NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

INTEL CORPORATION,
Appellant

v.

QUALCOMM INCORPORATED,
Appellee

2020-2092, 2020-2093

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2019-00128, IPR2019-00129.

Decided: March 24, 2022

GREGORY H. LANTIER, Wilmer Cutler Pickering Hale and Dorr LLP, Washington, DC, argued for appellant. Also represented by DAVID LANGDON CAVANAUGH, CLAIRE HYUNGYO CHUNG, THOMAS SAUNDERS; BENJAMIN S. FERNANDEZ, Denver, CO; JAMES M. LYONS, Boston, MA.

ISRAEL SASHA MAYERGOYZ, Jones Day, Chicago, IL, argued for appellee. Also represented by THOMAS W. RITCHIE; ROBERT BREETZ, DAVID B. COCHRAN, JOSEPH M. SAUER,

Cleveland, OH; KELLY HOLT, New York, NY; JENNIFER L. SWIZE, Washington, DC.

Before NEWMAN, REYNA, and CHEN, *Circuit Judges*.

REYNA, *Circuit Judge*.

Appellant Intel Corporation appeals two final written decisions by the Patent Trial and Appeal Board finding that Intel failed to show that certain claims of U.S. Patent No. 9,154,356 are unpatentable as anticipated or obvious. Intel contends that the Board misconstrued the claim term "carrier aggregation" and that it committed legal and factual error in finding no motivation to combine the asserted prior art. We hold that the Board's final written decisions are contrary to law and unsupported by substantial evidence. The decisions of the Board are therefore reversed.

BACKGROUND

Appellee Qualcomm Incorporated owns U.S. Patent No. 9,154,356 (the "'356 Patent"), titled "Low noise amplifiers for carrier aggregation." The '356 Patent is directed to a device and method for receiving wireless communications over multiple carrier signals. *See* '356 Patent, Abstract.

A typical wireless communication may involve combining ("multiplexing") an information signal with a carrier signal, transmitting the multiplexed signal to a wireless receiver, then removing the carrier signal ("de-multiplexing") from the information signal to arrive at the communicated message. *See generally* J.A. 11, 56, 2398–99, 2424, 5211–12. Often, a receiver will process the message signal through a low-noise amplifier ("LNA")—a component that amplifies the information signal while keeping noise to a minimum. *See* '356 Patent col. 3 ll. 60–61; J.A. 1018, 2402.

Carrier signals help ensure that communications are sent via designated frequency channels. *See* J.A. 1013–14.

Each frequency channel has a corresponding maximum data rate that limits the amount of information that can be transmitted over a certain period of time. J.A. 2397–98, 2423. One way to increase the maximum data rate of an overall communications system is to split a message into parts that are then transmitted simultaneously using multiple carrier signals over multiple frequency channels. J.A. 2398–99, 2403, 2423–24, 2427–28, 2430, 2442. If a receiver can compile the segmented pieces of a message upon receipt, the communication system is no longer limited to the bandwidth and corresponding data rate of a single channel. This process can be referred to as carrier aggregation. *Id.*

The '356 Patent discloses a receiver with a multiple-LNA structure that is equipped to receive a carrier-aggregated signal. Claim 1 is representative:

> 1. An apparatus comprising:
>
> > a first amplifier stage configured to be independently enabled or disabled, the first amplifier stage further configured to receive and amplify an input radio frequency (RF) signal and provide a first output RF signal to a first load circuit when the first amplifier stage is enabled, the input RF signal employing *carrier aggregation* comprising transmissions sent on multiple carriers at different frequencies to a wireless device, the first output RF signal including at least a first carrier of the multiple carriers; and
> >
> > a second amplifier stage configured to be independently enabled or disabled, the second amplifier stage further configured to receive and amplify the input RF signal and provide a second output RF signal to a second load circuit when the second

> amplifier stage is enabled, the second output RF signal including at least a second carrier of the multiple carriers different than the first carrier.

'356 Patent col. 20 ll. 42–61 (emphasis added).

PROCEDURAL HISTORY

On November 9, 2018, Intel filed two petitions for inter partes review ("IPR") challenging the claims of the '356 Patent. *See* J.A. 9 n.5, 54 n.6. In IPR2019-00128, Intel challenged claims 1, 7, 8, 11, 17, and 18 as anticipated by U.S. Patent Application Publication No. 2012/0056681 ("Lee") or obvious over the combination of Lee and a technical report published by a telecommunications standard-setting body, Third Generation Partnership Project (the "Feasibility Study"). J.A. 4005–89. In IPR2019-00129, Intel challenged claims 2–6 and 10 as obvious over Lee or over the combination of Lee and the Feasibility Study. J.A. 5005–93.[1]

On May 27, 2020, the Board issued two final written decisions in which it construed the disputed claim term, "carrier aggregation."[2] J.A. 1–42, 46–89. Intel argued, citing the specification, that "carrier aggregation" should be broadly construed to mean "simultaneous operation on multiple carriers." *See* J.A. 9–10, 54–55; *see also* '356 Patent col. 1 ll. 32–33 ("A wireless device may support carrier aggregation, which is simultaneous operation on multiple carriers."). The Board rejected that construction as overly

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[1] Although Intel asserted additional grounds for invalidation in both IPRs, we do not address those grounds as they are moot in light of our decision here.

[2] On June 4, 2020, the Board issued two Errata to the final written decisions to correct recitations of the claim language. J.A. 43–45, 90–92. The changes have been taken into account in this opinion.

broad. Instead, the Board relied on the specification, prosecution history, intrinsic record, and contemporaneous extrinsic evidence to construe "carrier aggregation" to mean "simultaneous operation on multiple carriers that are combined as a single virtual channel to provide higher bandwidth." J.A. 9–27, 54–72.

The parties agreed that the Feasibility Study discloses carrier aggregation (as construed by the Board) and that Lee discloses all other elements of claim 1. *See* Appellant's Br. 46–47; J.A. 1628, 1684. Thus, the Board's decisions turned on whether a person of ordinary skill in the art ("POSITA") would have been motivated to combine the Feasibility Study with Lee to arrive at the claimed invention. *See* J.A. 35–37, 80–81.

To establish motivation to combine, Intel proffered declaration testimony from its expert, Dr. Fay, explaining that the Feasibility Study contemplates the application of carrier aggregation to LTE technology to achieve "LTE-Advanced." *See* J.A. 1092–94 ("LTE-Advanced extends LTE release 8 with support for *Carrier Aggregation*, where two or more *component carriers* (CC) are aggregated in order to support wider transmission bandwidths up to 100MHz and for spectrum aggregation." (quoting Feasibility Study)). According to Dr. Fay, the Feasibility Study explains that the benefits of carrier aggregation can be obtained by using a receiver with "multiple RF front-ends." J.A. 1093–94. Dr. Fay testified that the Feasibility Study teaches every RF front-end contains a low-noise amplifier, so a POSITA would understand that the Feasibility Study effectively recommends the use of something like the circuit of Lee—which discloses a multi-LNA receiver. J.A. 1093–94.

Despite Dr. Fay's testimony, the Board found that Intel "d[id] not adequately address why or how [a POSITA] would have considered using the Feasibility Study's carrier aggregated signal with Lee's amplifier blocks, when Lee

does not teach combining carriers as a single virtual channel." J.A. 39; *see also* J.A. 84. The Board rejected Intel's argument as "overly generic" and noted that Intel "d[id] not explain why or how using Lee's particular circuitry would be necessary 'to achieve [the] benefits and unlock the features of LTE Advanced.'" *Id.* The Board concluded that Intel had not met its burden to show that a POSITA would be motivated to combine the Feasibility Study with Lee and, consequently, that Intel failed to show unpatentability of the challenged claims. J.A. 41, 86. Intel appeals the Board's decisions. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

STANDARD OF REVIEW

We review the Board's legal conclusions de novo and its factual findings for substantial evidence. *ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1365 (Fed. Cir. 2016). Substantial evidence "means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000) (quoting *Consol. Edison Co. of N.Y., Inc. v. NLRB*, 305 U.S. 197, 229–30 (1938)).

Obviousness is a question of law with underlying factual issues relating to the "scope and content of the prior art, differences between the prior art and the claims at issue, the level of ordinary skill in the pertinent art, and any objective indicia of non-obviousness." *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (citing *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966)). "The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact," which, as noted above, we review for substantial evidence. *Par Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1196 (Fed. Cir. 2014) (quoting *Alza Corp. v. Mylan Lab'ys, Inc.*, 464 F.3d 1286, 1289 (Fed. Cir. 2006)).

DISCUSSION

I

As a threshold matter, we first address Qualcomm's contention that Intel lacks standing to appeal the Board's final written decisions on grounds that Intel fails to establish a non-speculative risk of an infringement suit by Qualcomm. Appellee's Br. 22–33.

This is not the first time this court has addressed this standing issue between these parties. In two prior cases, we found Intel had standing on appeal based on the fact that Qualcomm sued Apple Inc. for infringement of the patent at issue, and that a main component of the accused products identified in Qualcomm's infringement contentions was manufactured by Intel. Appellant's Reply Br. 24–30. *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 808 (Fed. Cir. 2021) (determining that Intel had standing to bring its appeals); *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 789–90 (Fed. Cir. 2021) (same). We see no reason to find otherwise in this appeal. As such, Intel has demonstrated a non-speculative risk of being sued by Qualcomm for infringement and therefore has standing to bring this appeal. *See Grit Energy Sols., LLC v. Oren Techs., LLC*, 957 F.3d 1309, 1319–20 (Fed. Cir. 2020). We now turn to the merits of Intel's appeal.

II

On appeal, Intel challenges the Board's construction of the claim term "carrier aggregation," as well as the Board's finding of no motivation to combine the asserted prior art. *See* Appellant's Br. 28–45. We conclude that the Board committed legal and factual error in assessing motivation to combine Lee with the Feasibility Study, even under the Board's construction of "carrier aggregation."

Obviousness requires, among other things, a finding that a skilled artisan would have been motivated to combine the teachings of prior art to arrive at the claimed

invention. *See OSI Pharms., LLC v. Apotex Inc.*, 939 F.3d 1375, 1382 (Fed. Cir. 2019) (quoting *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir 2018)). The inquiry into the existence of a motivation to combine is a flexible one—we assume a POSITA is a person of ordinary creativity with common sense, common wisdom, and common knowledge. *See Fleming v. Cirrus Design Corp.*, No. 21-1561, — F.4th —, 2022 WL 710549, at *6 (Fed. Cir. 2022) (citing *Randall Mfg.*, 733 F.3d at 1362; *KSR*, 550 U.S. at 421). In light of a POSITA's knowledge and creativity, an obviousness determination does not require prior art to expressly state a motivation for every obvious combination. *See, e.g.*, *id.* Moreover, there is no requirement that a motivation to combine must be separately expressed in *each* prior art reference.

Here, the Board rejected Intel's position on grounds that Intel "d[id] not adequately address why an ordinarily skilled artisan would have considered using the Feasibility Study's carrier aggregated signal with Lee's amplifier blocks, *when Lee does not teach combining carriers as a single virtual channel*." J.A. 39, 84 (emphasis added). But whether Lee teaches carrier aggregation is immaterial because, as the parties agree, the Feasibility Study teaches carrier aggregation. The Board's requirement that both references teach carrier aggregation was error.

Furthermore, the Board erred insofar as it penalized Intel for failing to "explain why or how using Lee's *particular circuitry* would be *necessary* 'to achieve [the] benefits and unlock the features of LTE Advanced.'" J.A. 39, 84 (emphases added). This court has recognized that an obviousness showing "does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention." *Novartis Pharms. Corp. v. West-Ward Pharms. Int'l Ltd.*, 923 F.3d 1051, 1059 (Fed. Cir. 2019) (quoting *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004)). Intel was required to show only that

"'there is something in the prior art as a whole to suggest the *desirability* . . . of making the combination,' not whether there is something in the prior art as a whole to suggest that the combination is the *most desirable* combination available." *Fulton*, 391 F.3d at 1200 (quoting *In re Beattie*, 974 F.2d 1309, 1311 (Fed. Cir. 1992)).

Applying the appropriate legal standard, the asserted prior art discloses the desirability of combining the Feasibility Study with Lee to reach the claimed invention in order to claim the benefit of carrier aggregation: more bandwidth. As identified by Intel's expert, the Feasibility Study expressly contemplates the benefits of carrier aggregation as applied in the LTE context, and that those benefits could be achieved by using a receiver with multiple RF front ends. Dr. Fay also explained that every RF front end contains a low-noise amplifier, so a skilled artisan would understand that the Feasibility Study effectively recommends combining carrier aggregation with a device like the receiver taught in Lee, which is a multi-LNA receiver. J.A. 1093–94. Whether Lee presents the best combination to achieve the claimed invention is irrelevant. *See Novartis*, 923 F.3d at 1059.

The evidence of record clearly shows a skilled artisan would have been motivated to achieve the benefits of carrier aggregation with a multi-LNA receiver like Lee's. Accordingly, we reverse the Board's finding of no motivation to combine. *See Corning v. Fast Felt Corp.*, 873 F.3d 896, 902–03 (Fed. Cir. 2017) (reversing where the "only one permissible factual finding" was that a skilled artisan would be motivated to combine the prior-art references); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1077 (Fed. Cir. 2015) (reversing under similar circumstances).

CONCLUSION

The Board's final written decisions finding that a skilled artisan would not have been motivated to combine the asserted prior art to arrive at the claimed invention are

contrary to law and unsupported by substantial evidence. Under the correct legal standard, Intel met its burden in showing that a skilled artisan would have been motivated to combine Lee with the Feasibility Study to arrive at the claimed invention. Thus, we reverse and hold that claims 1–8, 10–11, and 17–18 of the '356 Patent are unpatentable as obvious.

REVERSED

COSTS

Costs to Intel.