

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC., DISH NETWORK, LLC,
COMCAST CABLE COMMUNICATIONS, LLC,
COX COMMUNICATIONS, INC.,
TIME WARNER CABLE ENTERPRISES LLC,
VERIZON SERVICES CORP., and ARRIS GROUP, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.

Case IPR2016-01021¹
Patent 8,718,158 B2

Before SALLY C. MEDLEY, TREVOR M. JEFFERSON, and
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

MEDLEY, *Administrative Patent Judge*.

DECISION
Denying Patent Owner's Rehearing Request
37 C.F.R. § 42.71

¹ DISH Network, L.L.C., who filed a Petition in IPR2017-00255, and Comcast Cable Communications, L.L.C., Cox Communications, Inc., Time Warner Cable Enterprises L.L.C., Verizon Services Corp., and ARRIS Group, Inc., who filed a Petition in IPR2017-00417, have been joined in this proceeding.

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.71(d), TQ Delta, LLC (“Patent Owner”) requests rehearing of our Final Written Decision (Paper 44, “Dec.”). Paper 45 (“Req. Reh’g”). Specifically, Patent Owner submits that our construction of “scrambling the phase characteristics of the carrier signals” misapprehends or overlooks certain evidence, that Stopler² does not disclose “scrambling the phase characteristics of the carrier signals,” that we misapprehended or overlooked certain testimony, and that we misapprehended that Shively³ would not have an increased or high PAR. Req. Reh’g *passim*.

For the reasons set forth below, Patent Owner’s Request for Rehearing is *denied*.

II. STANDARD OF REVIEW

A party requesting rehearing bears the burden of showing that the decision should be modified. 37 C.F.R. § 42.71(d). The party must identify specifically all matters we misapprehended or overlooked, and the place where each matter was addressed previously in a motion, an opposition, or a reply. *Id.* With this in mind, we address the arguments presented by Patent Owner.

III. ANALYSIS

A. “*scrambling the phase characteristics of the carrier signals*”

Claim 1 recites “a method for scrambling the phase characteristics of the carrier signals, comprising.” We adopted Patent Owner’s proposed

² U.S. Patent No. 6,625,219 B1; issued Sept. 23, 2003 (Ex. 1012) (“Stopler”).

³ U.S. Patent No. 6,144,696; issued Nov. 7, 2000 (Ex. 1011) (“Shively”).

construction in part by construing “scrambling the phase characteristics of the carrier signals” to mean “adjusting the phases of a plurality of carriers in a single multicarrier symbol.” Dec. 8–11. We did not add to that construction “by pseudo-randomly varying amounts” because Patent Owner did not show why that additional language should be included for the broadest reasonable construction of the term “scrambling the phase characteristics of the carrier signals.” *Id.* Patent Owner argues that our construction is overly broad because it encompasses adjusting the phases of every carrier in the single multicarrier symbol by the same amount. Req. Reh’g. 2–3. Such an adjustment, according to Patent Owner, would not reduce peak-to-average power ratio (“PAR”), which the parties and the panel all agree scrambling must do. *Id.* at 3–6. “The FWD misapprehends or overlooks that, under any proper construction, there must at a minimum be *varying amounts* by which the phases are adjusted within a single multicarrier symbol (*i.e., from carrier-to-carrier*) such that PAR is reduced.” *Id.* at 2.

Patent Owner presents arguments not presented previously. We could not have overlooked or misapprehended those arguments presented for the first time in the rehearing request. Importantly, Patent Owner argues now for the first time that for any proper construction “there must at a minimum be varying amounts by which the phases are adjusted within a single multicarrier symbol (*i.e., from carrier-to-carrier*) such that PAR is reduced.” *Id.* at 2. This proposed construction differs from Patent Owner’s original proposed construction which included “by pseudo-randomly varying amounts.” Absent from the new proposed construction is the term “pseudo-randomly.”

In any event, it is clear from the Decision that we construed the totality of claim 1, for example, as requiring varying the amount by which the phase of each carrier is adjusted. *See, e.g.*, Dec. 28. Accordingly, even if we were to adopt Patent Owner’s new proposed construction, it would not change the way we applied the prior art to the claim language as a whole.

B. Stopler’s Single-Carrier Embodiment

Patent Owner argues that Stopler’s QAM Mapper and Phase Scrambler 82 “must be compatible with single-carrier CDMA” because Stopler teaches that its output can, in one embodiment, be provided to a CDMA modulator. Req. Reh’g. 7–8. Patent Owner concludes that Stopler’s phase scrambling “must have a different purpose than the claimed phase scrambling because [it] . . . cannot reduce PAR.” *Id.* at 8.

We addressed this argument and found it unpersuasive. Dec. 23–28. Mere disagreement with the Board’s conclusion is not a proper basis for rehearing. It is not an abuse of discretion to have made a conclusion with which a party disagrees.

C. Allegedly Misapprehended or Overlooked Testimony

Patent Owner quotes pages 25 to 26 of our Decision and argues that “there are several inaccuracies.” Req. Reh’g 8–12. These arguments are based, in part, on a mischaracterization of our claim construction as *requiring* the same amount of rotation of the phase of each of the QAM symbols in a DMT symbol. *See, e.g., id.* at 9 (“First, a DMT symbol cannot be phase scrambled as that term is used in the claims by having its component QAM symbols rotated by the *same* amount.”), 9 (“as interpreted in the FWD (‘i.e., rotates by the same amount, the phase of a plurality of QAM symbols.’).”). Our construction of “scrambling the phase

characteristics of the carrier signals” does not *require* rotating by the same amount. And as we applied the prior art, to the totality of the claim language, it is clear that we construed the totality of the claim language to require the phases of the carriers of the multi-carrier signal be rotated by varying amounts. For example, our Decision states

Stopler further teaches that, “a phase scrambling sequence is applied to the output symbols,” including “all symbols, not just the overhead symbols.” *Id.* at 12:25–28. Patent Owner’s expert, Dr. Short, agreed that Stopler is referring to phase scrambling QAM symbols. Reply 16–17 (citing Ex. 1027 (Tellado Dep.), 54:17–55:3, 55:19–24, 58:6–8, 59:9–12, 60:15–22). Stopler further teaches that a “scrambling sequence may be generated by a pseudorandom generator” that generates pairs whose sum “is used to select the amount of rotation to be applied to the symbol,” singular; not “symbols” plural. Ex. 1012, 12:28–36. Thus, the most intuitive reading of Stopler supports Petitioner’s contention that QAM Mapper and Phase Scrambler 82 determines an amount of rotation and rotates the phase of a single QAM symbol by that amount.

Dec. 26.

Patent Owner also objects to our characterization of Dr. Short’s testimony as “admit[ing] that Stopler does not describe phase scrambling DMT symbols” (Dec. 25 (citing Ex. 1027, 60:11–14)). Req. Reh’g 9 (regarding Ex. 1027, 60:11–14). That testimony is as follows:

Q. Well, you would agree with me that [Stopler] doesn’t expressly teach applying the phase scrambler to the DMT as a whole?

A. I would agree with that.

Ex. 1027, 60:11–14. We acknowledge that Dr. Short testified that he *understands* Stopler to be rotating all of the QAM symbols within a DMT symbol by the same amount, but the point made in our Decision

remains: Dr. Short clearly conceded, however, that Stopler does not *expressly teach* applying the phase scrambler to the DMT symbol as a whole. Dec. 25 (citing Ex. 1027, 60:11–14).

Patent Owner also argues that we misapprehended its argument that Stopler would adjust the phases of QAM symbols *over time* in order to reduce narrowband noise. Req. Reh’g 10 (citing PO Resp. 39 (“According to a second narrowband-noise-reducing technique, Stopler addresses narrowband noise at the frequency of an overhead pilot carrier by scrambling the phase of the pilot carrier over time from one DMT symbol to the next, *i.e.*, by *inter*-symbol phase scrambling. See Ex. 2003 at ¶ 82.”)). As we noted in our Decision, however, Stopler teaches and Petitioner relies “not just on the scrambling of ‘overhead signals, such as pilot tones,’ (Pet. 13) but on the scrambling of *all* QAM symbols. Because neither Petitioner’s argument nor Stopler’s teaching of phase scrambling is limited to pilot tones, Patent Owner’s argument is not persuasive.” Dec. 27.

Patent Owner also argues that we misapprehended its burden by noting that “Patent Owner identifies nothing in Stopler to suggest that, in an alternative embodiment with a multicarrier modulator, QAM Mapper and Phase Scrambler 82 do not supply a plurality of phase-scrambled QAM symbols for modulation onto the plurality of carriers in the, e.g., DMT symbol.” Req. Reh’g 11 (quoting Dec. 25–26). Petitioner has the burden of persuasion to prove unpatentability by a preponderance of the evidence. See 35 U.S.C. § 316(e); *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1379 (Fed. Cir. 2015). For this element, we explained how Petitioner satisfied that burden based, *inter alia*, on express disclosure in Stopler. Dec. 26–27. The sentence to which Patent Owner objects merely

notes that, even assuming Stopler works as Patent Owner argues in an embodiment with a single-carrier modulator, that does not persuasively rebut the express disclosure upon which Petitioner relies. Accordingly, we are not persuaded that we misapprehended Patent Owner's burden.

Patent Owner also argues it was denied the opportunity to file a sur-reply. Req. Reh'g. 11–12. Patent Owner was, however, granted an opportunity to identify allegedly new arguments and evidence in Petitioner's Reply (Paper 25), and we considered the identified portions when reaching our Decision (Dec. 22 n.8). Although the "listing" format required Patent Owner to be efficient in its identification and required Petitioner to be efficient in its responsive paper, these papers provided "the information necessary to make a reasoned decision" (*Ultratec, Inc. v. CaptionCall, LLC*, 872 F.3d 1267, 1273 (Fed. Cir. 2017)) about whether the arguments and evidence raised in reply were outside the scope of a proper reply.

D. Shively's PAR

Finally, Patent Owner argues that we misapprehended or overlooked its argument that Shively's PAR would not be so "increased" or "high" that it resulted in clipping, as would be needed before a person of ordinary skill in the art had reason to modify Shively. Req. Reh'g 12–15. We addressed this argument and found it unpersuasive. Dec. 30–31. Mere disagreement with the Board's conclusion is not a proper basis for rehearing. It is not an abuse of discretion to have made a conclusion with which a party disagrees.

Moreover, Patent Owner alleges that "the FWD characterizes Shively as having a 'high' or 'increased' PAR." Req. Reh'g. 14 (citing Dec. 30). That is false. Our Decision states that it is undisputed that Shively's technique "will increase PAR" (Dec. 30–31), but does not characterize

Shively as having a “high” or “increased” PAR.⁴ Our Decision relies upon page 28 of Patent Owner’s Response (Paper 15), which concedes that “Shively’s ‘spreading’ technique will contribute a small uptick in clipping probability.” Patent Owner does not dispute, in its Request for Rehearing, Shively’s technique *increases* PAR.

With respect to Patent Owner’s argument that “there is no PAR *problem* presented by Shively” (Req. Reh’g. 14) and “the only PAR problem in this case relates to clipping” (*id.* at 15), we considered that argument and found it unpersuasive. Dec. 30–31. As we noted, “Petitioner’s reason to combine does not depend on the PAR increase exceeding some specific numeric threshold,” “there also is no dispute that equipment designed to handle a higher PAR can be larger, more expensive, and more power hungry than equipment designed to handle a lower PAR,” and, therefore, “a person of ordinary skill in the art . . . would have been motivated to reduce PAR regardless of whether Shively’s technique resulted in clipping.” *Id.* In other words, as we explained in our Decision, Shively’s PAR need not result in clipping in order to motivate a person of ordinary skill in the art because we are persuaded such a person would have been motivated sufficiently to reduce PAR by the benefit of being able to use smaller, less expensive, less power hungry components.

⁴ In a sentence summarizing Petitioner’s position, our Decision states, “*Petitioner alleges* that Shively’s proposed system would have an ‘increased’ or ‘high’ PAR.” Dec. 30 (quoting Pet. 14–15) (emphasis added). It should be obvious, however, that a summary of Petitioner’s allegation is not a characterization by the panel.

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IV. ORDER

Accordingly, it is ORDERED that Patent Owner's Request for Rehearing is *denied*.

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