soon as possible”), not the disclosure duty itself. Thus, while the language of the JVT IPR policies may not expressly require disclosure by all participants in all circumstances (e.g., if relevant IPR is not disclosed despite the use of best efforts), it at least incorporates a best efforts standard (even apart from the submission of technical proposals). By Qualcomm’s own admission, it did not present evidence of any efforts, much less best efforts, to disclose patents associated with the standardization proposal (of their own or anyone else’s) to the JVT prior to the release of the H.264 standard.

Moreover, in addition to the disclosure obligations provided in the JVT IPR policies, Qualcomm has disclosure obligations under the rules of the JVT parent organizations. Subsection 3.2 of the JVT IPR policies states that “the JVT Patent Disclosure form at the proposal stage does not have the same formal status as the final IPR declaration to the ITU TSB and ISO/IEC, which must be done in the approval process for the ITU-T Recommendation and ISO/IEC International Standard.” J.A. 8176 (emphasis added). Broadcom submits that the “must be done” language in subsection

3.2 is a mandatory final approval process requiring all participants to make disclosure prior to final approval of the standard. Indeed, Broadcom claims that Qualcomm made arguments to the trial court that should preclude it from arguing on appeal that there is not a “must be done” requirement. Specifically, Broadcom asserts that, in the following argument to the district court, Qualcomm conceded that JVT participants had a duty to disclose patents to the ISO/IEC and the ITU-T when a standard was approved:

There’s also some requirement language down here [in subsection 3.2 of the JVT policy] having to do with—there’s a must-be-done clause, must be done in the approval process. So if you’re participating when a standard is approved, then you have to submit a form to the parent bodies. But as I mentioned a moment ago and as I’ll get to later, Qualcomm wasn’t participating prior to approval, so this language didn’t apply.

J.A. 26421. We now know, however, that Qualcomm actually was participating in the JVT prior to approval of the H.264 standard. On appeal, Qualcomm responds that its trial counsel “acknowledged that the ‘must be done’ language is mandatory but did not make any representations as to the nature of the disclosure duty or what constitutes the relevant participation in parent organizations.” Appellant’s Reply Br. 8 n.1. Qualcomm’s trial counsel clearly indicated, however, that its position was, “if you’re participating when a standard is approved, then you have to submit a form to the parent bodies.”

J.A. 26421. We reject its contrary arguments on appeal.

The rules of the JVT parent organizations provide that an ITU-T and ISO/IEC “Patent Statement and Licensing Declaration” should be submitted separately to the ITU-T and ISO/IEC prior to final approval of a standard created by the JVT. Remedy Order at 1219. The ITU-T and ISO/IEC patent policy provides that “any party participating in the work of the ITU, ISO or IEC should” identify patents “embodied fully or partly” in a standard under consideration. Id. As the district court noted, this

language applies to Qualcomm as a “party participating in the work of the ITU, ISO or IEC.”³ Id. In light of the foregoing, we agree with the district court that JVT participants also had to disclose patents prior to final approval of a standard under the rules of the JVT parent organizations.⁴

In sum, we conclude that Qualcomm, as a participant in the JVT prior to the release of the H.264 standard, did have IPR disclosure obligations, as discussed above, under the written policies of both the JVT and its parent organizations.

³ Likewise, Broadcom argues that Section 2.14.2 of the ISO/IEC Directives applies to Qualcomm. Oral Arg. at 24:30, available at <http://oralarguments.cafc.uscourts.gov/mp3/2007-1545.mp3>; Appellee’s Br. 38. Section 2.14.2(a) of the ISO/IEC Directives states:

The originator of a proposal for a document shall draw the attention of the committee to any patent rights of which the originator is aware and considers to cover any item of the proposal. Any party involved in the preparation of a document shall draw the attention of the committee to any patent rights of which it becomes aware during any stage in the development of the document.

J.A. 11892-93. Broadcom also points to the ITU-T policy stating that “the patent holder has to provide a written statement to be filed at the [Telecommunications Standards Bureau] using the ITU-T ‘Patent Statement and Licensing Declaration’ form.” J.A. 11925; Appellee’s Br. 38. At oral argument, Qualcomm argued, however, that the ISO/IEC policy does not impose any more of a duty than otherwise would exist. Oral Arg. at 34:43, available at <http://oralarguments.cafc.uscourts.gov/mp3/2007-1545.mp3>.

⁴ Qualcomm notes that, while it did not disclose the ’104 and ’767 Patents to the JVT prior to adoption of the H.264 standard, it did disclose the technology covered by the asserted patents to a different project, the MPEG Digital Cinema project, in late 2001. It also notes that “[t]he MPEG disclosure was reviewed by [Gary] Sullivan, who subsequently chaired the JVT.” Appellant’s Br. 45. As Broadcom responds, however, Qualcomm cannot argue that its disclosure to the Digital Cinema project satisfies its disclosure duty to the JVT. Additionally, Broadcom argues that Qualcomm’s disclosure to the Digital Cinema project shows that there is no doubt that Qualcomm knew how to disclose these patents when it chose to disclose them in the development of another standard. We agree with Broadcom.

3. JVT Participants' Understanding of the JVT IPR Policies

Even if we were to read the written IPR policies as not unambiguously requiring by themselves the aforementioned disclosure obligations, our conclusion as to the disclosure obligations of JVT participants would nonetheless be the same. That is because the language of the JVT IPR policies coupled with the district court's unassailable findings and conclusions as to the JVT participants' understanding of the policies further establishes that the policies imposed disclosure duties on participants (apart from the submission of technical proposals). As previously discussed, even though the Rambus court determined that there was not an express disclosure duty in the JEDEC patent policy in that case, it treated the policy as imposing a disclosure duty because the members treated it as imposing a disclosure duty. Rambus, 318 F.3d at 1098.

In the present case, while the district court concluded that there was no express disclosure requirement in the written policies apart from the submission of technical proposals, it found "clear and convincing evidence that JVT participants treated the JVT IPR Policies as imposing a duty to disclose," Waiver Order at *34, and "that Qualcomm was aware of this treatment as early as August 2002," prior to the release of the H.264 standard in May 2003, Remedy Order at 1224. Specifically, the district court noted that, "like Rambus, in addition to the written guidelines, JVT participants also learned of the patent disclosure policy from attendance of JVT meetings." Waiver Order at *34. The district court considered witness testimony, including testimony from Qualcomm employees, indicating that it was the practice of the chairman of the JVT, Gary Sullivan, to discuss the JVT IPR policies at every meeting. The district court also considered

testimony indicating that JVT participants sometimes submitted disclosures without an accompanying technical proposal.

Qualcomm attempts to distinguish Rambus by arguing that the JEDEC patent policy in Rambus was silent as to whether members had a disclosure duty, while the written JVT IPR policies are “unambiguous,” Appellant’s Reply Br. 15, and “expressly specify disclosure duties only in conjunction with a submission,” Appellant’s Br. 28. Thus, Qualcomm argues that the district court erred by inferring a disclosure duty that is “directly contrary to the written JVT policy.” Appellant’s Br. 26. As previously discussed, however, we disagree with Qualcomm’s interpretation of the written JVT IPR policies in the present case. Moreover, even if we were to read the written IPR policies as not unambiguously requiring by themselves the aforementioned disclosure obligations, the disclosure duty found by the district court based on the understanding of the JVT participants is certainly not “directly contrary to the written JVT policy.” Id.

Having rejected Qualcomm’s argument that the understanding of JVT participants is contrary to the written JVT IPR policies, we are left with reviewing the sufficiency of the district court’s factual finding that JVT participants understood the JVT IPR policies as imposing a disclosure duty. Qualcomm argues that the evidence relied upon by the district court does not support its finding that the JVT participants understood the JVT IPR policies as imposing a disclosure duty. It asserts that Broadcom offered no testimony of the other JVT participants as to their understanding of the policy. Broadcom responds that it offered, inter alia, the testimony of Gary Sullivan (the JVT chair) and Stephen Gordon (a JVT participant) indicating that they understood the patent disclosure duty to be mandatory. Qualcomm offers a different

interpretation of this testimony, as well as the testimony expressly relied upon by the district court regarding the discussion of the JVT IPR policies at every meeting and the submission of disclosures without accompanying technical proposals. We are not persuaded, however, by Qualcomm's arguments that the district court's findings lacked sufficient evidentiary support, or that the evidence should be interpreted differently. The district court was in the best position to determine the significance and implications of the record testimony in the first instance, and the cited testimony provides sufficient evidentiary support for its findings.⁵

B. Scope of Disclosure Duty

Having concluded that Qualcomm, as a participant in the JVT prior to release of the H.264 standard, had a duty to disclose patents, we turn to the question of the scope of the disclosure duty. In Rambus, although the JEDEC IPR policy did not use the language "related to," the parties consistently agreed that the policy required disclosure of patents "related to" the standardization work of the committee. Rambus, 318 F.3d at 1098. The parties disagreed, however, in their interpretation of "related to." Id. at 1099. The court considered evidence regarding the JEDEC members' understanding of the JEDEC policy, and concluded that "Rambus's duty to disclose extended only to claims in patents or applications that reasonably might be necessary to practice the standard." Id. at 1100. The court reasoned that, "[t]o hold otherwise would contradict the record evidence and render the JEDEC disclosure duty unbounded. Under such an

⁵ Moreover, while we conclude that the district court's findings on this point were sufficiently supported by the record, we agree with Broadcom that Qualcomm's litigation misconduct in this case likely prevented Broadcom from obtaining further evidence regarding the understanding of other JVT participants.

amorphous duty, any patent or application having a vague relationship to the standard would have to be disclosed.” Id. at 1101. The court noted, “[j]ust as lack of compliance with a well-defined patent policy would chill participation in open standard-setting bodies, after-the-fact morphing of a vague, loosely defined policy to capture actions not within the actual scope of that policy likewise would chill participation in open standard-setting bodies.” Id. at 1102 n.10.

In the present case, the district court noted that the JVT IPR policies refer to IPR information “associated with” any standardization proposal or “affecting the use” of JVT work. Waiver Order at *27 (citing JVT ToR). Applying the reasoning of Rambus, the district court concluded that this language requires only that JVT participants disclose patents that “reasonably might be necessary” to practice the H.264 standard. Id. To hold otherwise, the district court explained, “would render the JVT disclosure duty inappropriately ‘unbounded,’ ‘amorphous,’ and ‘vague.’” Id.

On appeal, Qualcomm argues that we should reject the district court’s formulation of the “reasonably might be necessary” standard. Qualcomm characterizes the “reasonably might be necessary” formulation from Rambus as follows: “it must be reasonably clear at the time that the patent or application would actually be necessary to practice the standard.” Appellant’s Reply Br. 20 (emphasis removed) (citing Rambus, 318 F.3d at 1100). Thus, according to Qualcomm, when the Rambus court explained the standard in terms of whether the patent or application “reasonably might be necessary” to practice the standard, the court really meant that the patent or application must “actually be necessary” to practice the standard. Id. (emphasis added). Qualcomm submits that “[i]t is nonsensical to conceive that an SSO would require

disclosure to design a standard around a patent when the standard does not read on the patent in the first place.” Id. at 21-22.

We disagree with Qualcomm’s characterization of the standard applied in Rambus. The plain language used by the Rambus court (“reasonably might be necessary”) contradicts Qualcomm’s claim that the Rambus formulation requires that a patent must “actually be necessary” in order to trigger a disclosure duty. The Rambus court explained the “reasonably might be necessary” standard by stating that “the disclosure duty operates when a reasonable competitor would not expect to practice the standard without a license under the undisclosed claims.” Rambus, 318 F.3d at 1100-01. It further clarified that the “reasonably might be necessary” standard is an objective standard, which “does not depend on a member’s subjective belief that its patents do or do not read on the proposed standard.” Id. at 1104. Likewise, in the present case, we agree with the district court that the language requires JVT participants to disclose patents that “reasonably might be necessary” to practice the H.264 standard. This is an objective standard, which applies when a reasonable competitor would not expect to practice the H.264 standard without a license under the undisclosed claims. This formulation does not require that the patents ultimately must “actually be necessary” to practice the H.264 standard.

C. Breach of Disclosure Duty

Having concluded that the proper scope of the disclosure duty requires JVT participants to disclose patents that “reasonably might be necessary” to practice the H.264 standard, we next address the question of whether Qualcomm breached this disclosure duty. It is undisputed that Qualcomm did not disclose the ’104 and ’767

Patents to the JVT prior to the release of the H.264 standard. Thus, Qualcomm breached its disclosure duty if, as the district court found by clear and convincing evidence, the '104 and '767 Patents “reasonably might be necessary” to practice the H.264 standard.

As previously mentioned, the district court found clear and convincing evidence that the '104 and '767 Patents “reasonably might be necessary” to practice the H.264 standard.⁶ In reaching this conclusion, the district court relied on the testimony from several Qualcomm witnesses. For example, the district court relied on testimony from Qualcomm’s H.264 expert, who testified at trial that “the claims of the [’104] patent map onto the H.264 standard, so that devices or systems that practice H.264 actually practice claims of the 104 patent.” Waiver Order at *41. Additionally, inter alia, the district court relied on an email from a Qualcomm employee discussing the coverage of the '767 Patent, and describing it as a “core patent relevant to H.264.” Id. at *42.

Qualcomm argues that the finding of non-infringement here refutes any finding that it breached a disclosure duty. Broadcom responds, however, that it is inconsistent for Qualcomm to now argue that the asserted patents do not meet the “reasonably might be necessary” standard, when Qualcomm accused Broadcom’s products of infringement in this case solely because they practiced the H.264 standard. Broadcom also points to testimony of Qualcomm’s own JVT participants in support of its claim that

⁶ The district court refers to the standard in terms of “reasonably might be necessary,” “reasonably may be necessary,” and “reasonably may be essential.” Compare Waiver Order at *26 (“reasonably may be necessary”), *27 (“reasonably might be necessary”), and *40 (“reasonably may be essential”). We will refer to the standard in the terms used by the Rambus court, “reasonably might be necessary,” for consistency.

JVT participants considered that the asserted patents “reasonably might be necessary” to practice the H.264 standard.

On appeal, Qualcomm does not present any arguments comparing the asserted claims to the H.264 standard in an attempt to show that they do not meet the “reasonably might be necessary” formulation. Indeed, Broadcom argues that if Qualcomm truly believes that the asserted patents do not meet the “reasonably might be necessary” standard, then it necessarily lacked a Rule 11 basis to bring this litigation in the first place. Appellee’s Br. 48 (citing Fed. R. Civ. P. 11 (“By presenting to the court a pleading . . . an attorney . . . certifies that . . . (2) the claims, defenses, and other legal contentions are warranted by existing law . . . [and] (3) the factual contentions have evidentiary support . . .”))).

We are not persuaded by Qualcomm’s arguments on this point, and are unable to reconcile its ex post argument that the asserted patents do not meet the “reasonably might be necessary” standard with its ex ante arguments regarding infringement. Based on the foregoing, we conclude that the district court did not err in finding clear and convincing evidence that the ’104 and ’767 Patents fell within the “reasonably might be necessary” standard. Thus, the district court properly determined that Qualcomm breached its disclosure duty by failing to disclose the ’104 and ’767 Patents to the JVT prior to the release of the H.264 standard in May 2003.

Accordingly, we turn to the question of whether it was within the district court’s equitable authority to enter an unenforceability remedy in this case.

D. Equitable Remedies

The district court analyzed the consequence of Qualcomm's failure to disclose the '104 and '767 Patents under the framework of waiver as a consequence of silence in the face of a duty to speak. The parties disagree on whether waiver was the appropriate equitable framework, and whether the scope of the unenforceability remedy was within the district court's equitable authority.

1. Standard of Review

We review a district court's judgment on the equitable defense of waiver for an abuse of discretion. See A.C. Aukerman Co. v. R.L. Chaides Constr. Co., 960 F.2d 1020, 1028 (Fed. Cir. 1992) (en banc) ("As equitable defenses, laches and equitable estoppel are matters committed to the sound discretion of the trial judge and the trial judge's decision is reviewed by this court under the abuse of discretion standard."). We review issues of law involved in the district court's waiver judgment de novo. See Wang Labs., 103 F.3d at 1581. As this court has previously explained, we "may set aside a discretionary decision if the decision rests on an erroneous interpretation of the law or on clearly erroneous factual underpinnings. If such error is absent, the determination can be overturned only if the trial court's decision represents an unreasonable judgment in weighing relevant factors." A.C. Aukerman, 960 F.2d at 1039.

2. Waiver

First, we address the question of whether waiver was the appropriate equitable doctrine to apply in this case. Qualcomm argues that the district court's findings do not constitute waiver as a matter of law. It argues that "true waiver" requires a voluntary or intentional relinquishment of a known right.

Specifically, Qualcomm claims that the district court's findings in this case run directly contrary to any claim that Qualcomm intended to voluntarily waive its patent rights. On this point, we agree with Qualcomm. The following finding by the district court certainly suggests that Qualcomm did not intend to waive its patent rights:

The Court FINDS by clear and convincing evidence that Qualcomm intentionally organized a plan of action to shield the '104 and '767 patents from consideration by the JVT with the anticipation that (1) the resulting H.264 standard would infringe those patents and (2) Qualcomm would then have an opportunity to be an indispensable licensor to anyone in the world seeking to produce an H.264-compliant product.

Remedy Order at 1227. Therefore, rather than establishing that Qualcomm intentionally relinquished its rights, the district court's findings demonstrate that Qualcomm intentionally organized a plan to shield its patents from consideration by the JVT, intending to later obtain royalties from H.264-compliant products. Thus, in these circumstances, it appears that "true waiver" is not the appropriate framework.

As Broadcom notes, however, the district court's formulation of the law of waiver was not limited to "true waiver," but also addressed "implied waiver." Appellee's Br. 55.

The district court's advisory jury instruction stated:

In order to prove waiver, Broadcom must show by clear and convincing evidence either that Qualcomm, with full knowledge of the material facts, intentionally relinquished its rights to enforce the 104 and 767 patents or that its conduct was so inconsistent with an intent to enforce its rights as to induce a reasonable belief that such right has been relinquished.

Waiver Order at *32-33 (emphasis added). Broadcom submits that "[t]he second element of that instruction correctly states the long-established doctrine of implied waiver." Appellee's Br. 55.

Qualcomm responds that "[e]ven if a duty to disclose had been breached, this breach is best explained as negligence, oversight, or thoughtlessness, which does not

create a waiver.” Appellant’s Br. 52 (quotations omitted). In the present case, however, the district court found clear and convincing evidence that Qualcomm knew that the asserted patents “reasonably might be necessary” to practice that H.264 standard, and that it intentionally did not disclose them to the JVT. These findings demonstrate much more than “negligence, oversight, or thoughtlessness.”

As to implied waiver, Qualcomm argues that, “even if Broadcom had proven an intentional breach of the JVT disclosure duty, waiver could be inferred only if Qualcomm knew that nondisclosure alone would (with no detrimental reliance by any party) necessarily result in the loss of those rights.” Appellant’s Br. 52. While Qualcomm argues that implied waiver requires that a party have knowledge that its actions would “necessarily” result in the loss of rights, the case that Qualcomm cites as support for this argument states that “[w]here waivers are permissible, they are often enforced only if the waiver was knowing or intelligent, which means the individual has sufficient awareness of the relevant circumstances and likely consequences of his decision.” Clark v. Capital Credit & Collection Servs., 460 F.3d 1162, 1170-71 (9th Cir. 2006) (quotations and citations omitted). The Clark case also makes clear that waiver depends on the right at issue. There was a different right at issue in Clark, based on a different statutory scheme, in a much different context than the present case. Thus, we are not convinced that the Clark analysis is particularly helpful here. Additionally, we note that the district court’s findings in the present case—including that Qualcomm knew JVT participants treated the JVT policies as imposing a duty, that it knew the asserted patents “reasonably might be necessary” to practice the H.264 standard, and that it intentionally shielded the patents from consideration by the JVT—demonstrate

that Qualcomm had sufficient awareness of the relevant circumstances. Moreover, even if Qualcomm did not know that the asserted patents would “necessarily” be held unenforceable as a result of a breach of its disclosure duty, we conclude that alone would not shield it from the application of implied waiver in the SSO context where the district court found intentional nondisclosure in the face of a duty to speak.⁷

Qualcomm also argues that any “nondisclosure did not cause any harm to Broadcom or any other entity.” Appellant’s Br. 55. Qualcomm submits that there is no harm because (1) “the jury’s non-infringement verdict conclusively establishes” that the asserted patents are not needed to produce H.264-compliant products, and (2) even if the asserted patents were needed to practice the H.264 standard, Qualcomm would be willing to license them. Appellant’s Br. 56. We disagree. Even if Qualcomm agreed not to pursue an injunction in this case, injunctions are not the only type of harm. Forcing a party to accept a license and pay whatever fee the licensor demands, or to undergo the uncertainty and cost of litigation (which in this case was substantial), are significant burdens.

Qualcomm further argues that “[t]he district court never found detrimental reliance by Broadcom because of its misconception that such reliance is not an element of a defense premised on conduct that allegedly is objectively misleading to a reasonable person.” Appellant’s Reply Br. 25. In essence, it appears that Qualcomm

⁷ Indeed, as previously mentioned, here the district court found clear and convincing evidence that

Qualcomm intentionally organized a plan of action to shield the ’104 and ’767 patents from consideration by the JVT with the anticipation that (1) the resulting H.264 standard would infringe those patents and (2) Qualcomm would then have an opportunity to be an indispensable licensor to anyone in the world seeking to produce an H.264-compliant product.

wants to benefit from its intentional nondisclosure of the asserted patents by arguing that Broadcom cannot succeed on an implied waiver defense without specific findings as to detrimental reliance by Broadcom.

We disagree with Qualcomm's contention that the district court's findings in this case were insufficient to support the application of an implied waiver defense. The district court found that JVT participants understood the JVT IPR policies as imposing a disclosure duty, that Qualcomm participated in the JVT prior to release of the H.264 standard, and that Qualcomm was silent in the face of its disclosure duty. Indeed, the district court stated that "participants in the JVT project shared the aims and policies of the JVT and considered themselves obligated to identify IPR owned or known by them, whether or not they made technical proposals for study." Waiver Order at *60. As the district court noted, "Broadcom, ignorant of the existence of the '104 and '767 patents, designed and is in the process of manufacturing numerous H.264-compliant products." Remedy Order at 1248. In light of the record in this case in its entirety, it would be improper to allow Qualcomm to rely on the effect of its misconduct to shield it from the application of the equitable defense of implied waiver.⁸

In sum, we agree with the district court that, "[a] duty to speak can arise from a group relationship in which the working policy of disclosure of related intellectual

Remedy Order at 1227.

⁸ We note that Qualcomm argues that "Broadcom's conception of waiver would swallow the law of equitable estoppel." Appellant's Reply Br. 24. While equitable estoppel may generally be an appropriate legal framework for analysis of breaches of disclosure duties in the SSO context, as Broadcom points out, that does not preclude the same underlying conduct from satisfying the defense of implied waiver. As previously discussed, the district court's findings in this case as to Qualcomm's intentional nondisclosure in the face of a duty to speak fully support the application of implied waiver.

property rights ('IPR') is treated by the group as a whole as imposing an obligation to disclose information in order to support and advance the purposes of the group.” Waiver Order at *19-20. Not only did the district court find that Qualcomm was silent in the face of a disclosure duty in the SSO context, it also found clear and convincing evidence that Qualcomm had knowledge, prior to the adoption of the H.264 standard in May 2003, that the JVT participants understood the policies as imposing a disclosure duty, that the asserted patents “reasonably might be necessary” to practice the H.264 standard, and that Qualcomm intentionally organized a plan to shield said patents from consideration by the JVT, planning to demand license fees from those seeking to produce H.264-compliant products. Then, after participating in the JVT and shielding the asserted patents from consideration during development of the H.264 standard, Qualcomm filed a patent infringement lawsuit against Broadcom, alleging infringement primarily, if not solely, based on Broadcom’s H.264 compliance. In these circumstances, we conclude that it was within the district court’s authority, sitting as a court of equity, to determine that Qualcomm’s misconduct falls within the doctrine of waiver.

3. Equitable Estoppel

There remains the question of whether, even if implied waiver did not apply here, Qualcomm’s conduct falls within another equitable doctrine—equitable estoppel. Indeed, Qualcomm argues that equitable estoppel, rather than waiver, in appropriate circumstances is the proper remedy for breach of SSO disclosure duties. Appellant’s Br. 54 (“This Court and others have recognized that equitable estoppel, in appropriate

circumstances, is the proper defense when patent disclosure obligations to SSOs are breached.”). Qualcomm claims that Broadcom chose not to pursue equitable estoppel at trial, however, and is foreclosed from raising equitable estoppel on appeal because it did not cross-appeal the preclusion of that defense. We disagree.

At oral argument, Qualcomm’s counsel asserted that Broadcom cannot now press an equitable estoppel defense because it “chose as a tactical matter to pursue this as a matter of waiver and not as a matter of equitable estoppel.” Oral Arg. at 6:35, available at <http://oralarguments.cafc.uscourts.gov/mp3/2007-1545.mp3>. Broadcom responded, however, by noting that it attempted to raise equitable estoppel as a defense at the trial court, but Qualcomm opposed the addition of this defense, asserting that there is no legal or factual basis for the application of equitable estoppel in this case. Broadcom argues, “Qualcomm cannot withhold evidence of its JVT participation, successfully oppose Broadcom’s equitable estoppel defense making false factual assertions about its JVT participation, and then complain that its JVT misconduct is more amenable to an equitable estoppel defense than a waiver defense.” Appellee’s Br. 57.

In its answer to the complaint, Broadcom included the equitable defenses of waiver, laches, and “other applicable equitable doctrines.” Qualcomm then incorrectly asserted throughout discovery that it never participated in the JVT. As a result of Broadcom’s investigation, however, it discovered a single publicly available document—a December 2002 membership list for a JVT subcommittee including the email address of a Qualcomm employee—indicating that Qualcomm had indeed participated in the JVT prior to the release of the H.264 standard. Broadcom then submitted an

interrogatory answer contending that Qualcomm is barred by, inter alia, the doctrines of equitable estoppel and implied license. Qualcomm subsequently moved for summary judgment on Broadcom's defenses of waiver, equitable estoppel, and implied license. In support of its summary judgment motion, Qualcomm argued that Broadcom did not sufficiently plead equitable estoppel or implied license, but even if it had there is no basis for these defenses because Qualcomm did not participate in the JVT prior to the release of the H.264 standard. Remedy Order at 1240 (noting that Qualcomm's motion for summary judgment stated, "[t]he facts are undisputed: QUALCOMM employees never participated, in any form, in the JVT until after the H.264 standard was already released," and, "[t]here is no evidence that any QUALCOMM participant knew of the applicability of the patents-in-suit to the H.264 standard prior to the initiation of this lawsuit"). Thus, Qualcomm represented to the district court that there was no basis for equitable estoppel or implied license because there was no basis for them in the facts and because they were insufficiently pled.

Broadcom submits that "if Qualcomm had produced during discovery the 46,000 documents showing its participation in the JVT, the district court would almost surely have permitted Broadcom to amend its answer to assert equitable estoppel, as Broadcom was permitted to do when new evidence of inequitable conduct came to light." Appellee's Br. 56-57. We agree with Broadcom that Qualcomm cannot withhold evidence of its JVT participation, make false factual assertions about this participation to the district court in opposition to Broadcom's equitable estoppel defense, and then argue on appeal that Broadcom failed to sufficiently plead equitable estoppel. Surely Qualcomm cannot expect to benefit by concealing documents, misrepresenting facts

throughout trial, and then claiming ex post that Broadcom should have raised a similar equitable doctrine earlier. Although Broadcom's pleadings may have been deficient in certain respects, such deficiencies were caused, in significant measure, by Qualcomm's failure to disclose its participation in the H.264 standard-setting process. Under such extraordinary circumstances, any deficiencies in Broadcom's pleadings should not permit Qualcomm to escape the consequences of its malfeasance.

We also reject Qualcomm's argument that Broadcom cannot rely on equitable estoppel in this case because Broadcom did not cross-appeal the district court's preclusion of that defense. A cross-appeal would be improper here because the alternative doctrine of equitable estoppel would not enlarge the judgment relative to the doctrine of waiver relied upon by the district court. See Voda v. Cordis Corp., 536 F.3d 1311, 1324 n.4 (Fed. Cir. 2008) (stating that "where an argument is merely an alternative basis to support a judgment of infringement, it is not a proper basis for cross-appeal and should be dismissed"); Howmedica Osteonics Corp. v. Wright Med. Tech., Inc., 540 F.3d 1337, 1343 n.2 (Fed. Cir. 2008) (noting that the court "dismissed [a party's] cross-appeal as improper because it did not seek to enlarge the judgment but merely asserted an alternative ground to affirm the judgment"). Thus, Broadcom properly raised equitable estoppel as an alternative ground to uphold the judgment, rather than a cross-appeal.

Broadcom submits:

If this Court determines that Broadcom's waiver defense should have been in the form of equitable estoppel, the proper remedy is to remand to the district court with instructions to amend the pleadings to conform to the evidence pursuant to Rule 15(b), or, alternatively, remand to the district court with instructions to reinstate Broadcom's equitable estoppel defense,

to reopen discovery on Qualcomm's JVT misconduct, and to conduct a separate hearing on that defense.

Appellee's Br. 57 n.16. We agree with Broadcom that it is entitled to a remand with respect to equitable estoppel. However, because of our conclusion with respect to waiver, a remand to address equitable estoppel is not necessary here.

4. Unenforceability Remedy

In its March 21, 2007 order, after finding that Qualcomm waived its rights to enforce the asserted patents against H.264 products by silence in the face of a disclosure duty, the district court discussed the proper remedy to apply in this case. The district court was unable to find guidance for an equitable remedy of waiver by a patentee, but it noted that "[i]nequitable conduct by an inventor and his/her agents before the PTO may result in a decree of unenforceability of the patent, but the remedy depends on equitable considerations arising from the circumstances involved." Waiver Order at *61. The court reasoned that an equitable remedy to a finding of waiver should not be automatic; rather, it should be fashioned to give a fair, just and equitable response reflective of the offending conduct. Id. at *62. In light of this, the district court considered the extent of the materiality of the withheld information and the circumstances of the nondisclosure relating to the JVT proceedings. Id.

The district court noted that the "theoretical remedies that appear vary from total unenforceability of the patents to no sanction of any kind." Id. The court stated:

The Court sees the obvious connection between the '104 and '767 patents and H.264 compliant products. Therefore, the Court is inclined to consider a remedy consisting of (1) independent unenforceability of the '104 and '767 patents against any H.264 compliant products, and (2) inclusion of the '104 and '767 patents in the MPEG LA patent pool, which receives royalties from H.264 compliant producers that are divided between all owners of patents related to the H.264 standard who are members of the pool.

Id. at *62-63. The court did not decide which remedy to apply in its March 21, 2007 order. Instead, it scheduled an Order to Qualcomm to Show Cause why it should not order the aforementioned remedy. Id. at *63.

On August 6, 2007, after a hearing on the Order to Show Cause, the district court entered an Order on Remedy for Finding of Waiver, ordering the '104 and '767 Patents (and their continuations, continuations-in-part, divisions, reissues, and any other derivatives thereof) unenforceable against the world. In reaching this conclusion, the district court rejected Qualcomm's argument that Broadcom may not have any remedies beyond itself, because it raised waiver as an affirmative defense rather than as a counterclaim or cross-claim. The district court noted that this court has upheld the unenforceability of a patent to the world due to inequitable conduct even when pled as an affirmative defense. Remedy Order at 1217 (citing McKesson Info. Solutions, Inc. v. Bridge Med., Inc., 487 F.3d 897, 908, 926 (Fed. Cir. 2007); Semiconductor Energy Lab. Co. v. Samsung Elecs. Co., 204 F.3d 1368, 1372, 1378 (Fed. Cir. 2000); Refac Int'l. Ltd. v. Lotus Dev. Corp., 81 F.3d 1576, 1578, 1585 (Fed. Cir. 1996)).

Qualcomm argues that the remedy of unenforceability entered on Broadcom's defense of waiver is contrary to law. It submits that once the jury returned a non-infringement verdict the district court lacked any legal basis to consider the affirmative defense of waiver. It appears to base this argument largely on the fact that Broadcom pled waiver only as an affirmative defense, as opposed to a counterclaim. Thus, Qualcomm argues that, because waiver was pled as an affirmative defense, it cannot result in a judgment of unenforceability. We disagree. It was entirely appropriate for the district court to address the defense of waiver after the jury returned a non-infringement

verdict. As the district court noted, this court has upheld judgments of unenforceability based on inequitable conduct even where pled as an affirmative defense. We see no reason why an affirmative defense of waiver cannot similarly result in a judgment of unenforceability.

Broadcom also submits that “[t]he district court, sitting in equity, had the authority to grant relief as a result of Qualcomm’s conduct.” Appellee’s Br. 57. By analogy, it claims that successful assertion of the defenses of inequitable conduct, equitable estoppel, and patent misuse has resulted in unenforceability judgments. In response to Broadcom’s analogy to inequitable conduct, Qualcomm argues “the rationale for a remedy of unenforceability for inequitable conduct before the PTO—that such conduct taints the property right ab initio—is simply not present for waiver based on post-PTO conduct before a private SSO.” Appellant’s Reply Br. 27. In response to the patent misuse analogy, Qualcomm states that “[w]hen patent misuse is proven, a court may temporarily suspend the owner’s ability to enforce the patent while the improper practice and its effects remain ongoing.” Id.

In addition to the analogy to inequitable conduct, we find the remedy of unenforceability based on post-issuance patent misuse instructive in this case. As Qualcomm notes, the successful assertion of patent misuse may render a patent unenforceable until the misconduct can be purged; it does not render the patent unenforceable for all time. Appellant’s Reply Br. 27. In B. Braun Medical, Inc. v. Abbott Laboratories, this court stated:

[T]he patent misuse doctrine is an extension of the equitable doctrine of unclean hands, whereby a court of equity will not lend its support to enforcement of a patent that has been misused. Patent misuse arose, as an equitable defense available to the accused infringer, from the desire to

restrain practices that did not in themselves violate any law, but that drew anticompetitive strength from the patent right, and thus were deemed to be contrary to public policy. When used successfully, this defense results in rendering the patent unenforceable until the misuse is purged.

124 F.3d 1419, 1427 (Fed. Cir. 1997) (citations and quotations omitted); see also C.R. Bard. Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1372 (Fed. Cir. 1998) (“Patent misuse arises in equity, and a holding of misuse renders the patent unenforceable until the misuse is purged; it does not, of itself, invalidate the patent.”). In light of the foregoing, we agree with Qualcomm that patent misuse does not render a patent unenforceable for all time. Contrary to Qualcomm’s arguments, however, the limited scope of unenforceability in the patent misuse context does not necessarily lead to the conclusion that an unenforceability remedy is unavailable in the waiver context in the present case. Instead, we conclude that a district court may in appropriate circumstances order patents unenforceable as a result of silence in the face of an SSO disclosure duty, as long as the scope of the district court’s unenforceability remedy is properly limited in relation to the underlying breach.

While the scope of an unenforceability remedy in the patent misuse context is limited to rendering the patent unenforceable until the misuse is purged, the scope of the district court’s unenforceability remedy in the present case was not limited in relation to Qualcomm’s misconduct in the SSO context. The basis for Broadcom’s waiver defense was Qualcomm’s conduct before the JVT during development of the H.264 standard, including intentional nondisclosure of patents that it knew “reasonably might be necessary” to practice the standard. The district court correctly recognized that the remedy for waiver in the SSO context should not be automatic, but should be fashioned to give a fair, just, and equitable response reflective of the offending conduct. In

determining the appropriate equitable remedy in this case, the district court properly considered the extent of the materiality of the withheld information and the circumstances of the nondisclosure relating to the JVT proceedings. While we agree with the district court that there is an “obvious connection between the ’104 and ’767 patents and H.264 compliant products,” we do not discern such a connection between the asserted patents and products that are not H.264-compliant, and neither party points us to any such connection. Waiver Order at *62.

Accordingly, based on the district court’s findings, the broadest permissible unenforceability remedy in the circumstances of the present case would be to render the ’104 and ’767 Patents (and their continuations, continuations-in-part, divisions, reissues, and any other derivatives thereof) unenforceable against all H.264-compliant products (including the accused products in this case, as well as any other current or future H.264-compliant products). Accordingly, we vacate the unenforceability remedy and remand with instructions to enter an unenforceability remedy limited in scope to any H.264-compliant products.

E. Exceptional Case Determination

Under 35 U.S.C. § 285, a district court “in exceptional cases may award reasonable attorney fees to the prevailing party.” An exceptional-case finding must be established by clear and convincing evidence. Forest Labs., Inc. v. Abbott Labs., 339 F.3d 1324, 1327 (Fed. Cir. 2003). In review of a § 285 exceptional case determination, we review the district court’s underlying factual findings for clear error and its legal conclusions without deference. Rambus, 318 F.3d at 1088. The district court’s

determination of the award appropriate in an exceptional case is reviewed for an abuse of discretion. Id.

Finding that Broadcom established this to be an exceptional case by clear and convincing evidence, the district court awarded Broadcom its attorney fees. As both parties agree, the district court based its § 285 exceptional case determination both on Qualcomm's (1) "bad faith participation" in the JVT, and (2) "litigation misconduct . . . during discovery, motions practice, trial, and post-trial proceedings." Exceptional Case Order at *7.

Qualcomm argues that the district court's award of attorney fees associated with the exceptional case determination must be vacated because it is based in part on Qualcomm's JVT-related activities. First, Qualcomm claims that the JVT misconduct findings are clear error. Second, Qualcomm argues that a patentee's bad-faith business conduct toward an accused infringer prior to litigation does not warrant a finding of exceptionality, and that at a minimum we should vacate and remand for the district court to reform the award to excise the JVT-misconduct findings.

First, the district court's JVT findings are not clear error. The district court was in the best position to determine the significance and implications of the record testimony in the first instance, and the cited testimony provides ample evidentiary support for its findings regarding JVT misconduct. For example, in support of its JVT misconduct findings, the district court relied upon emails between Qualcomm employees suggesting "extending" Qualcomm's patents in order to cover the standard being developed by the JVT. Remedy Order at 1228. The district court also relied upon emails suggesting "monitoring" the JVT "from a distance" and refraining from making any submissions,

which would include patent disclosures, to a JVT parent body. Id. The district court discussed these and many other pieces of evidence relating to the JVT misconduct in detail in its opinions. We are not persuaded by Qualcomm's claim that the cited evidence was insufficient.

Second, as previously discussed, the district court found clear and convincing evidence that Qualcomm intentionally organized a plan of action to shield the '104 and '767 Patents from consideration by the JVT with the anticipation that it would then have the opportunity to become an indispensable licensor to anyone in the world seeking to produce H.264-compliant products. The district court's litigation misconduct findings—which were based on the repeated false claims during discovery, trial, and post-trial, by Qualcomm's attorneys and witnesses that Qualcomm did not participate in the JVT in the development of the H.264 standard—represented the culmination of this plan. Qualcomm is correct that this court has refused to uphold an exceptional case award “based on a patentee's bad-faith business conduct toward an accused infringer prior to litigation.” Forest Labs, 339 F.3d at 1329. In our view, the litigation misconduct findings were sufficient standing alone to support the exceptional case determination here, and in the circumstances of the present case it was not error for the district court to additionally consider the related JVT misconduct, which was an important predicate to understanding and evaluating the litigation misconduct.

III. CONCLUSION

Based on the foregoing analysis, we agree with the district court that Qualcomm had a duty to disclose the asserted patents to the JVT, that it breached its disclosure duty, and that Broadcom was entitled to an award of attorney fees associated with the

court's exceptional case determination. Because the scope of the remedy of unenforceability as applying to the world was too broad, however, we vacate the unenforceability judgment and remand with instructions to narrow the scope of unenforceability to H.264-compliant products. Accordingly, we affirm-in-part (duty to disclose, breach of duty, exceptional case determination), vacate-in-part (unenforceability scope), and remand.

AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED