

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DISH NETWORK L.L.C.,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2024-00373
Patent 7,594,249

**PETITIONER'S RESPONSE TO PATENT OWNER'S REQUEST FOR
DIRECTOR REVIEW**

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I. Introduction

After considering all the record evidence in this IPR proceeding, the Board issued a thorough and well-reasoned Final Written Decision (“FWD”) finding the claims of the ’249 patent unpatentable over the prior art. Patent Owner Entropic’s request for Director review of the Board’s FWD should be denied.

First, Petitioner DISH presented significant evidence of the unpatentability of dependent claim 17, both in its Petition and Reply. And the parties thoroughly addressed the issue at the oral hearing, thereby providing the Board with an opportunity to ask questions and develop a comprehensive understanding of the invalidity challenge to claim 17. The Board’s unpatentability finding in the FWD for claim 17 is well-supported and should stand. At most, should the Director find the FWD’s claim 17 analysis lacking, remand is the proper course.

Second, Patent Owner asks the Director to re-weigh the same evidence the Board already considered after a full trial, and to reinstate the Institution Decision’s preliminary view of the Jacobsen reference. That is not the purpose of Director Review. And on the merits, Patent Owner’s arguments misread Jacobsen. Jacobsen does not contradict the Board’s analysis. Instead, the Board correctly recognized in its FWD that Jacobsen compares two modulation types—namely, single carrier modulation with equalization and multicarrier modulation without equalization—while recognizing and further detailing the circumstances where a multicarrier

system uses equalization. The Board's findings rest on substantial evidence and sound law and should stand.

II. The Board Properly Considered and Disposed of Patent Owner's Claim 17 Arguments

A. Petitioner Presented Significant Evidence that the Petition's Grounds 3 and 4 Each Render Claim 17 Obvious

The '249 Patent's dependent claim 17 recites the mere notion of using "time division duplex protocol for communications" and use of a "beacon message" to synchronize network communications. DISH-1001, cl. 17. Petitioner presented significant evidence demonstrating that this claim is obvious to a person of ordinary skill in the art (POSITA) in view of the asserted prior art.

Petitioner's Ground 3 combines the Amit reference with the Jacobsen reference. The Petition explains how this combination renders claim 17 obvious because "Amit teaches or renders obvious a TDD protocol for communication in a channel" and because "the '249 patent acknowledges that it was known that TD-based protocols use broadcast beacon messages to synchronize nodes." Pet. 71. To corroborate that Amit discloses or renders obvious claim 17, the Petition cites the background of the '249 Patent, which incorporates the Gibbs reference to explain known broadband networks. *Id.* (citing DISH-1001, 2:42-59). The Petition further cites a passage in the '249 Patent, as additional evidence that the claimed beacon message concept was known in the art. *Id.* (citing DISH-1001, 6:35-48). Finally,

the Petition cites the declaration of Petitioner's expert, Dr. Scott Acton, whose opinions further support unpatentability. *Id.* (citing DISH-1003, ¶¶ 297–300).

Petitioner also presented, as Ground 4, an additional combination of Amit-Jacobsen with “DSL-Book.” The Petition, supported by Dr. Acton's declaration, details how Ground 4 renders claim 17 obvious. Pet., 84–85 (citing DISH-1003, ¶¶ 372–76).

Petitioner's Reply also responds to Patent Owner's arguments regarding claim 17. For example, it highlights as to Ground 3 how Patent Owner “admits Amit teaches ‘TDM requir[ing] synchronization’ and does not dispute that TDD is the application of TDM to separate outgoing and incoming signals.” Pet. Reply 21 (citing PO Resp. 47; Pet. 26). Patent Owner's expert also admitted that “Amit's filtered networks communicate with the regional network via a modem,” and noted that Patent Owner's expert “testified that TDD could be used in WANs and LANs.” *Id.*, 21–22 (citing DISH-1029, 89:15-90:7). Thus, consistent with the Petition, Petitioner further showed that a POSITA would have understood that the Amit-Jacobsen combination teaches claim 17's “time division duplex protocol” and “beacon message” limitations. *Id.*, 22.

For Ground 4, the Reply addresses Patent Owner's criticism of DSL-Book's use of pilot tones as satisfying claim 17. *Id.*, 22. The Reply highlights how Patent Owner concedes “that ‘Pilot tones **synchronize the clock sources** at either ends of

a transmission path” and, as such, “a pilot tone is a beacon message.” *Id.* (citing PO Resp., 49) (emphasis in original). The Reply also rebuts Patent Owner’s criticism by explaining that claim 17 “does not require a ranging protocol,” and that the ’249 Patent never references ranging protocols. *Id.*

The Reply also cites testimony from Patent Owner’s expert confirming that claim 17 is obvious. Pet. Reply, 21. In particular, Patent Owner’s expert admits that TDD synchronized by a beacon message was well-known by at least the 1990s:

Q. Is it fair to say the use of beacon signals was common in TDD communication systems in the 1990s?

...

THE WITNESS: I think it probably would have been, yes.

DISH-1029, 92:23-93:2 (cited at Pet. Reply, 21); *see also id.*, 92:11-22 (testifying to use of beacon messages for TDD cellular network in 1980s). Moreover, Entropic’s expert “could not name an alternative synchronization scheme for TDD—only T1 TDM.” Pet. Reply, 21 (citing DISH-1029, 90:15-91:4).

At the oral hearing, the Board fully engaged with both parties regarding claim 17 and the scope of the prior art. *See generally*, Paper 42, 33:4-34:14, 51:9-52:2. In particular, the Board asked questions specific to Patent Owner’s argument about claim 17:

JUDGE JURGOVAN: Does the pilot tone relate to the synchronization frame?

...

JUDGE JURGOVAN: So does the claim actually recite that this beacon message performs network management functions or should we just imply that from the fact that it says beacon message?

...

JUDGE JURGOVAN: Is the synchronization frame a message?

Id., 51:9-10; 51:18-20; 52:1-2.

B. The Board’s Final Written Decision Properly Finds Claim 17 Unpatentable

The Board’s FWD found claim 17 unpatentable as obvious under both Grounds 3 and 4. FWD, 60 (“We determine that Petitioner has shown by a preponderance of the evidence that claims 2, 9, and 17 would have been obvious over the combination of Amit and Jacobsen in light of what was known in the art.”); *id.*, 76–77 (“[W]e determine that Petitioner has shown by a preponderance of the evidence that claims 2, 9, 10, 12, 13, and 17 would have been obvious over the combination of Amit, Jacobsen, and DSL-Book[.]”), 81. In reaching its determination, the Board reiterated and accepted the claim 17 arguments Petitioner advanced throughout the proceeding:

Petitioner contends that claims 2, 9, and 17 are obvious over the combination of Amit and Jacobsen. Pet. 71 (citing Ex. 1003 ¶¶ 297–300). Specifically, Petitioner argues that, as discussed for ground 1, Amit discloses a TDD protocol for channel communication, and the ’249 patent acknowledges that it was known that TD-based protocols

use broadcast beacon messages to synchronize nodes. *Id.* (citing Ex. 1001, 2:42–59, 6:35–48). Petitioner’s expert, Dr. Acton, states that the ’249 patent acknowledges, by reference to U.S. Patent No. 5,889,765 to Gibbs, that it was known that TD-based protocols use broadcast beacon messages to synchronize nodes. Ex. 1003 ¶ 299.

FWD, 60.

The record in this IPR proceeding, as outlined above, offered ample evidence for the Board to conclude that claim 17 is unpatentable. While the FWD did not explicitly recognize Patent Owner’s arguments regarding claim 17, the mere omission of a list of Patent Owner’s arguments that were evidently unpersuasive is—at most—harmless error. Indeed, there is no legal requirement for a FWD to restate each argument advanced by a patent owner. The FWD confirms that the Board reviewed all record evidence submitted in the proceeding. *See* FWD, 2–3 (“Having reviewed the complete trial record, we determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims are unpatentable.”). The Board also specifically noted Patent Owner’s briefs as part of the record. FWD, 2. And the Board noted the oral hearing—during which it asked Patent Owner specific questions about claim 17—as also being part of the record it considered. FWD, 2. The Board was thus apprised of Patent Owner’s claim 17 arguments, but did not find them compelling. The Board’s logic is clearly discernible from the FWD.

Had Patent Owner desired further analysis on its claim 17 argument, it should have sought claim construction, but did not. A central dispute Patent Owner raised with claim 17 was whether the prior art satisfied the “beacon message” limitation. Paper 17 (PO Resp.), 46–51; Paper 34 (PO Sur-reply), 19. Patent Owner’s argument depended on an unconventional, yet unsupported, interpretation of claim 17’s “beacon message” limitation that would distinguish it from the pilot tones found in the prior art. However, Patent Owner did not attempt to construe “beacon message” to secure its understanding of the term. Patent Owner cannot now use the Director review process to get a second bite at the apple on its strategic decision to avoid affirmative claim constructions.

Even were the Director to agree with Patent Owner regarding the Board’s treatment of claim 17, the remedy it seeks is not justified. Should the Director find that the Board’s decision lacks clarity as to claim 17, Petitioner respectfully submits that the proper course is to remand to the Board Panel to clarify its claim 17 determination. *See* Order Granting Director Review and Remanding to the Patent Trial Appeal Board for Further Proceedings, *Tesla, Inc. v. Autonomous Devices, LLC*, IPR2023-01055, Paper 49 (P.T.A.B. Mar. 13, 2025) (remanding to Board

Panel, on Director review, to make factual findings regarding single claim and proposed substitute claim).¹

III. Jacobsen Teaches Multicarrier with Equalization

A. Background

Following institution, the parties addressed independent claim 10 in detail. *See* PO Resp., 16–44; Pet. Reply, 6–21; PO Sur-reply, 12–20. Among other things, Petitioner’s Reply highlights Jacobsen’s teaching in footnote 4 and expert evidence that were included in the Petition. Pet. Reply, 6–8. Later, both parties addressed claim 10 at the oral hearing. *See* Paper 42, e.g., 35:20-36:25, 46:3-22, 90:24-91:15. The Board issued detailed findings on claim 10 in the FWD. FWD, 27–36. The Board specifically noted that Jacobsen’s footnote 4 was not addressed at institution—underscoring why trial exists and why preliminary views can change on a full record. *Id.*, 28 n.6 (“Although Petitioner cited footnote 4 in its Petition (Pet. 69–70), we did not specifically address it in our Institution Decision.”). Patent Owner now objects to the Board’s alleged “about-face” from the Institution Decision.

¹ Although Patent Owner’s Director review request focuses heavily on claim 17, it mentions in passing dependent claims 2 and 9 as well. PO Req. Dir. Review, 5. To the extent Patent Owner argues that the Board’s determination as to claims 2 and 9 should be reviewed, that argument should be rejected for the same reasons noted for claim 17.

B. Jacobsen’s Footnote 4 Is Consistent with the Rest of Jacobsen and with the Board’s Analysis

Patent Owner’s entire argument rests on the assertion that Jacobsen’s footnote 4 “contradicts” Jacobsen’s purpose and conclusion. PO Req. Dir. Review, 6. Not so. The FWD correctly recognizes that Jacobsen compares single carrier modulation with equalization to multicarrier modulation without equalization. FWD, 18 (citing DISH-1007, 8). Jacobsen’s comparison shows why multicarrier modulation without equalization can be more computationally efficient than single-carrier modulation with equalization. DISH-1007, 15. This comparison does not criticize or discourage using *multicarrier with equalization*. To the contrary, Jacobsen’s footnote 4 explains when a POSITA would use a time-domain equalizer (TEQ) with a multicarrier system: to enable smaller FFT sizes and shorten the cyclic prefix. DISH-1007, 12, n.4. Jacobsen explains the tradeoff: using the TEQ reduces the cyclic prefix at an acceptable complexity cost—i.e., *multicarrier with equalization* is sometimes beneficial. *Id.*

Petitioner’s Reply made this very point: equalization combats intersymbol interference (ISI) and is known to improve performance in any modulation, and Jacobsen explicitly contemplates equalization in multicarrier modulation to reduce cyclic-prefix length. Pet. Reply, 6–8. Both experts acknowledged that a POSITA would have looked to equalization to improve multicarrier systems. *Id.*, 7 (citing

DISH-1029, 32:15-17; DISH-1003, ¶184). The Board agreed with both parties' experts. FWD, 29.

Patent Owner leans on Jacobsen's observation that "no equalizer is required in the multicarrier receiver." PO Req. Dir. Review, 9, n.3 (citing DISH-1007, 10). But just because something is "not required" does not mean it is never used, especially because Jacobsen explains when multicarrier with equalization is used, and why. The record, and Jacobsen's footnote 4 specifically, shows *multicarrier with equalization* is contemplated in the scenarios the FWD credits. FWD, 29 ("We agree with Petitioner that Jacobsen teaches that multicarrier modulation with equalization would be useful in some circumstances to reduce FFT size and reduce cyclic prefix length . . ."). The FWD also correctly recognizes that a general preference for multicarrier without equalization does not "teach away" from it. *Id.*, 28.

Further, Patent Owner argues that "the reference must also be analyzed from the perspective of a person of ordinary skill in the art." PO Req. Dir. Review, 8. Petitioner agrees. Indeed, Patent Owner's expert conceded that "a system designer [would] look to equalization in any network that is experiencing reflections." DISH-1029, 32:15-17. And Patent Owner does not explain why this admission is insufficient to establish the perspective of a POSITA.

C. Patent Owner Seeks “Two Bites at the Apple”

Patent Owner asks the Director to reinstate the Institution Decision: “the Board could—and should—have simply stood by its initial analysis.” PO Req. Dir. Review, 2. But the Board expressly noted that footnote 4 was not addressed at institution and that it then weighed that disclosure with the fully developed record—exactly what trial is for. FWD, 28. Director Review is not a vehicle to freeze preliminary views or re-try the case.

Findings in an institution decision are non-final and preliminary in nature. The Board enjoys full authority to make a finding in its FWD with the benefit of a complete record, which is different from an initial finding in an Institution Decision. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (“[T]he Board is not bound by any findings made in its Institution Decision. At that point, the Board is considering the matter preliminarily without the benefit of a full record. The Board is free to change its view of the merits after further development of the record, and should do so if convinced its initial inclinations were wrong.”). Indeed, if the Board were unable to modify its preliminary Institution Decision findings, the Institution Decision would effectively and improperly be a final written decision. Patent Owner’s argument thus relies on imposing an improper and unrealistic burden on the Board, which should be rejected by the Director.

IV. Conclusion

For the foregoing reasons, Patent Owner's request for Director review should be denied.

Respectfully submitted,

Date: August 26, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e), the undersigned certifies that on August 26, 2025, a complete and entire copy of this Petitioner's Response to Patent Owner's Request for Director Review was provided by email, to the Patent Owner by serving the correspondence addresses of record as follows:

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