

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2024-00430
Patent 8,284,690

**PETITIONER'S REQUEST FOR REHEARING PURSUANT TO
37 C.F.R. §42.71(d)**

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I. INTRODUCTION

Petitioner respectfully submits that the Board overlooked and/or misapprehended several issues in the Final Written Decision (Paper No. 27, hereinafter “FWD”). This request is timely filed within thirty (30) days of the Final Written Decision.

II. ARGUMENT

A. The Board’s Finding Regarding Claim 4 Relied on a Misstatement of the Claim Language

The Board found that Petitioner failed to show that claim 4 would have been obvious over IEEE-802.16 (FWD, 32-33), but Petitioner respectfully submits that this was based on a misstatement of the claim.¹

Claim 4 recites the following:

4. The method of claim 3, wherein *the probe request* identifies a hidden node. (Emphasis added).

In its finding, the Board incorrectly stated that “Claim 4 depends from claim 3 and recites ‘wherein *the probe* [sic] identifies a hidden node.’” FWD, 32 (emphasis added). The Board continued: “Petitioner contends that the initial Ranging Request

¹ Claims 13 and 21 are similar to claim 4 but depend from other intervening claims that Petitioner does not contest here. Petitioner reserves the right to argue on appeal these other claims and/or additional grounds asserted against claim 4.

(‘probe request’) identifies a hidden node because the SS that sends it is unknown to the BS until it receives the Ranging Request with the SS MAC address. Pet. 26–27 (citing Ex. 1013, 49, 167–177, 205–206, 664; Ex. 1002 ¶¶ 165–167, 239). However, *claim 4 requires that the ‘probe’ (not ‘probe request’) identifies a hidden node.*” FWD, 32-33 (emphasis added). The Board thus explicitly relied on incorrect claim language in concluding that the Petitioner had not demonstrated claim 4 is unpatentable in view of IEEE-802.16.

The Board’s findings regarding claim 4 materially misstated the claim language. However, the Petition correctly demonstrated that IEEE-802.16 teaches the *actual* limitation of claim 4—“the probe request identifies a hidden node”—because the Ranging Request (claimed “probe request”) identifies the SS, which is a hidden node. Pet. 26-27. And, it is undisputed that this meets claim 4; Patent Owner never raised any separate arguments for claim 4. *See generally* POR (challenging only independent claims and dependent claims 10-11 and 18-19); Sur-Reply (same); *see also* Reply, 1, 5.

B. The Board’s Finding Regarding Claim 5 Relied on an Erroneous Claim Construction That Was Never Argued

The Board found that Petitioner failed to show that claim 5 would have been

anticipated or obvious over IEEE-802.16² (FWD, 33), but Petitioner respectfully submits that this was based on misapprehending the claim language and overlooking Petitioner's arguments.

Claim 5 recites the following:

5. The method of claim 3, wherein the modulation profile for the probe emulates an orthogonal frequency division multiple access (OFDMA) transmission.

The Board stated that “[t]he term ‘emulate’ means ‘imitate.’” FWD, 33 (citing to <https://www.merriam-webster.com/dictionary/emulate>). The Board then concluded that “[s]ince the WirelessMAN-OFDMA PHY layer is an OFDMA transmission, and does not merely emulate one, Petitioner has not shown ... that claim 5 is unpatentable” FWD, 33. The Board thus construed claim 5 to require a modulation profile that is somehow like an OFDMA transmission, but is not actually an OFDMA transmission. However, “emulates an orthogonal frequency division multiple access (OFDMA) transmission” was never construed by Patent Owner during this proceeding.³ Thus, Petitioner's interpretation of claim 5 as being

² Claim 5 was also challenged based on Grounds D-H, which are founded on Waxman. Petitioner reserves the right to argue on appeal against claim 5 based on these additional grounds.

³ Neither Patent Owner nor its expert provided any argument on claim 5.

met because the Ranging Response (claimed “probe”) *is* an OFDMA transmission stands un rebutted. Pet. 27-28.

Moreover, the Board relied only on its own extrinsic evidence—a single dictionary definition introduced for the first time in the FWD. The Board overlooked that the ’690 specification discusses emulating an OFDMA transmission in the context of probe requests and probes transmitted using OFDMA, and indicates that an emulated OFDMA transmission may be an actual OFDMA transmission:

In one embodiment ***employing OFDMA***, a receiving node sends a probe request that indicates which sub-carriers are to be used to send a probe from a particular transmitting node and the bitloading profiles applied across those sub-carriers. For example, in one embodiment, node 1 may be an NC, and may receive reservation requests from nodes 2, 3, and 4 simultaneously ***using OFDMA***. ... In this case, the probe generated by node 2 in response to the probe request from node 1 ***would emulate an OFDMA transmission*** from node 2 to node 1. Node 1 could then use the information derived from the probe in its OFDMA sub-channel allocation procedure.

Ex. 1001, 5:35-51 (emphasis added).

As another example, ***an OFDMA transmission from a single node could be emulated*** by instructing the node to transmit a probe in which only subcarriers belonging to a certain sub-channel are transmitted, while leaving the remaining subcarriers untransmitted. Additionally, ***simultaneous OFDMA transmissions may occur*** in response to probe requests to multiple nodes. In one embodiment, each of the multiple

probe requests is sent to one of a plurality of nodes. Each probe request specifies a bitloading profile specific to the particular probe-transmitting node, such that *the simultaneously transmitted probes from the multiple nodes comprise an OFDMA transmission* to the requesting node.

Ex. 1001, 7:51-63 (emphasis added).

Alternatively, the probe request may *specify an OFDMA emulating probe* in which the payload is modulated on a set of subcarriers that comprises a potential sub-channel *for OFDMA communications*.

Ex. 1001, 9:24-28 (emphasis added).

The '690 specification thus does not distinguish “emulat[ing] an OFDMA transmission” from an actual OFDMA transmission. *See, e.g., Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (specification is “the single best guide to the meaning of a disputed term”). There is also no requirement in the claims to transmit a probe using something that imitates but is not an actual OFDMA transmission. As is indicated by the specification, “emulating an OFDMA transmission” may be met through an actual OFDMA transmission. It was error to construe claim 5 as *requiring* something other than an actual OFDMA transmission.

Furthermore, though the Board equates “emulate” with “imitate” based on a dictionary definition, other definitions (including in the same cited dictionary) of “emulate” are broader and include “to strive to equal or excel,” “to equal or approach equality with,” “to copy or imitate,” and “to be a match or counterpart for,” as well

as identify “copy” as a potential synonym.⁴ None of these prohibits an OFDMA transmission from emulating an OFDMA transmission. Indeed, the best emulation is a copy of the actual thing. Put differently, an actual OFDMA transmission is the most perfect emulation of it.

Petitioner respectfully submits that the Board erred in construing claim 5 to exclude an OFDMA transmission. FWD, 33. As the Board’s construction was not previously proposed or considered by any party at any point in this proceeding, Petitioner has not previously had the opportunity to address it. Petitioner previously proposed that all claim terms should be given their ordinary meaning and argued in the Petition that claim 5 is met because IEEE-802.16’s downlink burst profile for the Ranging Response emulates an OFDMA transmission for delivery through the OFDMA PHY layer. Pet. 6, 27-28. When reaching its conclusion, the Board did not appear to dispute the fact that the modulation profile for the probe is an OFDMA transmission; the Board only disputed that this teaches emulating an OFDMA transmission. Thus, Petitioner respectfully submits it has good cause to address the Board’s construction here. *See Qualcomm Inc. v. Intel Corp.*, 6 F.4th 1256, 1263-

⁴ See, <https://www.merriam-webster.com/dictionary/emulate>; see also, <https://www.dictionary.com/browse/emulate>; <https://www.wordnik.com/words/emulate>.

64 (Fed. Cir. 2021) (the Board failed to give adequate notice of its *sua sponte* claim construction).

Petitioner respectfully submits that the Board’s findings regarding claim 5 misapprehended the claim language and overlooked Petitioner’s arguments.

C. The Board’s Finding Regarding Claims 11 and 19 Overlooked the Prior Art’s Teachings of Simultaneous Transmission

The Board found that Petitioner failed to show that claim 11 (and corresponding system claim 19) were obvious over IEEE-802.16 (FWD, 38-40), Waxman (FWD, 58-60), the combination of Waxman and Zuckerman (FWD, 64), or the combination of DOCSIS-2.0⁵, ISO8802-2, and Zuckerman (FWD, 72-73, 77).

Claim 11 recites the following:

11. The method of claim 9, further comprising:

[11A] a) the first node transmitting a second probe request to a third node;

⁵ Petitioner’s grounds rely on two different procedures of DOCSIS-2.0—the ranging procedure and the testing procedure. Pet. 71-85. Because the Board found that the ranging procedure does not disclose the independent claims (FWD, 66), Petitioner limits this request to the DOCSIS-2.0 testing procedure applied in combination with ISO8802-2. Petitioner reserves all rights to appeal on the basis of the DOCSIS-2.0 ranging procedure grounds.

[11B] b) and the first node receiving a second probe from the third node, wherein the second probe is generated according to the second probe request; and

[11C] wherein the first probe and second probe are transmitted simultaneously using OFDMA.

The Board found that none of the primary references *disclosed* limitation 11C, requiring simultaneous transmission of the probes. Petitioner respectfully submits that these findings either: (1) misapprehended the claim language by improperly discounting simultaneous transmission that would occur “by chance”; (2) misapprehended the law by requiring an explicit disclosure of simultaneous transmission for obviousness; (3) overlooked Petitioner’s obviousness arguments and evidence explaining that the fundamental purpose for using OFDMA was to allow for simultaneous transmission, thus its use was suggestive of simultaneous transmission; or (4) overlooked Petitioner’s evidence that references *did* disclose simultaneous transmission to a POSITA. Petitioner’s grounds for obviousness are discussed in turn, below.

1. The Board Overlooked that Simultaneous Transmission Would Occur in IEEE-802.16, and that Such Transmission, Even if Incidental, Meets Limitation [11C]

In its finding for the IEEE-802.16 ground, the Board limited its discussion to limitation 11C. FWD, 38-40. The Board noted Patent Owner’s argument that probes being simultaneously transmitted “would be only by pure chance.” FWD, 40. Without addressing that such simultaneous transmission “by pure chance” meets the

claim limitation (*see* Reply, 14-15⁶), the Board concluded that “Petitioner has not shown that two BSs would have transmitted probes simultaneously in response to probe requests from an SS.” FWD, 40.

To the extent that the Board implicitly construed claim 11 to require actively controlling the first and second probes to be simultaneously transmitted “on purpose” as opposed to “by chance,” and/or to require simultaneous transmission to happen with a certain frequency, then the Board erred by overlooking that claim 11 contains no such requirement(s). Claim 11 does not recite any feature that coordinates the timing at which the two probes are transmitted, e.g., anything about the first and second probe requests that must purposefully cause the first and second probes to be transmitted “simultaneously using OFDMA.” Reply, 15. The specification likewise does not mandate a coordination requirement for simultaneous

⁶ The Board overlooked Petitioner’s evidence in the Reply (Reply, 14 (citing Ex. 2007, ¶76)) that Patent Owner’s expert never disputed that simultaneous transmission would happen “sometimes.” Occurring “sometimes” is sufficient to meet the claim. *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) (affirming obviousness because “[i]t is enough that the combination would sometimes perform all the method steps”); *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003).

OFDMA transmission, and instead describes that such simultaneous transmissions can occur simply as a result of multiple probe requests being sent to multiple nodes. Ex. 1001, 6:18-32 (“In other OFMDA [*sic*] embodiments, multiple nodes might share the communications channel for multi-point to multi-point communications. In such a case, ***multiple nodes can transmit*** probe requests, and ***multiple nodes can receive probes, all simultaneously.***”) (emphasis added); 7:56-58 (“Additionally, simultaneous OFDMA transmissions ***may occur*** in response to probe requests to multiple nodes.”) (emphasis added).

By its clear terms, the claim requires only a single simultaneous transmission, not that every set of probes be transmitted simultaneously to the same node. Reply, 14-15; Pet. 38; Ex. 1002, ¶¶257-259. And, as set forth in Petitioner’s Reply (and not rebutted), a POSITA would have understood that “simultaneously using OFDMA” recites a result that need occur only once and that the claims do not recite anything about what causes the probes to be transmitted “simultaneously using OFDMA.” Reply, 14-15; Ex. 1036, ¶¶40-43. Accordingly, it was error for the Board to overlook Petitioner’s unrebutted evidence that, in the relied-upon systems (e.g., IEEE-802.16’s WiMAX system), simultaneous transmission would occur (even if “by chance”), and that this would meet claim element 11C.

This is especially true since the very purpose of using OFDMA is to allow for efficient multiple transmissions at the same time, as OFDMA beneficially allocates

bandwidth for simultaneous transmissions. *See e.g.*, Ex. 1002, ¶¶257-259, 429-430, 526-531 (explaining that one of the main goals or advantages of OFDMA is to more efficiently use bandwidth to allow for simultaneous transmissions). The Board misapprehended this evidence in concluding that “Petitioner’s citation to multiple service flows and maintaining link quality in IEEE-802.16 is insufficient to disclose two BSs simultaneously transmitting probes to an SS in response to its probe requests, as limitation 11C requires.” FWD, 40. The Board overlooks that, for the same reason Ranging Responses (i.e., probes) would be transmitted individually (e.g., to maintain link quality), they would be transmitted simultaneously, particularly when using OFDMA which is specifically “‘designed for simultaneous access,’ which is the situation in a WiMAX system having multiple BSs and multiple SSs.” Ex. 1036 (Bertonis Reply Dec.), ¶43 (citing Ex. 1016 (Zuckerman), [0008]). Patent Owner and its expert, Mr. Holobinko, never refuted this evidence nor addressed that “WiMAX discloses transmitting MAC messages on the downlink using OFDMA and that Zuckerman also provides evidence of this being known to a POSITA”. *See* Ex. 1036, ¶43 (citing Ex. 1013, 493-504; Ex. 1016, [0065]-[0067], [0131]-[0132], [0134], FIGs. 1A-1C (showing subscriber stations 50 and 51 each connected to multiple base stations 20 and 21)).

2. The Board Misapprehended that Petitioner’s Obviousness Ground Required Waxman to Explicitly Disclose Limitation [11C], and Overlooked that Waxman and Zuckerman Did

Disclose Situations that Include Simultaneous Transmission and Combine to Render Obvious Limitation [11C]

In addressing the Waxman grounds, the Board first concluded there is no anticipation as “there is no mention in Waxman of transmitting probes simultaneously using OFDMA.” FWD, 58. Then for obviousness, the Board concluded “Petitioner has not shown that claims 10 and 11 would have been obvious for similar reasons stated for these claims in ground D [anticipation by Waxman].” FWD, 60. However, to be found obvious, simultaneous transmission need not be explicitly disclosed in Waxman. The Board’s conclusion overlooked Petitioner’s explanation that, because OFDMA is beneficial to allocate bandwidth to allow for simultaneous transmission, a POSITA would have *found it obvious* that the stations configured to employ OFDMA would have received probe responses that were simultaneously transmitted by different APs. Ex. 1002, ¶¶429-430; Pet. 59. Moreover, in considering only whether there was an express disclosure in Waxman, the Board overlooked Petitioner’s argument (not disputed by Patent Owner⁷) that Waxman does disclose situations where multiple probe responses would have been transmitted simultaneously. Ex. 1007, [0038] (discussing an “optional[] ... ‘back-

⁷ See Sur-Reply, 20-21 (never countering this in arguing “additional distinctions over Waxman”).

off’ mechanism” feature that provides a delay period for certain communications to avoid some instances of simultaneous transmissions); Reply, 21 (“Waxman’s ¶[0038] provides evidence that multiple probe responses would have been transmitted simultaneously.”).

Further, in addressing the Waxman-Zuckerman ground for claim 11, the Board agreed that “Petitioner shows that a POSITA would have been motivated to combine Waxman and Zuckerman” (FWD, 63), but then simply concluded that “Petitioner does not show that the combination of Waxman and Zuckerman **discloses** two different nodes transmitting probes simultaneously ...” (FWD, 64 (emphasis added)). Again, the Board overlooked the Petitioner’s unrebutted arguments as to Waxman’s teachings for simultaneously transmitting multiple probe responses. And, the Board overlooked that, as set forth in the Petition and not rebutted by Patent Owner, Zuckerman specifically teaches using OFDMA for simultaneous transmissions on the same channel. Pet. 66; Ex. 1016 (Zuckerman), [0008], [0176], [0211]-[0212], [0215]-[0216]; Ex. 1002, ¶¶527-532.

At root, the Board overlooked that obviousness does not require an express disclosure of the claim limitation. Instead, Petitioner must show that the asserted combination renders the claim limitation obvious. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-418 (2007). As set forth in the Petition, it would have been obvious to configure Waxman’s stations to employ OFDMA to receive communications

(particularly Waxman’s probe responses) simultaneously, as taught by Zuckerman because OFDMA beneficially allocates bandwidth to allow for simultaneous transmissions. Pet. 66-67; Ex. 1002, ¶¶528-532. Patent Owner never even addressed Zuckerman’s teachings or Petitioner’s reasons for the Waxman-Zuckerman combination. Reply, 21; POR, 41-43.

3. The Board Misapprehended that Petitioner’s Obviousness Ground Required DOCSIS-2.0 to Explicitly Disclose Limitation [11C], and Overlooked that Zuckerman Teaches “Simultaneously” Transmitting DOCSIS Messages

Similarly, for the grounds applying a combination of DOCSIS-2.0 (testing procedure), ISO8802-2, and Zuckerman, the Board agreed that “a POSITA would have been motivated to use Zuckerman’s OFDMA in DOCSIS-2.0 for the benefits it provides” (FWD, 70), but then concluded that limitation 11C was not met because “we find no mention of simultaneously transmitting Test Responses from two CMs to a CMTS” (FWD, 73). The Board failed to apprehend that an express disclosure of the claim limitation is not required for this obviousness ground. *KSR Int’l Co.*, 550 U.S. at 418. Instead, the Petition asserted that, in the combination, it would have been obvious for both Test Responses to be transmitted simultaneously using OFDMA, because the messages that trigger them would have been sent simultaneously so that the test procedure would be performed on multiple channels simultaneously. Pet. 92; Ex. 1002, ¶¶682, 685. The Board overlooked that DOCSIS-2.0 teaches CMs independently transmitting Test Responses using OFDMA while

Zuckerman teaches “simultaneously” transmitting DOCSIS messages. Pet. 89-92 (citing Ex. 1016 (Zuckerman), [0006]-[0008], [0015], [0041], [0048]-[0054], [0058]-[0065], [0071]-[0072], [0076], [0080], [0110], [0134], [0141], [0174], [0176], [0198], [0210]-[0212]); Ex. 1002, ¶¶682-687; Reply, 27. The Board additionally overlooks that there is no evidence contradicting Petitioner’s showing for limitation 11C as Patent Owner’s only argument for claim 11 was against the use of OFDMA in DOCSIS-2.0, which the Board correctly rejected in its analysis for claim 10. FWD, 70-72.

For at least these reasons, Petitioner respectfully submits that the Board misapprehended and/or overlooked various arguments and evidence in finding that claims 11 and 19 were not shown to be unpatentable over IEEE-802, Waxman, the combination of Waxman and Zuckerman, and the combination of DOCSIS-2.0, ISO8802-2, and Zuckerman.

III. CONCLUSION

For at least the reasons above, Petitioner submits that the Board erred in the FWD, and respectfully requests reconsideration of its findings that claims 4, 5, 11, and 19 were not shown to be unpatentable.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §42.6(e)(4), the undersigned hereby certifies that the foregoing PETITIONER'S REQUEST FOR REHEARING PURSUANT TO 37 C.F.R. §42.71(d) was served electronically via e-mail on the following counsel of record for Patent Owner:

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