NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

INTELLECTUAL VENTURES II LLC,
Appellant

v.

ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON,
Appellees

2016-1803

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board, in No. IPR2014-01195.

Decided: April 18, 2017

SHARON HWANG, McAndrews, Held & Malloy, Ltd., Chicago, IL, argued for appellant. Also represented by PETER J. MCANDREWS, RAJENDRA A. CHIPLUNKAR, STEPHANIE SAMZ.

J. ANDREW LOWES, Haynes & Boone, LLP, Richardson, TX, argued for appellees. Also represented by CLINT S. WILKINS; DEBRA JANECE MCCOMAS, Dallas, TX.

Before LOURIE, REYNA, and STOLL, *Circuit Judges.*

LOURIE, *Circuit Judge*.

Intellectual Ventures II LLC ("IV") appeals from the written decision of the United States Patent and Trademark Office ("PTO") Patent Trial and Appeal Board ("the Board") in an *inter partes* review ("IPR") proceeding concluding that claims 1 and 2 of U.S. Patent 7,787,431 ("the '431 patent") are unpatentable as obvious. *Ericsson Inc. v. Intellectual Ventures II LLC*, IPR 2014-01195, 2016 WL 380219 (P.T.A.B. Jan. 29, 2016) ("*Final Decision*"). Because the Board did not err in concluding that claims 1 and 2 are unpatentable, we *affirm*.

BACKGROUND

IV owns the '431 patent, which describes a variable-bandwidth wireless communication system. *See* '431 patent, col. 3 l. 7–col. 5 l. 7. According to the patent, different countries use different segments (or "bands") of the electromagnetic spectrum for wireless communications. *Id.* col. 1 ll. 34–36. Moreover, different wireless operators can "own and operate on a broadband spectrum that is different in frequency and bandwidth from other operators." *Id.* col. 1 ll. 36–39. Thus, a single wireless device must be capable of transmitting and receiving multiple bandwidths if it is to be used in areas or systems that require different bandwidths. *Id.* col. 1 ll. 30–42.

The '431 patent purports to allow for a wireless device to communicate in systems or regions with different communication schemes that require different bandwidths. In particular, the patent describes a "core band" in which basic communication signals are transmitted. *Id.* col. 4 l. 67–col. 5 l. 25. The core band is "substantially centered at the operating center frequency" of the different communication schemes, *id.* col. 5 l. 1, and may be used by a particular communication system to transmit a

preamble that identifies the bandwidth used by that system, *id.* col. 6 ll. 4–32. The device can then adjust its signal accordingly. *Id.* col. 4 ll. 25–35. Moreover, the core band is described as "not greater than the smallest operating channel bandwidth among all the possible spectral bands that the receiver is designed to operate with." *Id.* col. 5 ll. 2–4. Claim 1 reads:

> 1. In a variable bandwidth wireless communication system communicating under multiple different communication schemes that each have a different bandwidth, a process performed by a base station of generating an information bearing signal for wireless transmission, the process comprising:
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> utilizing by the base station a number of subcarriers to construct a variable bandwidth wireless channel;
>
> utilizing by the base station groups of subcarriers, wherein each group includes a plurality of subcarriers;
>
> maintaining a fixed spacing between adjacent subcarriers;
>
> adding or subtracting, by the base station, groups of subcarriers to scale the variable bandwidth wireless channel and achieve an operating channel bandwidth; and
>
> wherein a core-band, including a plurality of subcarrier groups, *substantially centered at an operating center frequency of the different communication schemes*, is utilized by the base station as a broadcast channel carrying radio control and operation signalling, *where the core-band is substantially not wider than a smallest possible*

> *operating channel bandwidth of the system*; and
>
> wherein the information bearing signal has a primary preamble sufficient for basic radio operation and wherein:
>
> the primary preamble is a direct sequence in the time domain with a frequency content confined within the core-band, or is an orthogonal frequency-divisional multiplexing (OFDM) symbol corresponding to a particular frequency pattern within the core-band; and
>
> wherein properties of the primary preamble comprise:
>
> an autocorrelation having a large correlation peak with respect to sidelobes;
>
> a cross-correlation with other primary preambles having a small cross-correlation coefficient with respect to power of other primary preambles; and
>
> a small peak-to-average ratio; and
>
> wherein a large number of primary preamble sequences exhibit the properties.

Id. col. 9 l. 33–col. 10 l. 2 (emphases added). Claim 2 adds that the information-bearing signal is an "orthogonal frequency division multiple access (OFDMA) signal," and is used in a downlink with particular features. *See id.* col. 10 ll. 3–9.

Ericsson Inc. and Telefonaktiebolaget LM Ericsson (together, "Ericsson") filed a petition for IPR of the '431 patent, alleging that claims 1, 2, 8–12, and 18–22 were unpatentable as obvious over various combinations of references. The Board ultimately instituted review of

only claims 1 and 2. *Ericsson Inc. v. Intellectual Ventures II LLC*, IPR 2014-01195, 2015 WL 5565070, at *8–9 (P.T.A.B. Feb. 4, 2015) ("*Institution Decision*"). Specifically, the Board instituted review of whether the claims would have been obvious over (1) U.S. Patent 6,904,283 ("Li"), which describes a variable-bandwidth communications system, *see* J.A. 721–44; (2) U.S. Patent 7,782,750 ("Yamaura"), which describes a communications system in which controls signals are communicated in a particular band of an OFDM system using preambles, *see* J.A. 745–87; (3) U.S. Patent 7,426,175 ("Zhaung"), which describes pilot signals with particular properties at the beginning of communications, resulting in improved correlation, *see* J.A. 788–96; and (4) a technical report describing a universal mobile telecommunications system with a core band equal to the width of the smallest operating channel ("Beta"),[1] *see* J.A. 830, 1003–29.[2]

In its written decision, the Board concluded that claims 1 and 2 are unpatentable as obvious over the combination of Li, Yamaura, Zhaung, and Beta. First, the Board determined that claim 1's requirement that the core band be "substantially not wider" than a smallest operating channel was a term of approximation, and not of magnitude, and so would be met by a core band that was the same size as the operating channel. *Final Deci-*

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[1] The Board's opinion refers to Beta as "UTRA." *See Final Decision*, 2016 WL 380219, at *3.

[2] The Board also instituted review of claims 1 and 2 based on a combination of six references, and later determined that the six-reference combination also rendered claims 1 and 2 unpatentable as obvious. *Final Decision*, 2016 WL 380219, at *11–12. Because we affirm the Board's conclusion based on the combination of Li, Yamaura, Zhaung, and Beta, we need not, and do not, reach the second combination.

sion, 2016 WL 380219, at *5–6. The Board thus rejected IV's argument that "substantially not wider" meant "significantly narrower than," although the Board determined that no explicit construction was necessary. *Id.* at *6.

The Board then turned to Ericsson's proposed combination of references. First, the Board determined that Ericsson had adequately alleged reasons why a skilled artisan would have combined Li and Yamaura, rejecting IV's argument that Ericsson could not rely for claims 1 and 2 on arguments it had made in its petition relating to similar, but not identical, claims. *Id.* at *7. Specifically, the Board determined that although claims 1 and 2 had different limitations, Ericsson proposed combining the same teachings from Li and Yamaura to teach similar features of the claims. *Id.* Thus, the Board concluded that IV had sufficient notice of, and an opportunity to respond to, Ericsson's proposed combination. *Id.*

The Board next found that a skilled artisan would have been motivated to combine Li and Yamaura, as the references were directed to "complementary aspects of wireless communication systems." *Id.* at 8. In particular, the Board found that a skilled artisan would have looked to improve Li's controlling and signaling by implementing Yamaura's use of control and synchronization channels to exchange information before establishing communications. *Id.* In so doing, the Board stated that it considered the testimony of both IV and Ericsson's experts, and credited Ericsson's expert. *Id.* The Board also found that IV did not contest that there would have been a motivation to combine Li and Beta. *Id.*

The Board then addressed the manner in which Ericsson presented its argument that a skilled artisan would have been motivated to combine the references. The

Board noted that Ericsson did not make a specific argument relating to why a skilled artisan would have combined Yamaura and Beta, but found that because a skilled artisan would have been motivated to combine Li with Yamaura and Li with Beta, there would have been a motivation to combine the teachings of Yamaura and Beta through Li. *Id.* The Board rejected IV's argument that establishing a motivation to combine in that manner was improper, reasoning that "[t]here is no per se rule that requires each subset of prior art references to be independently combined." *Id.*

Finally, the Board found that there would have been a motivation to combine Yamaura's preambles with Zhaung's method of improving correlation of preambles because the combination would have involved applying a known technique to achieve a predictable result. *Id.* at *8–9. The Board rejected IV's argument that the combination would have rendered the pilot symbols used by Li inoperable, because Ericsson's proposed combination only involved the use of Li's variable bandwidth system, and not Li's pilot symbols. *Id.* at *9.

On the merits, the Board found that the combination of Li and Yamaura disclosed or suggested the required core band substantially centered at an operating frequency. Specifically, the Board found that Yamaura disclosed a centered control channel, and Li disclosed a variable bandwidth system. *Id.* at *9. The Board then credited Ericsson's expert to find that it would have been desirable and within the capabilities of a skilled artisan to combine the two in a way that ensured that Yamaura's control signals remained substantially centered. *Id.* The Board also rejected IV's argument that Yamaura's core band was not "substantially not wider" than the operating channel bandwidth, as it relied on the definition that the Board had rejected. *Id.*

Based on those findings, the Board concluded that Ericsson had proven that claims 1 and 2 are unpatentable as obvious. *Id.* at *11–12. IV timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

We review the Board's factual determinations for substantial evidence and its legal determinations de novo. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). Obviousness is a question of law based on subsidiary findings of fact 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)). Whether there would have been a motivation to combine multiple references is also a question of fact. *S. Ala. Med. Sci. Found. v. Gnosis S.P.A.*, 808 F.3d 823, 826 (Fed. Cir. 2015). Accordingly, we review these findings for substantial evidence. *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1380 (Fed. Cir. 2016). A finding is supported by substantial evidence if a reasonable mind might accept the evidence as sufficient to support the finding. *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938).

IV's first argument challenges Ericsson's general approach to the obviousness analysis, which was adopted by the Board. Rather than providing individual motivations to combine Li with Yamaura, Li with Beta, and Yamaura with Zhaung, IV argues, Ericsson had to offer a rationale for combining each reference with each other reference, or all of the references together. Further, IV argues that Ericsson had to establish a motivation to combine Yamaura with Beta, rather than arguing that because there would have been a motivation to combine Li with both Yamaura and Beta separately, there would

have been a motivation to combine all three together. By accepting Ericsson's "pairwise" combination of references, IV contends, the Board's analysis became infected by impermissible hindsight.

Ericsson responds that there was nothing improper about the manner in which it presented evidence relating to the motivation to combine. Ericsson contends that because the approach to obviousness is "expansive and flexible," Ericsson's Br. 26 (quoting *KSR*, 550 U.S. at 415), the Board's analysis was acceptable in light of the evidence and arguments presented.

We agree with Ericsson that there was nothing inherently improper with the evidence presented or the Board's analysis. *KSR* rejected "rigid and mandatory formulas" in analyzing obviousness, 550 U.S at 419, and our decisions following *KSR* have reflected that "[t]he determination of obviousness is dependent on the facts of each case," *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1089 (Fed. Cir. 2008). For example, we have held that "[a] claimed invention may [have been] obvious even when the prior art d[id] not teach each claim limitation, so long as the record contains some reason why one of skill in the art would [have] modif[ied] the prior art to obtain the claimed invention." *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016). Similarly, we have explained that the obviousness analysis need not always be supported by expert opinions, as in some cases "the technology will be easily understandable without the need for expert explanatory testimony." *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1330 (Fed Cir. 2009) (quoting *Centricut, LLC v. Esab Grp., Inc.*, 390 F.3d 1361, 1369 (Fed. Cir. 2004)).

Thus, our precedent establishes that, consistent with *KSR*, there is no single formula or approach that must mechanically be followed to determine whether a claimed invention would have been obvious. Here, the Board

articulated reasons why a skilled artisan would have combined the references to arrive at the contested features, *see Final Decision*, 2016 WL 380219, at *7–10, and its ultimate conclusion of obviousness is directed to the claims as a whole, *id.* at *1, *7, *12. Thus, on the facts of this case, we find no error in the Board's approach.

IV also contends that the Board's erroneous approach led to errors on the merits of the motivation-to-combine analysis. Specifically, IV argues that not requiring a rationale to combine all four references together allowed Ericsson to rely on references that are directed to different aspects of wireless communications and do not address the problem that motivated the inventor of the '431 patent. Ericsson responds that the problem motivating the inventor is irrelevant to the obviousness analysis.

We agree with Ericsson that the references used to establish that a claim would have been obvious need not be directed to the same problem that the inventor was trying to solve. Indeed, in *KSR* the Supreme Court explicitly stated that "neither the particular motivation nor the avowed purposed of the patentee controls" the determination whether a claimed invention would have been obvious. 550 U.S. at 419. Thus, whether the cited references are directed to the same problem that the inventor was trying to solve is not conclusive concerning the obviousness analysis. IV's other argument essentially challenges the motivation to combine the cited references; we address those arguments in detail *infra*.

IV next argues that the Board's method of analyzing the motivation to combine allowed it to ignore IV's argument that the combination would have rendered Li inoperable for its intended purpose. According to IV, it presented evidence that Li's pilot signals communicate bandwidth allocation information to mobile stations, while Zhaung's pilot sequences do not convey such information. Accordingly, IV contends, replacing Li's pilot

signals with Zhaung's pilot sequences would result in a system that was unable to convey the status of available bandwidth and, therefore, unable to provide variable bandwidth. As Ericsson did not rebut this evidence, IV argues that the Board's decision should be reversed.

Ericsson responds that the Board's decision was not erroneous because it never argued that Li's pilot signals would be replaced by Zhaung's pilot sequences. Instead, Ericsson contends that it argued that Yamaura, together with Zhaung, disclosed preambles with particular properties, and that a skilled artisan would have been motivated to add those preambles to Li's variable-bandwidth system. Therefore, Ericsson argues, IV's assertions are based on an incorrect premise.

We agree with Ericsson that there was no error in the Board's analysis. The Board's opinion shows that it did not ignore IV's inoperability argument; instead, the Board considered and rejected that argument. *Final Decision*, 2016 WL 380219, at *9. Moreover, "it is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements." *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012). Instead, the relevant question is "what the combined teachings of the references would have suggested to those having ordinary skill in the art." *Id.* at 1333. The Board's rejection of IV's inoperability argument, *see Final Decision*, 2016 WL 380219, at *9, comports with those directions. Ericsson proposed that a skilled artisan would have been motivated to add the properties of Zhaung's pilot signals to Yamaura's preambles, and would have been similarly motivated to add those preambles to Li's variable-bandwidth system. *See* J.A. 243–53. As Ericsson did not propose combining the particular features that IV argues would have led to an inoperable result, there was no reversible error in the Board's decision.

IV next argues that the Board's rationale for combining Li and Yamaura is legally and factually incorrect. IV first argues that the Board improperly relied on Ericsson's arguments relating to claim 8 in arguing that a skilled artisan would have been motivated to create the invention of claim 1, even though the two claims are different. IV argues that we can review this issue because it is challenging the Board's ultimate conclusion of obviousness, rather than its institution decision. *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1374 (Fed. Cir. 2016).

Ericsson responds that IV's complaints are essentially a challenge to the Board's decision to institute review, which is unreviewable. *See Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131, 2141 (2016). Even if it can be reviewed, Ericsson contends that its petition provided reasons to combine Li and Yamaura that applied across all of the claims, and that IV was provided fair notice and an opportunity to respond.

We agree with IV that we can review the Board's ultimate decision whether Ericsson presented sufficient evidence to establish that a skilled artisan would have been motivated to combine Li and Yamaura. *Magnum Oil* makes clear that we can review all "arguments regarding the basis for the Board's ultimate judgment of unpatentability," 829 F.3d at 1374, and here IV is challenging whether Ericsson provided sufficient evidence of a motivation to combine the references.

We agree with Ericsson, however, that there was nothing improper about the Board relying on arguments that Ericsson incorporated from its treatment of claim 8 into its treatment of claim 1. In presenting its contention that claim 1 would have been obvious, Ericsson both made independent arguments and, where the claim limitations were essentially the same, referenced its earlier arguments relating to claim 8. J.A. 262–68.

IV argues that Ericsson's cross-referencing of arguments relating to different claims is similar to the manner in which the petitioner cross-referenced arguments relating to different combinations of references in *Magnum Oil*. In *Magnum Oil*, the petitioner sought review on the basis that the claims would have been obvious over two combinations, with the same secondary references but different primary references. 829 F.3d at 1379. The petitioner asserted that its arguments relating to a motivation to combine the first combination also applied to the second. *Id.* The Board then instituted review on the second combination, but not the first. *Id.* We determined that the petitioner could not rely on its arguments from the first combination because the two primary references were different, and the petitioner did not articulate why the second combination could be combined in the same manner as the first combination, considering the different primary references. *Id.*

Ericsson's reference to its claim 8 arguments is different. Rather than referencing a different combination, Ericsson used the same references, in the same way, to argue that the combination disclosed or suggested nearly-identical limitations. *See* J.A. 262–68. Although Ericsson's combination for claim 1 included an additional reference (Beta), Ericsson provided additional detail where relevant, explaining how the addition of Beta affected its analysis. *See*, *e.g.*, J.A. 265–66. Therefore, there was no error in Ericsson, or the Board, relying on those arguments.

IV next argues that even if it were proper for the Board to rely on Ericsson's arguments relating to claim 8, Ericsson's reason to combine Li and Yamaura was factually wrong. Specifically, IV argues that the reason that Ericsson gave to the Board for combining the two references in its petition—to add Yamaura's control signals to Li—was unnecessary because Li already disclosed the required control signals. Therefore, IV contends that a

skilled artisan would have had no reason to attempt to improve Li in the manner that Ericsson suggested.

Ericsson responds that IV has waived these arguments by not presenting them to the Board below. On the merits, Ericsson contends that the Board's finding that Li and Yamaura are directed to complementary aspects of a wireless communications system is supported by substantial evidence. Specifically, Ericsson argues that although Li mentions control channels, Li is focused on data traffic channels and does not provide detail as to how synchronization or control is performed. Therefore, Ericsson continues, a skilled artisan would have looked to Yamaura's preambles to provide synchronization and control.

Assuming that IV's argument was not waived, we still agree with Ericsson that the Board's finding that a skilled artisan would have been motivated to combine Li and Yamaura is supported by substantial evidence. When determining whether there was a motivation to combine Li and Yamaura, the Board weighed the testimony of Ericsson's expert, Dr. Haas, and IV's expert, Dr. Zeger, and credited Dr. Haas's testimony in determining that there would have been a motivation to combine the references. *See Final Decision*, 2016 WL 380219, at *8. Specifically, Dr. Haas laid out the systems of Li and Yamaura, as well as their relative advantages, and concluded that Yamaura's particular system would have added control and synchronization advantages over existing systems. J.A.1960–63. We find IV's argument that a skilled artisan would not have needed to "search outside of Li to make Li work," IV's Br. 42, unpersuasive because, in addition to the Board's explicit findings on a motivation to combine, we have recognized "[t]he normal desire of artisans to improve upon what is already generally known." *In re Ethicon, Inc.*, 844 F.3d 1344, 1351 (Fed. Cir. 2017). Accordingly, we discern no reversible error in the Board's finding.

IV also argues that the combination of Li, Yamaura, Zhaung, and Beta does not disclose every limitation of claims 1 and 2. Specifically, IV argues that the combination does not disclose (1) "a core-band . . . substantially centered at an operating center frequency of the different communication schemes"; or (2) that "the core-band is substantially not wider than a smallest possible operating channel bandwidth of the system." We address each argument in turn.

First, IV argues that the combination of Li, Yamaura, Zhaung, and Beta does not disclose "a core band . . . substantially centered at an operating center frequency of the different communication schemes." Specifically, IV argues that (1) although Yamaura discloses operating at a center frequency, it does not disclose different communication schemes; (2) although Li discloses different communication schemes, it does not disclose operating at a center frequency; and (3) Ericsson did not indicate that it was relying on a combination of Li and Yamaura for this limitation until its reply. Thus, IV contends, it was improper for the Board to consider Ericsson's late-introduced combination. *See* IV's Br. 48–50 (citing *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369–70 (Fed. Cir. 2016)). IV further alleges that even if the Board properly considered Ericsson's arguments, Ericsson did not explain how a skilled artisan would have combined the two references to arrive at a centered core band, as claimed.

Ericsson responds that the Board's consideration of the arguments was proper, and that the Board's decision was supported by substantial evidence. Specifically, Ericsson contends that it explained, with supporting testimony from Dr. Haas, why a skilled artisan would have been motivated to combine the references.

We agree with Ericsson that it was not improper for the Board to consider the evidence presented. In *Intelli-*

gent Bio-Systems, the petitioner introduced in its reply a "new theory of invalidity by reference to new evidence," including a number of nonpatent references that were not included in its petition. 821 F.3d at 1369. Here, in contrast, Ericsson did not introduce new references, and instead continued to argue, just as it had in its petition, that claim 1 would have been obvious over the combination of Li, Yamaura, Zhaung, and Beta.

We also agree with Ericsson that the Board's finding that the combination would have taught or suggested a centered core band is supported by substantial evidence. Ericsson presented testimony that a skilled artisan would have placed the control signals in the center "[i]n order to maintain the benefit of Yamaura's narrowband control signals." J.A. 3217. The Board chose to credit that testimony in finding that the combination disclosed the recited limitation. *Final Decision*, 2016 WL 380219, at *9. Although IV attacks the sufficiency of Ericsson's evidence, IV does not cite evidence, *e.g.*, testimony from its own expert, that this finding is incorrect. *See*, *e.g.*, IV's Br. 47–53. As there was evidence to support the Board's finding, and no evidence to the contrary, that finding is supported by substantial evidence.

Finally, IV argues that the combination of Li, Yamaura, Zhaung, and Beta does not disclose that "the core-band is substantially not wider than a smallest possible operating channel bandwidth of the system." IV argues that "substantially not wider" should have been understood as a term of magnitude, *i.e.* "significantly narrower than." IV contends that the plain language of the claim, as well as the written description, supports this understanding. IV argues that because the combination only discloses a core band that is equal to the size of the smallest operating channel, under the correct understanding the combination does not disclose this limitation.

Ericsson responds that the Board's understanding is correct, because the written description specifically defines the core band as "not greater than the smallest operating channel bandwidth," Ericsson's Br. 57 (quoting '431 patent, col. 5 ll. 1–3), and therefore indicates that the term is one of approximation, and not magnitude. Ericsson also argues that the remaining intrinsic evidence supports that understanding.

We agree with Ericsson and the Board that a core band "substantially not wider than a smallest possible operating channel" does not exclude core bands equal in width to the smallest possible operating channel. The ordinary meaning of "not wider than" is "equal to or narrower than." That understanding, in addition to its clear linguistic meaning, is confirmed by the written description's indication that the core band "is not greater than the smallest operating channel." '431 patent, col. 5 ll. 2–3. Accordingly, the limitation is met by a core band that is as wide as the smallest operating channel, and the Board did not err in its understanding.

IV does not challenge the Board's finding that the combination discloses a core band that is "substantially not wider than a smallest possible operating channel" as that limitation was understood by the Board. Thus, we affirm the Board's conclusion that claim 1 of the '431 patent is unpatentable as obvious. IV does not argue that dependent claim 2 is separately patentable, and therefore we affirm the Board's conclusion as to that claim as well.

CONCLUSION

We have considered the remaining arguments, but find them unpersuasive. For the foregoing reasons, the decision of the Board is affirmed.

AFFIRMED