

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DALI WIRELESS INC.,
Petitioner,

v.

COMMSCOPE TECHNOLOGIES LLC,
Patent Owner.

Case IPR2017-01324
Patent 7,848,747 B2

Before JAMES B. ARPIN, BARBARA A. PARVIS, and
TERRENCE W. McMILLIN, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

DECISION
Denying Petitioner's Request for Rehearing
37 C.F.R. § 42.71(d)

I. INTRODUCTION

A. Background

Dali Wireless Inc. (“Petitioner”) filed a Petitioner’s Request for Rehearing Pursuant to 37 C.F.R. § 42.71 (Paper 7, “Req. Reh’g”) of our decision not to institute an *inter partes* review (Paper 6, “DDI”) of claims 1–5 and 7–17 of U.S. Patent No. 7,848,747 B2 (Ex. 1001, “the ’747 patent”).¹ Specifically, Petitioner argues:

In rendering its Decision, the Board did not interpret the claimed “sample rate selected based on the bandwidth” and similar limitations under the Broadest Reasonable Interpretation standard, and as a result misapprehended the Petition’s application of the Bellers and Ichiyoshi references to this claim limitation. In addition, the Board did not fully analyze the evidence provided by Petitioner that supports the motivation to combine. As a result, the Board inadvertently overlooked evidence provided by the Petition that supports a finding of a motivation to combine these references.

Req. Reh’g. 1. Accordingly, we have considered whether we overlooked or misunderstood the Petition’s arguments and evidence establishing whether: (1) Bellers or Ichiyoshi teach or suggest a “sample rate selected based on the bandwidth” and (2) there is a motivation to combine the applied references.

¹ The Petition (Paper 2, “Pet.”) and our Decision Denying Institution (Paper 6) were broader in scope than the Request for Rehearing (Paper 7). In the Petition, *inter partes* review was requested of claims 1–17 (all) of the ’747 patent based on three asserted grounds. Pet. 16. In the Request for Rehearing, Petitioner only requests “reconsideration of the Board’s decision not to institute a review of claims 1-5 and 7-17 of U.S. Patent No. 7,848,747 as being rendered obvious by the combination of Bellers in view of Farhan and of claims 1, 7, 8, 10, 11, and 14 as being rendered obvious by the combination of Ichiyoshi and Farhan.” Req. Reh’g 2.

Upon consideration of the Request for Rehearing and Petitioner's arguments and evidence, we conclude that Petitioner has not persuaded us of any reason to alter our decision denying institution of an *inter partes* review of claims 1–5 and 7–17 of the '747 patent. For the reasons provided below, we deny Petitioner's Request for Rehearing.

B. The '747 Patent

The '747 patent is entitled, "System and Method for Enhancing the Performance of Wideband Digital RF Transport Systems." Ex. 1001, (54).

The Abstract of the '747 patent states that:

A system and method for enhancing the performance of wideband digital RF transport systems is disclosed, which enables the transport of different bandwidth segments on a plurality of wideband channels by selecting an optimal clock sample rate for each bandwidth segment to be transported. Thus, the bandwidth segments are proportionally allocated so that an optimum amount of bandwidth can be transported at the serial bit rate.

Id., (57).

Figure 2 of the '747 patent is reproduced below.

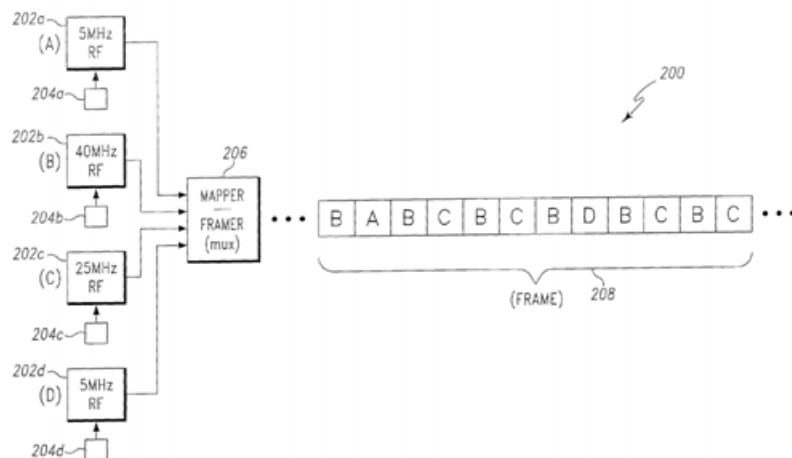


Fig. 2

Figure 2 depicts “how the present invention allocates bandwidth proportionally.” *Id.* at 6:2–3. The detailed description of Figure 2 states that:

The sample rate of sample clock 204a is selected to be approximately 15 Msps (for 5 MHz bandwidth segments), approximately 90 Msps for sample clock 204b (for 40 MHz bandwidth segments), approximately 60 Msps for sample clock 204c (for 25 MHz bandwidth segments), and approximately 15 Msps for sample clock 204d (for 5 MHz bandwidth segments). Thus, as illustrated by this example, the bandwidths in frame 208 are allocated proportionally, by transporting one slot for bandwidth A (5 MHz), six slots for bandwidth B (40 MHz), four slots for bandwidth C (25 MHz), and one slot for bandwidth D (5 MHz).

Id. at 6:25–36.

The ’747 patent contains seventeen claims, four of which are independent claims. Independent claim 1 is directed to a method, independent claims 7 and 11 are directed to host units, and independent claim 14 is directed to a system. Petitioner challenges all 17 claims. Independent claim 1 recites (emphasis added):

1. A method comprising:

receiving a plurality of analog inputs each having an associated bandwidth containing an arbitrary number of channels;

sampling each of the plurality of analog inputs with a selected sample rate, ***the selected sample rates selected based on the bandwidth of the associated one of the plurality of analog inputs***;

combining the samples of the plurality of analog inputs;

converting the combined samples to a serial data stream; and

transmitting the serial data stream over a communication medium.

Ex. 1001, 6:49–61.

Dependent claim 6 recites (emphasis added), “[t]he method of claim 1, wherein the **sample rate is proportional to the bandwidth** of the associated one of the plurality of analog inputs.” *Id.* at 7:12–14.

Independent claim 7 recites (emphasis added), “each analog to digital converter circuit operating at a **sample rate related to a signal bandwidth** of its associated broadband RF signal.” *Id.* at 7:15–27.

Independent claim 11 recites (emphasis added), “the selected **sample rates selected based on the bandwidth** of the analog signal.” *Id.* at 7:48–61.

Independent claim 14 recites (emphasis added), “each **output** has an associated sample clock with a **sample rate selected based on the bandwidth** of the associated RF bandwidth segment.” *Id.* at 8:14–47.

Dependent claim 16 recites (emphasis added), “each analog to digital converter circuit has an associated sample clock with a **sample rate selected based on the bandwidth** of the associated RF bandwidth segment.” *Id.* at 8:53–56.

II. ANALYSIS

A. Selecting the Sample Rate Based on Bandwidth

Each of the claims of the ’747 patent contains a limitation relating to selecting the sample rate based on the bandwidth. *See* Req. Reh’g 3–4. In the Petition, Petitioner relied on each of the cited references as teaching or suggesting selecting the sample rate based on the bandwidth. *See* Pet. 14–15 (claim 1, citing Bellers and Farhan), 25–26 (claim 6, citing Bellers and

Farhan), 31–32 (claim 7, citing Bellers and Farhan), 39–40 (claim 11, citing Bellers and Farhan), 56 (claim 14, citing Farhan), 58 (claim 16, citing Bellers and Farhan), 61–64 (all claims, citing Bellers and Farhan), 67 (claim 7, citing Bellers and Grace), 72 (claim 11, citing Bellers and Grace), 78–79 (claim 14, citing Grace), 79–80 (claim 16, citing Bellers and Grace), 80–82 (claims 7–11 and 13–17, citing Bellers and Grace), 83 (claim 1, citing Ichiyoshi), 86 (claim 7, citing Ichiyoshi and Farhan), 90 (claim 11, citing Ichiyoshi and Farhan), 95 (claim 14, citing Farhan), 95–96 (claims 1, 7, 8, 10, 11, 14, citing Ichiyoshi and Farhan). After reviewing the applied art and other evidence, primarily the Bims Declaration,² we found the applied art failed to teach or suggest at least selecting the sample rate based on bandwidth. DDI 9–13.

1. Claim Construction

Petitioner argues that we applied an overly narrow construction of “sample rate based on the bandwidth.” Req. Reh’g 4–6. Specifically, Petitioner argues that we required “that the sample rate must be ***directly related to*** the bandwidth” and, under a proper construction, the phrase “only requires that the sample rate is ***somehow related to*** the bandwidth.” Req. Reh’g 4–5 (emphasis added). Petitioner argues that:

For example, under the broadest reasonable reading of the claims, the sample rate can be based on a variable that itself is based on the bandwidth. In such an example, the sample rate is based on the bandwidth, although indirectly through the intermediary variable. This, however, clearly satisfies the “based on” claim language requirement.

² Declaration under 37 C.F.R. § 42.53 of Harry Bims, Ph.D. (Ex. 1002, “Bims Decl.”).

Id. at 5.

We interpret claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b). In applying a broadest reasonable construction, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner's new claim construction argument was not made in the Petition. *See* Pet. 10 ("Claim Construction"). In the Request for Rehearing, Petitioner does not cite to the Petition or make any showing that this argument was made explicitly or implicitly in the Petition. Req. Reh'g 4–6. As an initial matter, we could not have overlooked or misapprehended a claim construction that Petitioner did not argue in the Petition. Moreover, Petitioner's only support for its newly proposed construction is the wording of the claims themselves and a claim differentiation argument based on dependent claim 6 which recites that the "sample rate is proportional to the bandwidth." *Id.* Petitioner fails to persuade us that its proposed construction is supported adequately by the wording of the claims, the Specification, and the file history. We also conclude that Petitioner's "somehow related to" construction of "based on" is unreasonable and overly broad. Based on this record, we decline to adopt Petitioner's proposed construction. Thus, Petitioner fails to show that it argued this construction in the Petition or that its construction is demonstrably correct in view of the claim language, the Specification, the file history, or other evidence.

Further, as stated in the Decision Denying Institution, we do not

believe the express construction of “sample rate based on the bandwidth” is necessary for this Decision. *See* DDI 6. As shown below, Petitioner has failed to establish the applied art teaches or suggests basing the sample rate, directly on the bandwidth or that the sample rate is somehow related to the bandwidth.

2. *Bellers (Ex. 1006)*³

Petitioner argues *Bellers* teaches “selecting the sample rate based on bandwidth.” *Req. Reh’g* 9–13. As noted by Petitioner (*id.* at 10–11), *Bellers* states: “[r]eceiver 101 includes a sampling mechanism 104 which samples the analog video input signal at a frequency modulated by or dependent upon the spatial frequency of the sampled content” (Ex. 1006, 3:11–14) and “[t]he present invention employs a sampling rate which is modulated *based upon the spatial frequencies* of the content being sampled. Higher sampling rates, and larger sample densities, are employed for content having high spatial frequencies while lower sampling rates are employed for content having low spatial frequencies” (*id.* at 4:14–19 (emphasis added)). *Bellers* expressly defines spatial frequencies, as follows: “[t]he spatial frequency or frequencies of an image are the rates of pixel change per unit distance, usually expressed in cycles per degree or radian.” *Id.* at 1:11–13. Thus, *Bellers* teaches modulating the sampling rate based on the *rates of pixel change per unit distance*. Petitioner has not shown that *Bellers* teaches or suggests a “sample rate selected based on the bandwidth.” Petitioner has not directed our attention, either in the Petition or the Request for Rehearing,

³ U.S. Patent No. 8,446,530 B2.

to teachings or suggestions in Bellers of selecting the sample rate based on the bandwidth.

3. *Ichiyoshi (Ex. 1009)*⁴

In both the Petition (Pet. 83, 86, 90, 95–96) and the Request for Rehearing (Req. Reh’g 7–8), Petitioner argues the following passages in Ichiyoshi teach or suggest selecting the sample rate based on bandwidth.

The sampling frequency f_s is normally set to $f_s = N\Delta f$ where Δf represents a channel frequency interval. The sampling frequency f_s is generated independently in the transmission device 81 and the reception device 82.

Ex. 1009, 6:3–6.

. . . signal combining circuit 91 includes a sampling timing generator 1 for generating a signal of the sampling frequency f_s , and N A/D converter 3 for sampling N independent information signals with the sampling frequency f_s . . .

Id. at 6:9–13.

These passages, however, do not relate to selecting the sample rate based on bandwidth. Petitioner provides no adequate explanation or other support in the Petition (Pet. 83) or the Request for Rehearing (Req. Reh’g 7–8) for concluding these passages in Ichiyoshi teach or suggest selecting the sample rate based on bandwidth. Indeed, in the Petition, the Petitioner quoted these two passages, but failed to provide any explanation or to cite any further support for finding Ichiyoshi taught or suggested selecting the sample rate based on bandwidth. See Pet. 83.

B. Reason to Combine

In the Request for Rehearing, Petitioner argues that we “inadvertently

⁴ U.S. Patent No. 6,014,366.

overlooked evidence provided by the Petition that supports a finding of a motivation to combine” the teachings of (1) Bellers and Farhan; and (2) Ichiyoshi and Farhan. Reg. Reh’g 1, 9, 14. Petitioners are incorrect. We fully considered all of the evidence argued in the Petition relating to motivation to combine the cited references. See DDI 13–15 (finding “Petitioner has failed to show a reasonable likelihood of establishing a reason to combine with regard to any of the asserted combinations of the teachings of the applied references.”).

With regard to the combination of Bellers and Farhan, in the Petition, Petitioner cited paragraphs **117–120** of the Bims Declaration (Ex. 1002) as providing support for combining the teachings of these references. Pet. 11. As discussed in the Decision Denying Institution, however, the cited paragraphs relate to different subject matter. DDI 14. In the Request for Rehearing, Petitioner now relies upon paragraphs **104–107** of the Bims Declaration. Req. Reh’g 14. Petitioner did not rely upon these paragraphs in the Petition, and Petitioner provides no explanation for this change of argument and evidence in its Request for Rehearing. *Id.*

With regard to the combination of the teachings of Ichiyoshi and Farhan, in the Petition, Petitioner cited paragraph **254** of the Bims Declaration. Pet. 12. As discussed in the Decision Denying Institution, the cited paragraph relates to different subject matter. DDI 15. In the Request for Rehearing, Petitioner now relies upon paragraphs **255–258** of the Bims Declaration. Req. Reh’g 9. Petitioner did not rely upon these paragraphs in the Petition, and Petitioner provides no explanation for this change of argument and evidence in its Request for Rehearing. *Id.*

As noted above, we could not overlook or misapprehend arguments

that Petitioner did not make or evidence upon which it did not rely. Thus, contrary to Petitioner's assertion, we did not overlook argument or evidence presented in the Petition relating to motivation to combine.

Moreover, we have reconsidered Petitioner's reasons to combine for the combinations of (1) Bellers and Farhan; and (2) Ichiyoshi and Farhan provided in the Petition (Pet. 11–12) in light of the additional citations provided in the Request for Rehearing and find, as we did in the Decision Denying Institution (Dec. 13–15) that Petitioner has failed to show a reasonable likelihood of establishing a reason to combine the relevant teachings of these references. As we indicated in the Decision Denying Institution (*id.*), the reasons to combine in the Petition for all of the asserted combinations of references were brief and conclusory. With regard to the combination of Bellers and Farhan, the Petition states, “[i]t was **commonly understood** that flexible ADCs could have a sampling rate adapted to the associated bandwidth of their analog input signal.” Pet. 11 (emphasis added). With regard to the combination of Ichiyoshi and Farhan, the Petition states, “POSITAS would have been motivated to combine Ichiyoshi's sampling system with Farhan's broadband communications system based on POSITA's **commonly understood knowledge** that optimizing RF signal sampling rates can further improve bandwidth efficiency.” Pet. 12 (emphasis added). Neither the Petition nor the Bims Declaration provide adequate support for the assertions as to what was “commonly understood” by persons of skill in the art. The only support given in the Bims Declaration for these assertions are quotations from the art cited in the Petition (*see* Ex. 1002, ¶¶ 104, 255), which fall far short of establishing what was “commonly understood” as of the date of filing the

'747 patent.

III. CONCLUSION

Petitioner has not established that any argument or evidence was misapprehended or overlooked or that any errors were made in making the decision denying institution of *inter partes* review of the '747 patent, which justify altering our Decision denying review of claims 1–5 and 7–17. Accordingly, we are not persuaded that changes to our Decision Denying Institution (Paper 6) are appropriate, and we deny Petitioner's Request for Rehearing.

IV. ORDER

For the reasons given, it is:

ORDERED that Petitioner's Request for Rehearing Pursuant to 37 C.F.R. § 42.71 (Paper 7) is *denied*.

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