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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARRIS INTERNATIONAL PLC, ARRIS GLOBAL LTD.,
PACE AMERICAS, LLC, PACE AMERICAS HOLDINGS, INC.,
and PACE AMERICAS INVESTMENTS, LLC,
Petitioner,

v.

SONY CORPORATION,
Patent Owner.

Case IPR2016-00834
Patent 6,097,676

Before JENNIFER S. BISK, BART A. GERSTENBLITH, and CHARLES J. BOUDREAU, *Administrative Patent Judges*.

BOUDREAU, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

ARRIS International plc, Pace Ltd.,[1] Pace Americas, LLC, Pace Americas Holdings, Inc., and Pace Americas Investments, LLC (collectively, "Petitioner") filed a Petition for *inter partes* review of claims 5 and 8 of U.S. Patent No. 6,097,676 (Ex. 1001, "the '676 patent"). Paper 2 ("Pet."). Sony Corporation ("Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp."). On September 30, 2016, we instituted trial on one of the grounds presented in the Petition—that Yoshio[2] would have rendered the subject matter of claims 5 and 8 obvious to one of ordinary skill in the art at the time of the invention. Paper 13 ("Institution Decision" or "Inst. Dec.").

Following institution, Patent Owner filed a Request for Rehearing of the Institution Decision (Paper 14, "Reh'g Req."), and we denied that Request (Paper 21, "Rehearing Decision" or "Reh'g Dec."). Patent Owner then filed a Response (Paper 24, "PO Resp."), and Petitioner filed a Reply (Paper 29, "Reply"). Petitioner also filed a Motion to Exclude Evidence (Paper 35, "Mot. Excl.), to which Patent Owner filed an Opposition (Paper 41, "Opp. Mot. Excl."), and Petitioner filed a Reply to Patent Owner's Opposition (Paper 44, "Reply Mot. Excl.). Patent Owner also filed a Motion for Observation with respect to the cross-examination of

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[1] According to updated mandatory notice information filed under 37 C.F.R. § 42.8, original petitioner "Pace Ltd. . . . changed its name to ARRIS Global Ltd. in May of 2016." Paper 16, 1. We have updated the caption accordingly.

[2] U.S. Patent No. 5,130,816 to Junichi Yoshio (Ex. 1005)

Petitioner's Reply Witness, Dr. Samuel H. Russ (Paper 37, "Obs."), in response to which Petitioner filed a Response (Paper 40, "Obs. Resp.").

We held an oral hearing on June 29, 2017. A transcript of the hearing is included in the record. Paper 52 ("Tr."). After the hearing, we ordered Patent Owner to file complete copies of a claim construction brief and a joint claim construction statement filed in related district court litigation, partial copies of which brief and statement Patent Owner had filed concurrently with its Patent Owner Response (Exs. 2003, 2004) and were the subject of a Motion to Exclude filed by Petitioner (Paper 35). Paper 45, 2 ("Order"). In the Order, we also authorized Petitioner and Patent Owner to file a Brief (Paper 49, "Pet.'s Brief on Claim Constr.") and Reply Brief (Paper 50 "PO's Reply Brief on Claim Constr.), respectively, to address whether Petitioner should be bound by the parties' agreement in the related litigation as to the construction of a claim term disputed in this proceeding. Paper 45, 3–4. Lastly, we authorized Patent Owner to file a three-page Notice of Supplemental Authority related to the Federal Circuit's decision in *IPCom GmbH & Co. v. HTC Corp.*, 861 F.3d 1362 (Fed. Cir. 2017), which issued after the hearing (Paper 47, "Supp. Auth."), and we authorized Petitioner to file a three-page response to Patent Owner's Notice (Paper 48, "Resp. Supp. Auth.").

This is a Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth the below, we conclude that Petitioner has shown by a preponderance of evidence that the challenged claims are *unpatentable*.

II. BACKGROUND

A. Related Proceedings

The parties indicate that the ’676 patent is involved in *Sony Corp. v. Pace plc*, No. 1:15-cv-00288 (D. Del.), filed April 1, 2015. Pet. 1–2; Paper 5, 2; Paper 16, 2.

B. The ’676 Patent

The ’676 patent, titled “Information Recording Medium and Reproducing Device Therefor with Codes Representing the Software Category and Channels of Recorded Data,” describes “an information recording medium such as a compact disk, video disk and magneto-optical disk,” and “a reproducing device for reproducing information recorded in such an information recording medium.” Ex. 1001, at [54], 1:11–15.

In what is termed the “third aspect . . . according to the present invention,” the reproducing device is provided with “storing means for storing designation information for designating audio information to be reproduced,” “reading means for reading codes representing kinds of audio information,” and “reproducing means for reproducing the audio information designated by the designation information from plural kinds of audio information.” *Id.* at 3:4–11. Audio information designated as a “default” is “selected from audio information of plural kinds,” and “the audio information thus selected is reproduced.” *Id.* at 3:31–35, 3:57–61. Thus, for example, audio data for a movie may be translated into different languages for various countries and multiplexedly recorded in an information recording medium, with each language correspondingly identified by identifiers, such as 0, 1, 2, and 3 for English, French, German, and Japanese, respectively. *Id.* at 10:61–67. One of the identifier numbers is set as a default value in a

nonvolatile memory in the information reproducing device—in products to be used in the United States or the United Kingdom, for instance, the identifier number 0 for English is set as the default value; in products to be used in France, the identifier number 1 for French is set as the default value; and so on. *Id.* at 10:67–11:9, Fig. 15. Accordingly, information reproducing devices for use in multiple countries "may be made common provided that the default is to be changed and set for every destination country"; "the predetermined audio information selected from various audio information can be always reproduced"; and "any other audio information can also be reproduced as desired by changing the default." *Id.* at 3:40–43, 61–64.

A preferred embodiment is described with reference to Figure 7, reproduced below.[3]

[3] We note that the '676 patent states that the preferred embodiment of the third aspect is "described with reference to FIG. 1" (Ex. 1001, 3:12–13), but that appears to be a typographical error. The description following that statement refers to "nonvolatile memory 16" (*id.* at 3:15), which is depicted only in Figure 7, and the Brief Description of the Drawings and Detailed Description sections of the '676 patent identify Figure 7 as a block diagram showing a construction of the third preferred embodiment (*id.* at 4:35–37, 7:54–56; *cf. id.* at 4:17–19 (identifying Figure 1 as a block diagram showing a construction of "a *first* preferred embodiment" (emphasis added))).

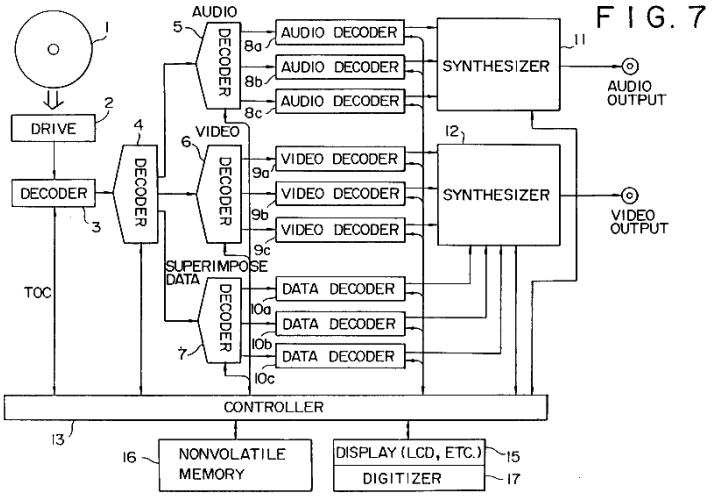

Figure 7 is a block diagram showing the construction of the information reproducing device of the third preferred embodiment. *Id.* at 4:35–37. According to the '676 patent, the "storing means" comprises nonvolatile memory 16; the reading means comprises decoders 3–7, audio decoders 8a–8c, video decoders 9a–9c, and data decoders 10a–10c; and the reproducing means comprises synthesizer 11 and controller 13. *Id.* at 3:12–19.

In the operation of the device, disk 1 is loaded into drive 2, and information recorded in disk 1 is reproduced by drive 2. *Id.* at 7:56–58. Decoder 3 decodes a reproduced signal output from drive 2 and supplies reproduced data from each track to decoder 4. *Id.* at 7:58–62. Decoder 4 separates the reproduced data from each track into audio data, video data, and superimpose data, and supplies these data to decoders 5, 6, and 7, respectively. *Id.* at 7:64–67.

Decoder 5 reads data recorded at an audio header portion (multiplex header portion) from the audio data received, and supplies the read data to controller 13. *Id.* at 8:1–3. Further, decoder 5 separates packet data following the data recorded at the audio header portion into plural channels, and supplies the separated data to audio decoders 8a–8c, respectively. *Id.* at

8:4–7. Each of audio decoders 8a–8c reads data recorded at an audio packet header portion from the audio packet data received, and outputs the read data to controller 13. *Id.* at 8:22–24. Further, each of audio decoders 8a–8c decodes data recorded at an audio data portion following the audio packet header portion, and outputs the decoded data to synthesizer 11. *Id.* at 8:25–28. Synthesizer 11 is controlled by controller 13 to synthesize the outputs from audio decoders 8a–8b and output a synthesized signal to a speaker or the like (not shown). *Id.* at 8:43–46. Nonvolatile memory 16 is provided to store predetermined default values, such as the language identifiers for products to be exported to or used in various countries. *Id.* at 8:62–64, 10:61–11:9.

C. The Challenged Claims

Challenged claims 5 and 8 are reproduced below.

> 5. An information reproducing device for reproducing an information recording medium in which audio data of plural channels are multiplexedly recorded, the information reproducing device comprising:
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> storing means for storing a default value for designating one of the plural channels to be reproduced; and
>
> reproducing means for reproducing the audio data of the channel designated by the default value stored in the storing means; and
>
> wherein a plurality of voice data, each voice data having similar contents translated into different languages are multiplexedly recorded as audio data of plural channels; and a default value for designating the voice data corresponding to one of the different languages is stored in the storing means.

> 8. An information reproducing device for reproducing an information recording medium in which audio data of plural channels and codes representing kinds of said audio data are multiplexedly recorded, the information reproducing device comprising:
>
> storing means for storing a default value for designating one of the plural channels to be reproduced;
>
> reading means for reading the codes representing the kinds of the audio data; and
>
> reproducing means for reproducing the audio data of the channel designated by the default value stored in the storing means, according to the codes read by the reading means; and
>
> wherein a plurality of voice data, each voice data having similar contents translated into different languages are multiplexedly recorded as audio data of plural channels; and a default value for designating the voice data corresponding to one of the different languages is stored in the storing means.

Ex. 1001, 12:28–43, 13:1–21.

D. Evidence Relied Upon

The instituted ground relies on Yoshio, which issued July 14, 1992, from an application filed July 24, 1989, that in turn claimed the benefit of a Japanese patent application filed February 9, 1989 (*id.* at [22], [30], [45], [75]). Petitioner also relies upon two declarations of Dr. Russ (Exs. 1003, 1022), in support of its Petition and Reply, respectively.

III. ANALYSIS

A. Claim Construction

Patent Owner concedes, and Petitioner does not contest, that the '676 patent expired in August 2017. PO Resp. 8 n.1; Reply 10. We review the claims of an expired patent using a district court-type claim construction standard. *See In re Rambus, Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2013). Under

that standard, claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention in light of the language of the claims, the specification, and the prosecution history of record. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313–17 (Fed. Cir. 2005) (en banc).

1. The Reproducing Means Limitation

The parties' dispute in this case focuses on one particular limitation—"reproducing means for reproducing the audio data of the channel designated by the default value stored in the storing means" (the "reproducing means" limitation)—recited by claims 5 and 8. PO Resp. 1, 5–17; Reply 2–17.

A claim limitation using the phrase "means for" creates a rebuttable presumption that the drafter intended to invoke 35 U.S.C. § 112 ¶ 6.[4] *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). Section 112 ¶ 6 provides that:

> An element in a claim for a combination may be expressed as a means . . . for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

When construing a means-plus-function limitation under § 112 ¶ 6, it is necessary first to identify the claimed function, and then to look to the

[4] Section 4(c) of the Leahy-Smith America Invents Act (AIA), Pub. L. No. 112-29, § 4(c), 125 Stat. 284 (2011), re-designated 35 U.S.C. § 112 ¶ 6, as 35 U.S.C. § 112(f). Because the '676 patent has a filing date before September 16, 2012 (effective date of the statute), we refer to the pre-AIA version of 35 U.S.C. § 112.

specification to identify the corresponding structure for that function. *In re Aoyama*, 656 F.3d 1293, 1296–97 (Fed. Cir. 2011); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed. Cir. 2002). Under that second step, "structure disclosed in the specification is corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003) (quoting *B. Braun Med. Inc. v. Abbott Labs*., 124 F.3d 1419, 1424 (Fed. Cir. 1997)). Our Rules specifically require that the petition identify the corresponding structure in proposing a construction for a means-plus-function claim limitation. 37 C.F.R. § 42.104(b)(3). "This inquiry is undertaken from the perspective of a person of ordinary skill in the art." *Cardiac Pacemakers*, 296 F.3d at 1113 (citing *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1378–79 (Fed. Cir. 1999)).

As an initial matter, there is no dispute in this case that the reproducing means limitation is subject to construction under § 112 ¶ 6 and that the claimed function of the reproducing means is "reproducing the audio data of the channel designated by the default value stored in the storing means," as explicitly recited in each of claims 5 and 8. Pet. 16; PO Resp. 1. There also does not appear to be any dispute that the recited function has two portions that can be classified as "selecting" a designated audio channel and "reproducing" the audio data of the designated audio channel. Pet. 16; PO Resp. 7. Finally, there does not appear to be any dispute that the structures corresponding to those two functions in the specification of the '676 patent are, respectively, a "controller" and a "synthesizer." Pet. 17; PO Resp. 5, 7. Rather, the dispute between the parties centers on whether the

construction of the reproducing means limitation additionally requires that the controller be linked to an algorithm. PO Resp. 5–17; Reply 5–17.

In the Institution Decision, we agreed with Petitioner that the '676 patent discloses a controller and a synthesizer as structure corresponding to the reproducing means. Inst. Dec. 14–15. These identifications are supported explicitly by the specification, which provides that "the reproducing means comprises a synthesizer 11 and a controller 13" and that "controller 13 controls the [decoders] and the synthesizers 11 and 12." Ex. 1001, 3:18–19, 5:19–21. We further explained that "synthesizer 11 and controller 13 both are shown and described in the '676 patent as discrete hardware elements that interface with other hardware elements of the described information reproducing devices." Inst. Dec. 14 (citing Ex. 1001, Fig. 7, 7:59–8:62). Thus, while acknowledging the correctness of Patent Owner's argument in the Preliminary Response that when a means-plus-function term is directed to a computer programmed to carry out an algorithm, "the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm," we determined that the reproducing means recited in claims 5 and 8 is not a "computer-implemented" means-plus-function term directed to a computer programmed to carry out an algorithm subject to the legal rule that computer-implemented means-plus-function terms must be construed to include the corresponding algorithmic structure disclosed in the specification. *Id.* (quoting Prelim. Resp. 8 (quoting *In re Aoyama,* 656 F.3d 1293, 1297 (Fed. Cir. 2011))). We further explained that the cases cited by Patent Owner in the Preliminary Response in support of its arguments do not support importation of an algorithm into the corresponding structure for a

non-computer-implemented means-plus-function limitation, and that, in contrast with the limitations at issue in those cases, we were persuaded that the reproducing means limitation of claims 5 and 8 has adequate corresponding structure that is neither a general-purpose computer nor a microprocessor. *Id.* at 14–15 (citing *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 621 (Fed. Cir. 2015); *Typhoon Touch Techs. v. Dell, Inc.*, 659 F.3d 1376, 1384 (Fed. Cir. 2011); *Aoyama*, 656 F.3d at 1297; *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008); *WMS Gaming v. Int'l Game Tech.*, 184 F.3d 1339, 1347–48 (Fed. Cir. 1999); *ZTE Corp. v. ContentGuard Holdings, Inc.*, Case IPR2013-00139 (PTAB July 9, 2013) (Paper 15)).

In its Request for Rehearing, Patent Owner contended that we erred in instituting trial in this proceeding, arguing, *inter alia,* that we "mistakenly determined that unless a claim recites the terms 'computer' or 'microprocessor,' it is not computer-implemented"; that "[a] 'controller' is nothing more than a broad class of devices that include a [central processing unit] CPU"; that the '676 patent explicitly discloses an algorithm that controller 13 uses to carry out a determination of a channel to be synthesized or reproduced; that "[b]y proposing a construction where the controller implements an algorithm in the related district court litigation, Petitioners have at least admitted that the 'reproducing means' is computer-implemented"; and that we, accordingly, erred in finding that the reproducing means limitations recited in claims 5 and 8 are not computer-implemented and do not include an algorithm. Reh'g Req. 1, 4–5, 7–8.

In the Rehearing Decision, we explained that, contrary to Patent Owner's contentions, we did not determine in the Institution Decision that "unless a claim recites the terms 'computer' or 'microprocessor,' it is not computer-implemented"; that "the claimed controller is not a computer based solely on a word matching exercise"; or that the Board "is free to disregard the law on how computer-implemented means-plus-function terms are to be construed." Reh'g Dec. 4 (citing Reh'g Req. 1–2). Rather, we explained, we simply were not persuaded on the record before us that a "controller" requires invocation of the rule applicable to computer-implemented means-plus-function limitations. *See id.* at 4–5.

First, despite Patent Owner's assertion that a controller includes a CPU (*see, e.g.*, Reh'g Req. 1), we found no evidentiary support on the record for that assertion. Reh'g Dec. 4. While acknowledging that Patent Owner's assertion might reflect one possible meaning of controller, we noted that "courts that have had occasion to construe the term 'controller' in various patents have interpreted that term, consistently with our finding in our Institution Decision that controller 13 is a discrete hardware elements, as, for example, a 'device,' 'circuit[ry],' or a 'component.'" *Id.* at 5 (citing, e.g., *AutoMed Techs., Inc. v. Microfil, LLC*, 244 F. App'x 354, 357–58 (Fed. Cir. 2007) (affirming district court's construction of "controller" as "single control system that regulates the entire process"); *Braun Corp. v. Vantage Mobility Int'l, LLC*, 608 F. Supp. 2d 1036, 1045 (N.D. Ind. 2009) (construing "controller" as "a device that actuates and/or directs the operation of other components, or is capable of making decisions with respect to the operation or actuation of those components, including being operable to selectively delay execution of the door operation commands");

911EP v. Whelen Eng'g Co., 512 F. Supp. 2d 713, 724 (E.D. Tex. 2007) (concluding that "one of ordinary skill in the art would understand a 'controller' to be a circuit or device that is *either* programmable or has a pre-determined function," and that a "programmable controller" is merely "an aspect of a preferred embodiment that should not be read into the claims") (emphasis added); *Lexar Media, Inc. v. Fuji Photo Film USA, Inc.*, No. C03-00355MJJ, 2007 WL 677166, at *4 (N.D. Cal. Mar 1, 2007) (construing "controller" as "a device that interfaces between a host and nonvolatile memory"); *Koninklijke Philips Elecs., NV v. Defibtech LLC*, No. C03-1322JLR, 2005 WL 3500783, at *6 (W.D. Wash. Dec. 21, 2005) (construing "controller" as "a circuit or component that controls"); *ABB Automation Inc. v. Schlumberger Res. Mgmt. Servs., Inc.*, 254 F. Supp. 2d 475, 477 (D. Del. 2003) (construing "controller" as "electronic circuitry that generates a control signal"); *EMC Corp. v. Hewlett-Packard Co.*, No. 00-40188-NMG, 2003 WL 25782750, at *9 (D. Mass. Sept. 12, 2003) (construing "data storage system controller" as "a device that controls data storage operations")).

Second, after considering Patent Owner's argument, supported by Dr. Robert Stevenson's now-withdrawn testimony,[5] that the '676 patent

[5] In support of the Preliminary Response, Patent Owner provided a Declaration of Robert Stevenson, Ph.D. (Ex. 2002). On March 29, 2017, however, after institution of this proceeding, Patent Owner informed the Board via email that it was withdrawing Dr. Stevenson's Declaration in both this case and a related case—IPR2016-00835. *See* Tr. 15:21–23 (confirming withdrawal of Dr. Stevenson's Declaration). Consistent with this notification, Patent Owner did not rely on this testimony in any of its

explicitly discloses an algorithm used by controller 13 (*see* Reh'g Req. 4–5), we explained that "algorithms are not the sole province of computers, and Patent Owner's characterization of one disclosed sequence of operations to carry out a determination of a channel by the controller as an algorithm does not mean that the controller is computer-implemented." Reh'g Dec. 6–7. Absent persuasive evidence that would support a threshold finding that the "reproducing means" of claims 5 and 8 are computer-implemented, we explained, we were not persuaded that it would be proper to read any algorithm from the specification into the claims. *Id.* at 7 (citing *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988) (holding that reading an "extraneous limitation" into a claim from the specification is improper)).

We also were unpersuaded both by Patent Owner's suggestion in the Request for Rehearing that "reproducing means" is "in part computer-implemented" based on "Petitioners' . . . proposed construction for this term in the related district court litigation, where Petitioners argued that the corresponding structure for the term includes a specific algorithm shown in one of the figures of the '676 patent" and by its characterization of *Netgear, Inc. v. Ruckus Wireless, Inc.*, 5 F. Supp. 3d 592, 622 (D. Del. 2013), as "finding [a] means-plus-function term indefinite because the specification merely disclosed a generic 'controller' for carrying out the claimed function without a corresponding algorithm." Reh'g Req. 4, 8. With respect to the first argument, we explained that claim construction is a matter of law, and

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post-filing briefs. We, therefore, did not consider Dr. Stevenson's Declaration for purposes of this Decision.

the determination as to whether the "reproducing means" recited in claims 5 and 8 is "computer-implemented" does not turn on arguments made by Petitioner in another proceeding. Reh'g Dec. 7. Regarding the second argument, we explained that the court's conclusion of indefiniteness in *Netgear* was based on a failure to disclose algorithms for three other elements of the claims at issue in that case, not the term "controller." *Id.* at 7–8.

In the Patent Owner Response, Patent Owner again asserts that the recited reproducing means is computer-implemented and must be construed to include algorithmic structure. PO Resp. 10–14. In support of that assertion, Patent Owner again cites *Netgear* for the proposition that "courts have applied the algorithm requirement in the context of 'controllers' just as they have for 'computers' and 'microprocessors'" (*id.* at 11 (citing *Netgear*, 5 F. Supp. 3d at 622)).

Citing two definitions of the term "microcontroller" from online dictionaries, both dated February 2, 2017, Patent Owner further contends:

> The '676 patent is directed to a consumer electronics device. (*See, e.g.*, Ex. 1001 at 1:11–15, noting that the invention relates to a recording medium and reproducing device for compact disks, video disks, and magneto-optical disks.) In reproducing the recording medium by using the reproducing device of the present invention, the '676 patent explicitly states that the processing as shown in FIG. 16 is executed. Ex. 1001 at 11:10–12. Thus, at least in the consumer electronics context of the '676 patent, the algorithm requirement applies for "controllers" just as it does for "computers" and "microprocessors" because while a CPU is generally understood as including only a processor, in the consumer electronics context, a controller or microcontroller is a broader class of devices that may not just include a processor, but also have

additional on-board functionality such as storage and communication processing.

For example, Merriam-Webster defines "microcontroller" as "a microprocessor that controls some or all of the functions of an electronic device (as a home appliance) or system." *See* Ex. 2005 at 2. Similarly, the PC Magazine Encyclopedia defines "microcontroller" as:

> "A single chip that contains the processor (the CPU), non-volatile memory for the program (ROM or flash), volatile memory for input and output (RAM), a clock and an I/O control unit. Available in numerous sizes and architectures, and also called a 'computer on a chip,' billions of microcontroller units (MCUs) are embedded each year in products from toys to appliances to automobiles. For example, a car or truck can employ 70 or more microcontrollers (see automotive systems). See CPU, RAM, ROM and clock."

See Ex. 2006. Thus, the class of devices referred to as "controllers" in the '676 patent clearly require algorithms to the same extent as individual microprocessors or computers, consistent with Federal Circuit precedent. *See e.g.*, *Aoyama*, 656 F.3d at 1297.

Here, the '676 specification specifically discloses an algorithm that is carried out by the controller in performing the recited function of the "reproducing means." *See* Ex. 1001 at 11:10-32. The specification does not link a generic, off-the-shelf controller, and for good reason. Without any programming, a "controller"—just like a "computer" or "microprocessor"—would not be able to perform the claimed processing function. On the contrary, the specification explains in detail (at 11:10-32) the algorithm that the controller performs in carrying out the claimed processing function.

Id. at 12–14.

Patent Owner further contends the construction adopted in the Institution Decision "is clearly wrong because it does not limit the 'reproducing means' to what the '676 patent actually discloses" and "violates the fundamental *quid pro quo* of means-plus-function claiming by allowing the claim to read on any generic controller that aids in reproducing audio, rather than limiting the claim to the structure disclosed in the specification that corresponds to the claimed function of reproducing a channel designated by a default value of a memory." *Id.* at 9.

According to Patent Owner, "a controller as described and claimed in the '676 patent cannot 'reproduce[] the audio data of the channel designated by the default value stored in the storing means' without an algorithm instructing it on when, and how to do such processing." *Id.* at 5. While acknowledging the cases cited in our Rehearing Decision relating to construction of the term "controller," Patent Owner contends that those cases "are entirely divorced from the context of the functions recited in Patent Owner's claims and specification," and that "[n]one of this case law is at all relevant to the question here, which is: How can a controller possibly implement the claimed processing function of the 'reproducing means' as described in the specification without the algorithm disclosed therein?" *Id.* at 6.

Patent Owner further contends that "[b]y acknowledging that the corresponding structure [for the reproducing means] includes a controller that performs the 'selecting,' Petitioners acknowledged that the 'reproducing means' is, in part, computer-implemented and requires an algorithm." *Id.* at 7. According to Patent Owner, "the '676 patent discloses an algorithm that the controller uses to perform the selecting processing (at least at [Ex. 1001,]

11:10–32)" and "does not rely on a generic hardware 'controller' alone to perform this function." *Id.* Patent Owner alleges that it is "well-known" that "off-the-shelf controllers require programming to perform particular tasks." *Id.*

Patent Owner further contends that "[b]y stipulating to a construction where the controller implements an algorithm in the related district court litigation, Petitioners have at least admitted that the 'reproducing means' is computer-implemented," and that "judicial estoppel prevents Petitioners from arguing for a broad construction here (*i.e.*, not limiting the term to the corresponding algorithm) for purposes of unpatentability while pursuing a more narrow construction (*i.e.*, agreeing that the term is limited by the corresponding algorithm) in the district court for purposes of infringement." *Id.* at 8 & n.1.

In its Reply, Petitioner responds that Patent Owner provides no reason to depart from the claim construction adopted in the Institution Decision. *See generally* Reply 5–17.

First, Petitioner contends that the Board correctly determined that the controller is not limited to computer-implemented applications and can be implemented in hardware, pointing to the cases cited in our Rehearing Decision in support. *Id.* at 6–8 (citing Inst. Dec. 12–14; Reh'g Dec. 4, 5 & n.2; *AutoMed Techs.*, 244 F.App'x at 357–58; *Braun*, 608 F. Supp. 2d at 1045; *Lexar Media*, 2007 WL 677166, at *4; *Koninklijke Philips*, 2005 WL 3500783, at *6; *ABB Automation*, 254 F. Supp. 2d at 477).

Second, Petitioner contends that Patent Owner's reliance on *Netgear* is misplaced, arguing that although Patent Owner "latches on" to the district court's holding in that case that "certain 'means' terms, construed in part to

include a 'controller,' were found indefinite for lack of algorithmic structure," the court "also found that the controllers in [that case] were *processors*, the predicate to requiring algorithmic structure." *Id.* at 8 (citing *Netgear*, 5 F. Supp. 3d at 624). Petitioner contends that "because the Board has made no such determination here, *Netgear* is readily distinguishable." *Id.*

Third, Petitioner contends that it has not conceded that the reproducing means is "in part computer-implemented," as argued by Patent Owner. *Id.* (citing PO Resp. 7). According to Petitioner, Patent Owner's argument "assumes, again, that *any* controller must by computer-implemented, a position that . . . has no basis in fact," and "[a]t no point did Petitioner admit or imply that the controller of the '676 patent must be computer-implemented." *Id.* at 8–9. Petitioner further asserts that the Board also already rejected Patent Owner's argument that the parties' stipulated construction in the related district court proceeding constitutes judicial estoppel. *Id.* at 9 (citing Reh'g Dec. 7). Petitioner contends that the Federal Circuit has "recently reiterated" that the Board is "not bound by decisions or activity in a district court" and that the Board "has long exercised its independent judgment in claim construction." *Id.* (citing *Novartis AG v. Noven Pharm, Inc.*, 853 F.3d 1289, 1293–94 (Fed. Cir. 2017); *Freightcar Am., Inv. V. Nat'l Steel Car, Ltd.*, IPR2016-00788, slip op. at 8–10 (PTAB Sept. 28, 2016) (Paper 9); *Mitchell Int'l, Inc. v. Audatex N. Am., Inc.*, CBM2014-00171, slip op. at 12 (PTAB Feb. 19, 2016) (Paper 25); *Apple v. VirnetX Inc.*, IPR2014-00481, slip op. at 12 (PTAB Aug. 24, 2015) (Paper 35); *Scentair Techs., Inc. v. Prolitec, Inc.*, IPR2013-00180, slip op. at 8–9 (PTAB July 18, 2014) (Paper 47)).

Fourth, Petitioner argues that a person of ordinary skill in the art would have understood that a "controller" need not be computer-implemented, even if used in a "consumer electronics device." *Id.* at 10–14; *cf.* PO Resp. 12–14. Relying on Dr. Russ's testimony, Petitioner contends that a person of ordinary skill in the art at the time of the invention, familiar with consumer electronics, would have known and understood that a controller such as that described in the '676 patent was not necessarily computer-implemented and instead could use a mix of hardware and software, as well as that "microcontrollers" of the time had disadvantages in complexity and cost. Reply 12–13 (citing Ex. 1022 ¶¶ 13, 14, 16).

Fifth, Petitioner argues that the '676 patent's choice of terminology—using the term "controller" rather than, for example, "microcontroller," "microprocessor," "microcomputer," or "processor"—supports the construction adopted in the Institution Decision. *Id.* at 14–16; *see also id.* at 12 n.2 (arguing that the '676 patent's specification does not use any of the typical words that one of ordinary skill in the art would understand to connote a general-purpose computer). Relying on testimony of Dr. Russ, as well as on other prior art references of record, Petitioner contends that at the time of the invention claimed in the '676 patent, patent applicants, including Patent Owner itself, would use terminology that expressly identified components intended to be limited to programmable or general-purpose computers. *Id.* (citing Ex. 1022 ¶¶ 26–30; Exs. 1010–1014).

Lastly, Petitioner contends that Patent Owner's cited definitions of "microcontroller" (Exs. 2005, 2006) also do not support any change in the

adopted construction. Reply 16–17.[6] More specifically, Petitioner argues that, whereas the '676 patent uses the term "controller," the term "microcontroller" never appears in the '676 patent. *Id.* at 16. Citing the testimony of Dr. Russ, Petitioner asserts that a person of ordinary skill in the art at the time of the alleged invention would have considered controllers and microcontrollers to be distinct terms referring to different things. *Id.* (citing Ex. 1022 ¶¶ 20, 23). Petitioner further contends that the definitions set forth in Exhibits 2005 and 2006 are "at most definitions of 'microcontroller' as of February, 2017, which is not probative of how a person of ordinary skill in the art would have understood the term actually used—'controller'—at the time of the '676 patent's alleged invention in July 1991, more than twenty-five years earlier." *Id.* at 16–17 (citing Ex. 1022 ¶ 21).

Having thoroughly considered the parties' respective arguments and cited evidence, we remain persuaded that the construction of the reproducing means limitation adopted in the Institution Decision is correct. As we explained in the Rehearing Decision, we find no support in the '676 patent or its prosecution history for a controller being a general purpose computer or including a CPU. Reh'g Dec. 5. We previously found that Patent Owner's assertion that a controller "is nothing more than a broad class of devices that include a CPU" lacked evidentiary support and was based only

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[6] Petitioner also refers in its Reply to definitions of "microcontroller" and "controller" set forth in Patent Owner's Exhibits 2010 and 2011. Reply 16–17. We understand from Patent Owner's Updated Exhibit List filed July 31, 2017, that those exhibits were "served only" and are not part of the trial record in this case. Paper 51, 2–3.

on attorney argument. *Id.* at 4 (citing *In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997) (attorney argument cannot take the place of evidence)). Not only does that remain true now with respect to that specific assertion, but, in light of Patent Owner's withdrawal of Dr. Stevenson's Declaration (*see supra* note 5), characterizes and pervades all of Patent Owner's arguments as to how a person of ordinary skill in the art would have understood the term "controller" at the time of the invention. Examples of such arguments lacking evidentiary support include, Patent Owner's contentions that "a controller as described and claimed in the '676 patent cannot 'reproduce[] the audio data of the channel designated by the default value stored in the storing means' without an algorithm instructing it on when, and how to do such processing" (PO Resp. 5); that it is "well-known" that "off-the-shelf controllers require programming to perform particular tasks" (*id.* at 7); that the term controller has any special meaning "in the consumer electronics context" (*id.* at 12–13); that "the class of devices referred to as 'controllers' in the '676 patent clearly require[s] algorithms to the same extent as individual microprocessors or computers" (*id.* at 13); and that "[w]ithout any programming, a 'controller'—just like a 'computer' or 'microprocessor'—would not be able to perform the claimed processing function" (*id.* at 13–14). In contrast, we credit the testimony of Dr. Russ that such a person of ordinary skill would have understood that a controller need not be computer-implemented. *See, e.g.*, Ex. 1022 ¶¶ 7–18, 26–30.

As we also explained in the Rehearing Decision, this understanding comports with the determinations of numerous courts that have had occasion to construe the term controller (*see* Reh'g Dec. 5 n.2), and Patent Owner has not cited any authority that compels a different result. Whereas Patent

Owner contends in its Response that we "provided no explanation" for our disagreement with Patent Owner's characterization of *Netgear* (*see* PO Resp. 11–12), we, in fact, explained in the Rehearing Decision that the *Netgear* court's conclusion of indefiniteness of a claim that included the term "controller" was based on a failure to disclose algorithms for three other elements, namely "means in the base station for determining which one of . . . multiple antennas received data most successfully . . . ," "means in . . . at least one mobile station for selecting one of said multiple antennas . . . ," and "means in said at least one mobile station for selecting one of said multiple antennas . . . ," as well as determining that the term "most successfully" was insolubly ambiguous. Reh'g Dec. 7–8 (citing *Netgear*, 5 F. Supp. 3d at 622–23). Additionally, we noted the *Netgear* court also explicitly found that "[t]he recited means" determined to lack essential algorithms "are processors performing ubiquitous functions." *Id.* at 8 (quoting *Netgear*, 5 F. Supp. 3d at 624 (emphasis added)).

We also are not persuaded that *IPCom* compels any different result.[7] As explained by Patent Owner, *IPCom* addressed construction of a means-plus-function term that was linked to the general-purpose computing elements "processor and transceiver" and determined that the Board's analysis was "erroneous because it never specified what it believed was the actual algorithm disclosed in the [challenged patent] for performing the [construed] function." Supp. Auth. 1–2 (quoting *IPCom*, 861 F.3d at 1371).

[7] Patent Owner requested, and we granted, additional briefing to discuss *IPCom*, which was decided subsequent to the oral hearing in this case. *See* Supp. Auth.; Resp. Supp. Auth.

Because the Board "never identified any algorithm for the [means-plus-function limitation], the Board also erred by failing to evaluate whether the prior art disclosed that algorithm (or its equivalents)." *IPCom*, 861 F.3d at 1371. Patent Owner contends that this is one of the same points "emphasized by Patent Owner through the briefing and oral argument of this IPR proceeding," and that we likewise should find that Petitioner failed to correctly construe the reproducing means limitation or to correctly compare the prior art to the claims. Supp. Auth. 2–3.

We agree with Petitioner that *IPCom* is inapplicable to the present case. Resp. Supp. Auth. 1–3. As Petitioner points out, the court in *IPCom* did not construe the term "controller," hold that a controller is like a general-purpose computer, or hold that a controller lacks sufficient structure without specifying an algorithm, but instead was based on a predicate holding in a prior appeal that the claimed structure "amounted to nothing more than a general-purpose computer." *Id.* (quoting *IPCom*, 861 F.3d at 1371). Despite Patent Owner's unsupported assertion that the "processor and transceiver" construed in *IPCom* are "akin to" the controller and synthesizer of the '676 patent (Supp. Auth. 1), we reiterate that we find no support in the '676 patent or its prosecution history for a controller being a general-purpose computer or including a CPU. Although the specification of the '676 patent includes steps that could be termed an algorithm and that could be implemented on a computer, we agree with Petitioner that does not mean that the controller is "computer-implemented" or require that the construction must include the algorithm. Resp. Supp. Auth. 3. As we previously explained in the Rehearing Decision, this is not to say that a patent must use the specific words "computer" or "microprocessor" to refer

to a computing device that performs an algorithm for carrying out the function of a means-plus-function term in order for the Federal Circuit's algorithm requirement to come into play, but rather that where, as here, a patent discloses a structure not shown to be computer-implemented, we do not understand Federal Circuit precedent to support application of such an "algorithm requirement." *See* Reh'g Dec. 8.

Further, neither the fact that Petitioner agreed in the related district court litigation to a construction of reproducing means that included an algorithm (*see* Ex. 2013, 21), nor the fact that a sequence of steps that could be characterized as an algorithm is disclosed in the '676 patent (*see* Ex. 1001, 11:10–32, Fig. 16), persuasively demonstrates that the reproducing means necessarily is "computer-implemented." We find persuasive the Board's reasoning in *Cook Group Inc. v. Boston Scientific Scimed, Inc.*, IPR2017-00135 (PTAB May 16, 2017) (Paper 7), that "[c]laim construction is a legal determination based on a hierarchy of evidence—intrinsic evidence, including the claim language, the specification, and the prosecution history," and "not an issue of fact that can be conceded." *Id.*, slip op. at 7–8; *see also Apple Inc. v. VirnetX Inc.*, IPR2015-00810, slip op. at 18–19 (PTAB Aug. 30, 2016) (Paper 44) ("Neither are we persuaded that what the parties agreed to in the district court binds us. . . . We are unaware of any precedent preventing Petitioner from taking inconsistent positions in different forums . . . ."). Although, unlike in the present case, the patents involved in *Cook Group* and *Apple v. VirnetX* were unexpired and thus subject to construction under the broadest reasonable interpretation standard, the cited principles are not premised on that distinction. Second, as we explained in the Rehearing Decision, algorithms are not the sole province of

computers, and the characterization of a disclosed sequence of operations to carry out a determination of a channel by the controller as an "algorithm" does not mean that the controller is computer-implemented. Reh'g Dec. 6–7. Moreover, Patent Owner has not pointed to any evidence that Petitioner has, in fact, characterized the reproducing means as computer-implemented. This case, accordingly, differs from *WMS Gaming*, where the parties stipulated that the subject patent was microprocessor-implemented. *See WMS Gaming*, 184 F.3d at 1347.

We also are not persuaded by Patent Owner's assertion that judicial estoppel applies in this case. As Patent Owner recognizes, judicial estoppel applies "when (1) a party's later position is 'clearly inconsistent' with its prior position, (2) the party successfully persuaded a court to accept its prior position, and (3) the party 'would derive an unfair advantage or impose an unfair detriment on the opposing party if not estopped.'" PO's Reply Br. on Claim Constr. 1 (quoting *New Hampshire v. Maine*, 532 U.S. 742, 750–51 (2001)). To the extent that the equitable defense of judicial estoppel is available at all in the context of an *inter partes* review,[8] Patent Owner's assertion here fails on the first of those prongs, and neither the second prong

[8] Patent Owner does not cite any precedent for application of judicial estoppel in a proceeding before the Board. Moreover, our statutory mandate is silent as to whether such equitable defenses are available in *inter partes* review proceedings. *See Athena Automation Ltd. v. Husky Injection Molding Sys. Ltd.*, Case IPR2013-00290, slip op. at 13 (Oct. 25, 2013) (Paper 18) (precedential) (pointing out that statutory framework for *inter partes* review includes no counterpart to 19 U.S.C. § 1337(c) wherein Congress provided explicitly that "[a]ll legal and equitable defenses may be presented" in International Trade Commission (ITC) investigations involving patent disputes).

nor the third prong weighs unequivocally in Patent Owner's favor. In particular, whereas Patent Owner contends that "[h]ere, Petitioners' later position, that an algorithm is not necessary (*see* Paper 42, June 2017), is clearly inconsistent with their prior position agreeing that an algorithm is required (see Ex. 2013, Sept. 2016)" (PO's Reply Br. on Claim Constr. 1–2), we note that Petitioner's position that an algorithm is not necessary is reflected in the Petition—i.e., Paper 2, April 2016—and, thus, is not a "later" position with respect to either the July 2016 Opening Claim Construction Brief (Ex. 2003) or the September 2016 Amended Joint Claim Construction (Exs. 2004, 2013)—i.e., the only evidence of record of what Patent Owner terms Petitioner's "prior position." Thus, whereas Patent Owner frames Petitioner's position in this proceeding as a "later" position, the only evidence of Petitioner's district court position is dated *after* the Petition. We find that Petitioner's position has been consistent throughout this proceeding. Further, there is no evidence of record that Petitioner "successfully persuaded" the district court to accept any position. Rather, the district court simply adopted the uncontested, jointly stipulated construction without any analysis beyond settling the parties' disagreement—in Patent Owner's favor—as to whether the corresponding structures of the storing means and reproducing means limitations (as well as a number of other limitations from other patents involved in the district court litigation) should include the description "and equivalents thereof." *See* Ex. 2014, 2 (Memorandum Order regarding claim construction); *see also* Ex. 2003, 7 (Petitioner contending that "including the 'equivalents thereof' language as part of the structure . . . unnecessarily complicates the analysis for the fact-finder"). Still further, we are not persuaded that construing a

claim term based on a stipulation would be fair to the public, whose interest we also take into consideration in conducting *inter partes* review proceedings. *See Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1376 (Fed. Cir. 2017) ("[W]e, of course, may adopt a definition not proposed by either party that best fits with the claim language and specification. *See Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1556 (Fed. Cir. 1995) ("[T]he judge's task is not to decide which of the adversaries[' constructions] is correct. Instead the judge must independently assess the claims, the specification, . . . and declare the meaning of the claims."); *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 ("As we noted in *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938), '[t]he limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public.' Otherwise, a 'zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field,' *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236 (1942), and '[t]he public [would] be deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights.' *Merrill v. Yeomans*, 94 U.S. 568, 573 (1877)."); *Aero Spark Plug Co. v. B. G. Corp.*, 130 F.2d 290, 293 (2d Cir. 1942) (Frank, J., concurring) ("To allow a patent to remain apparently valid when the issue of invalidity is raised and the court sees that the patent is invalid, is to ignore the paramount public interest."); Mem. Order at 2, *Genetics Inst., LLC v. Novartis Vaccines & Diagnostics, Inc.*, No. 08-290-SLR (D. Del. May 7, 2009), 2009 WL 1270209, at *1

("There is a strong public interest in protecting the public from an unlawful monopoly . . . by the legal operation of invalid patents.").

Finally, we note that we do agree with Patent Owner that more than simply a "generic" controller is required (*see* PO Resp. 9)—indeed, it must be a controller that performs the claimed function. In order to demonstrate unpatentability of a claim that includes a means-plus-function limitation, a challenger must, of course, show not only that a prior art element is the same as or equivalent to the corresponding structure in the specification, but also that the prior art element performs the identical function specified in the claim. *See* Manual of Patent Examining Procedure §§ 2182, 2183. For this reason, however, Patent Owner's argument that the construction adopted in the Institution Decision would "allow[] the claim to read on any generic controller that aids in reproducing audio" (PO Resp. 9) is unpersuasive.

In conclusion, we remain persuaded in view of the full trial record that the corresponding structure for "reproducing means for reproducing the audio data of the channel designated by the default value stored in the storing means," as recited in both challenged claims, is properly construed under 35 U.S.C. § 112 ¶ 6 to cover "a controller and a synthesizer, or the equivalent."

2. The Remaining Means Limitations

In the Petition, Petitioner identified two additional claim limitations using "means for" terminology: (1) "storing means for storing a default value for designating one of the plural channels to be reproduced," as recited in challenged claims 5 and 8; and (2) "reading means for reading the codes representing the kinds of the audio data," as recited in challenged claim 8. Pet. 13–16. Contending that both of these limitations are presumptively

means-plus-function limitations subject to construction under 35 U.S.C. § 112 ¶ 6, Petitioner proposed constructions for both, including identification of the respective functions and corresponding structures disclosed in the specification of the '676 patent, as set forth in the table below. *Id.*

Limitation	**Corresponding Function**	**Corresponding Structure**
storing means for storing a default value for designating one of the plural channels to be reproduced	storing a default value for designating one of the plural channels to be reproduced	nonvolatile memory 16
reading means for reading the codes representing the kinds of the audio data	reading the codes representing the kinds of the audio data	decoder 3, decoders 4 to 7, audio decoders 8a to 8c, video decoders 9a to 9c, and data decoders 10a to 10c

Patent Owner does not address the construction of these limitations. *See generally* PO Resp. As previously set forth in the Institution Decision, we agree with and adopt Petitioner's proposed constructions for both limitations for the reasons explained by Petitioner. Inst. Dec. 10–12.

B. Obviousness over Yoshio

1. General Principles

To prevail in an *inter partes* review, a petitioner must prove the unpatentability of the challenged claims by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). "[T]he petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363

(Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). The burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, a petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of non-obviousness, i.e., secondary considerations.[9] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We analyze the instituted grounds of unpatentability in accordance with the principles stated above.

2. Level of Skill in the Art

Based on testimony of Dr. Russ, Petitioner contends that the applicable person of ordinary skill in the art "would have had at least a

[9] The parties do not address secondary considerations, which, accordingly, do not form part of our analysis.

bachelor's degree in digital electronics, electrical engineering, computer engineering, computer science, or a related technical field, with several years (*e.g.*, 2–5 years) of post-degree experience in a similar field," or alternatively "would have had an advance degree (*e.g.*, a master's degree) in digital electronics, electrical engineering, computer engineering, computer science, or a related technical field." Pet. 8 (citing Ex. 1003 ¶¶ 35–38). Patent Owner does not dispute this assessment. *See generally* PO Resp.

Petitioner's assessment appears consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art raised in this proceeding. *See Chore-Time Equip., Inc. v. Cumberland Corp*., 713 F.2d 774, 779 n.2 (Fed. Cir. 1983) (recognizing that the prior art itself may reflect the appropriate level of ordinary skill in the art). Accordingly, we adopt Petitioner's assessment.

3. Overview of Yoshio

Yoshio, titled "Method and Apparatus for Recording and Reproducing Information Including Plural Channel Audio Signals," is directed to methods and apparatus for recording and reproducing information, in which a plurality of audio signals corresponding to speech in a plurality of languages can be recorded on a recording medium (e.g., a video disc or a digital audio disc), and an audio signal corresponding to the speech in a desired language can be obtained from among the plurality of audio signals thus recorded. Ex. 1005, [54], 1:9–12, 1:43–50. In the preferred embodiment, audio signals of five channels (e.g., a sound effects track and four speech tracks in different languages) and a video format signal are supplied as inputs to the described recording apparatus. *Id.* at 2:24–27, 7:13–23. Following various modulation, analog-to-digital conversion, and encoding operations,

corresponding signals are supplied to a multiplexing circuit and then recorded. *Id.* at 2:27–4:24.

Figure 4 of Yoshio is reproduced below.

Fig. 4

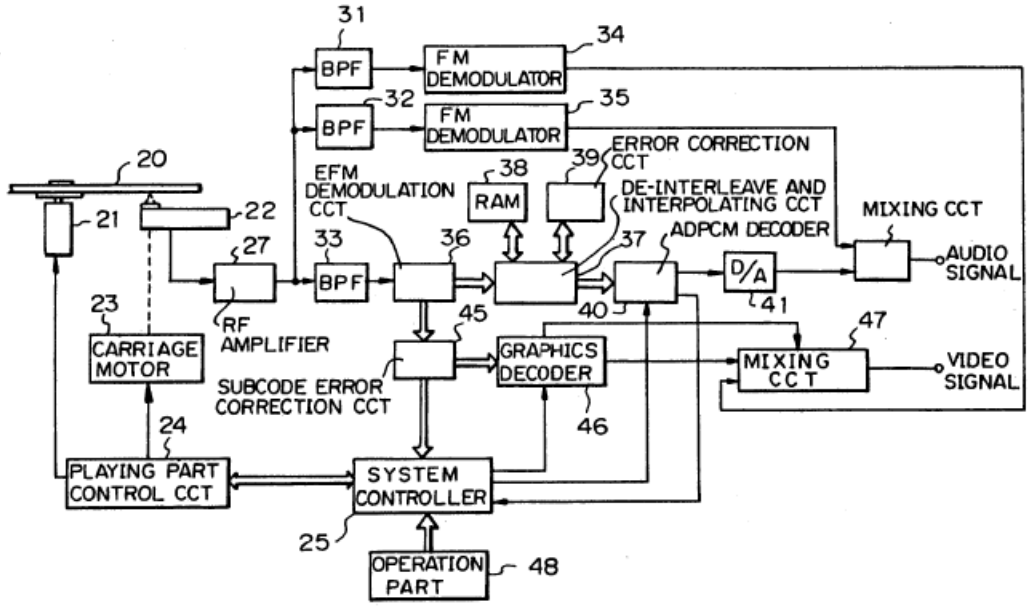

Figure 4 is a block diagram showing an apparatus for playing a disc on which information has been recorded by the described recording system. *Id.* at 4:31–33. As shown in Figure 4, disc 20 is driven by spindle motor 21, and as disc 20 rotates, the signal recorded on the disc is read by pickup 22. *Id.* at 4:33–36. An RF (radio frequency) signal output from pickup 22 is amplified by RF amplifier 27 and supplied to FM demodulation circuits 34 and 35 and to EFM demodulation circuit 36 through band-pass filters (BPFs) 31, 32, and 33, respectively. *Id.* at 4:57–61. The frequency characteristics of BPFs 31, 32, and 33 are chosen to permit only the video format signal component, the audio signal component of channel CH1, and the digital audio signal component respectively. *Id.* at 4:61–65. Digital data including the audio information and control information output from EFM

demodulation circuit 36 is supplied to de-interleaving and interpolating circuit 37, and data output from de-interleaving and interpolating circuit 37 is supplied to adaptive differential pulse-code modulation ("ADPCM") decoder 40. *Id.* at 5:3–7, 5:26–28. Data from system controller 25, indicating the channel designated by a manual operation, is supplied to ADPCM decoder 40, which is configured to decode only the ADPCM data of blocks of the designated channel. *Id.* at 5:29–38. The ADPCM data demodulated by ADPCM decoder 40 is supplied to digital-to-analog ("D/A") converting circuit 41, for conversion to an analog audio signal that is then mixed in mixing circuit 42 with the audio signal of channel CH1 demodulated by FM demodulation circuit 35. *Id.* at 5:44–51.

Yoshio also discloses that system controller 25, which includes, for example, a processor, read-only memory ("ROM"), and random access memory ("RAM"), executes operations on the basis of data or programs stored in the ROM, RAM, or the like, and subsequently supplies instruction signals to playing part control circuit 24. *Id.* at 6:22–31. When the player is set to play mode, the processor detects whether a channel designation has been made (e.g., CH2 for Japanese speech, CH3 for English speech, CH4 for Chinese speech, or CH5 for Korean speech). *Id.* at 6:36–41, 7:16–23. If so, the processor supplies data indicating the designated channel to ADPCM decoder 40. *Id.* at 6:41–45. Otherwise, the processor instead supplies "predetermined data," such as data indicating channel CH2 (i.e., for Japanese speech), to ADPCM decoder 40. *Id.* at 6:45–48. Accordingly, data indicating the designated channel (when a channel has been designated) or indicating the predetermined channel (when no channel has been designated) is supplied to the ADPCM decoder. *Id.* at 6:63–67. The coded information

signal of the channel indicated by the output data of system controller 25 is thus selectively decoded in ADPCM decoder 40, converted to an analog signal by D/A converting circuit 41 (i.e., providing a speech track in the particular language indicated by the channel designation data or predetermined data), and in turn mixed with the audio signal of channel CH1 (e.g., a sound effect track) output from FM demodulator circuit 35 at mixing circuit 42. *Id.* at 6:67–7:10, 7:13–15.

4. Comparison of Yoshio to the Claimed Subject Matter

Petitioner asserts that Yoshio discloses or renders obvious all limitations of claims 5 and 8, supporting its contentions with claim charts detailing its mapping of Yoshio's disclosure onto the challenged claims and with citations to Dr. Russ's testimony. Pet. 18–33 (citing Ex. 1003 ¶¶ 40–52, 116, 128, 132–137, 139–141, 144, 146–148, 150, 152, 153, 157–159, 161, 162, 166, 167, 169, 170; Ex. 1005, [57], 1:43–50, 1:58–64, 2:24–3:9, 4:10–24, 6:22–31, 6:41–49, 6:63–67, 7:11–23, 8:63–64, 10:13–28).

We have reviewed both parties' arguments and supporting evidence, including the disclosure of Yoshio and the testimony of Dr. Russ. Pet. 18–33; PO Resp. 1–19; Reply 1–22; Ex. 1003; Ex. 1022; Ex. 2012 (Russ Deposition Transcript). As explained below, we agree with and adopt Petitioner's analysis, and we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of the challenged claims would have been obvious over the teachings of Yoshio. For the reasons discussed below, we do not agree with Patent Owner's arguments to the contrary.

a. Yoshio Teaches or Suggests Each of the Uncontested Limitations of the Challenged Claims

We discuss each of the limitations of claims 5 and 8 below, leaving for last the reproducing means limitation, the only limitation addressed by Patent Owner.

First, Yoshio describes "[a] method for recording and reproducing information, including plural channel audio signals on and from a recording medium," where the audio signals are encoded and then "multiplexed by a time division multiplexing operations and recorded on the recording medium." Ex. 1005, [57]. Yoshio specifically discloses, as one of its objects, to provide "a method *and apparatus* of recording and reproducing information, in which a plurality of audio signals corresponding to speech in a plurality of the languages can be recorded on a recording medium." *Id.* at 1:43–50 (emphasis added). Yoshio also discloses that audio signals of multiple channels are supplied to analog-to-digital converters and then to an encoder configured to multiplex the data, and that "an identification code" is added to each channel of audio data before the data are multiplexedly recorded onto the recording medium. *Id.* at [57], 2:24–53, 10:24–28. We agree with Petitioner that this description teaches an information reproducing device for reproducing an information recording medium in which audio data of plural channels are multiplexedly recorded, as recited in the preambles of claims 5 and 8, as well as "codes representing kinds of said audio data," as additionally recited in the preamble of claim 8. Pet. 18, 22–23, 27, 29–30.

Second, Yoshio describes that "predetermined data" are supplied by system controller 25 to ADPCM decoder 40 when no channel has otherwise been designated. Ex. 1005, 6:41–49, 6:63–67. We agree with Petitioner that

Yoshio's predetermined data teaches a "default value for designating one of the plural channels to be reproduced," as recited in claims 5 and 8. Pet. 19, 24, 27–28. Yoshio also discloses that "system controller 25 is constituted by a microcomputer including a processor, ROM, RAM, and a timer, for example," and that operations are executed "on the basis of data or programs stored in the ROM, RAM or the like." Ex. 1005, 6:22–28. Petitioner contends, and Patent Owner does not dispute, that a person of ordinary skill in the art would understand ROM be a type of nonvolatile memory, relying on Dr. Russ's testimony. Pet. 18 (citing Ex. 1003 ¶ 40). In the Institution Decision, we explained that we were not persuaded by Petitioner's evidence that Yoshio's predetermined data *necessarily* would be stored in the ROM (*see* Inst. Dec. 24), but we were and remain persuaded by Petitioner's uncontested evidence that it would have been obvious to a person of ordinary skill in the art to store the predetermined data in the ROM (*see* Pet. 33 (citing Ex. 1003 ¶¶ 40–52, 166–167, 169–170)). We agree with Petitioner, therefore, that Yoshio suggests the storing means limitation of claims 5 and 8. *Id.*

Third, Yoshio discloses plural audio channels, corresponding to speech in each of Japanese, English, Chinese, and Korean, that are sampled, supplied to ADPCM encoder 10, and multiplexed with output data of control data generating circuit 11 before being multiplexed again by multiplexing circuit 2 and recorded onto a disc. Ex. 1005, 2:24–53, 4:10–24, 7:11–23. We agree with Petitioner that this disclosure teaches the limitation "wherein a plurality of voice data, each voice having similar contents translated into different languages are multiplexedly recorded as audio data of plural channels," as well as that Yoshio's predetermined data designates the voice

data corresponding to one of the different languages, as recited in claims 5 and 8. Pet. 21–22, 25–26, 29, 32.

Fourth, we agree with Petitioner's mapping of Yoshio's band-pass filters 31–33 onto the reading means limitation of claim 8. Pet. 28, 30–31. As explained by Petitioner (Pet. 28), Yoshio discloses that band-pass filters 31–33 separate audio signals from the signal read from the recording medium (Ex. 1005, 4:60–65). Band-pass filter 33, for example, separates a signal containing the plurality of encoded digital audio channels from the signal read from the recording medium. *Id.* Yoshio further describes how the signal from band-pass filter 33 is processed by EFM demodulator 36 and by de-interleaving and interpolating circuit 37, which "puts the digital data in its original order" and ultimately outputs "data having a block structure as shown in Fig. 2" to ADPCM decoder 40, which is able to read the "channel number in the subheader of the data block output from the de-interleaving and interpolating circuit 37." *Id.* at 4:66–5:35. Petitioner contends, and we agree, that the channel number is the code representing the kinds of audio. *See* Pet. 28. Therefore, we agree with Petitioner that Yoshio discloses a reading means that separates the plurality of audio signals (i.e., band-pass filters 31–33) and reads the codes multiplexedly recorded with the audio (i.e., ADPCM decoder 40 reads the headers in the blocks of the digital signal after it has been restored by EFM demodulator 36 and de-interleaver 37). *Id.* (citing Ex. 1003 ¶¶ 157–159).

b. Yoshio Teaches the Reproducing Means Limitation of the Challenged Claims

As discussed above, the corresponding function of the reproducing means is "reproducing the audio data of the channel designated by the default value stored in the storing means" and the corresponding structure is

a synthesizer and a controller. *See supra* Section III.A.1. Petitioner identifies Yoshio's system controller 25, which controls ADPCM decoder 40 to select a channel, and D/A converting circuit 41, which reproduces or synthesizes the audio data, as disclosing the controller and synthesizer, respectively. Pet. 20. With respect specifically to the controller portion of the corresponding structure, Petitioner points out that Yoshio discloses that ADPCM decoder 40 "compares the channel number in the subheader of the data block output from the de-interleaving and interpolating circuit 37 with the output data of the system controller 25, and decodes only the ADPCM data of blocks of the designated channel." *Id.* (quoting Ex. 1005, 5:33–38). Moreover, Petitioner contends—and as also explained in the discussion of Yoshio's "predetermined data" in the context of the storage means limitation in Section III.C.1. *supra*—"[t]he 'output data of the system controller' is a value which, when not designated by the user, is the default value from the storing means—'data indicating the predetermined channel (when no channel has been designated).'" *Id.* (citing Ex. 1005, 6:45–49; 6:63–67; Ex. 1003 ¶ 140). With respect to the synthesizer portion of the structure, Petitioner cites Yoshio's disclosure that the "output signal of the ADPCM decoder 40 is converted to an analog signal by a D/A converting circuit 41." *Id.* (quoting Ex. 1005, 7:5–8) (citing Ex. 1003 ¶¶ 116, 139). Relying on the testimony of Dr. Russ, Petitioner asserts that "a person of ordinary skill in the art would understand Yoshio to disclose a reproducing means (system controller 25 controlling ADPCM decoder 40, and D/A converter 41) that function to reproduce the audio data (convert to an analog signal) of the channel designated by the default value (the predetermined data supplied to the ADPCM decoder by the controller)."

Id. at 20–21 (citing Ex. 1003 ¶ 141). With respect to claim 8, which further recites that the reproducing means must reproduce the audio data "according to the codes read by the reading means," Petitioner further contends:

> Yoshio discloses that the ADPCM decoder compares "the channel number in the subheader of the data block output from the de-interleaving and interpolating circuit 37"—again, the channel number is the code representing the kind of audio data read by the reading means—"with the output data of the system controller 25" (the default value) "and decodes only the ADPCM data of blocks of the designated channel." Ex. 1005, 5:33–38. In other words, the reproducing means only reproduces audio data from the channel where the default value matches (i.e., "according to") the channel number in the subheader (i.e., the codes read by the reading means). Ex. 1003 ¶[¶] 161–[1]62.

Pet. 29.

Based on these arguments and other evidence presented in the Petition (*see, e.g.*, *id.* at 24–25 (quoting Ex. 1005, 5:26–51, 6:67–7:7), 32), we are persuaded that Yoshio teaches a reproducing means that reproduces the audio data of the channel designated by the default value stored in the storing means, as recited in claim 5, and does so according to the codes read by the reading means, as recited in claim 8.

In the Patent Owner Response, Patent Owner does not contest Petitioner's mapping of Yoshio's system controller 25 and D/A converting circuit 41 to the recited reproducing means limitation or present any rebuttal evidence, but instead relies solely on its arguments regarding claim construction. *See generally* PO Resp. More specifically, Patent Owner contends that "[s]ince Petitioners did not consider the disclosed algorithm—or any algorithm—in presenting their grounds of unpatentability, they failed to identify necessary claimed structure," and "[a]ccordingly, they fail to

make out a *prima facie* case of obviousness." *Id.* at 5; *see also id.* at 1–2 ("Because Petitioners never compared the proper structure of the claimed 'reproducing means' to any structure disclosed in the prior art—*or under any construction that could possibly be correct under the law*—Petitioners fail to carry their burden, and have not presented a *prima facie* case of obviousness."), 14 ("[S]ince the Board routinely finds no reasonable likelihood of prevailing in situations where the petitioner fails to put forward a legally viable claim construction of means-plus-function terms, there can be no *prima facie* case of unpatentability in such situations, and the claims must be confirmed as patentable."). Pointing to case law holding that the burden of persuasion in an *inter partes* review "never shifts to the patentee," Patent Owner contends that it is not its burden "to prove that its claims are patentable" or "to prove patentability in response to a hypothetical argument that Petitioners never even made." *Id.* at 2 (citing *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375–76 (Fed. Cir. 2016)); *see also id.* at 17–19 (contending, *inter alia*, that "the Board has effectively placed the burden on Sony to argue against itself" and that "[i]t is not [Patent Owner]'s burden to guess at what the Petitioners[] might have meant had their trial grounds been properly prepared and presented"). "In any event," Patent Owner contends, "[Patent Owner] is not presenting rebuttal evidence with this trial response. Absent any semblance of a *prima facie* case, it is not [Patent Owner]'s burden to fly blindly forward." *Id.* at 4.

Patent Owner's arguments that Petitioner has not demonstrated Yoshio renders the challenged claims unpatentable are premised entirely on Patent Owner's claim construction position with respect to the reproducing means limitation and, as such, are unpersuasive for the same reasons. PO

Resp. 1–2, 4–5, 14–19. Contrary to Patent Owner's contentions, we have not shifted the burden of persuasion to it "to prove that its claims are patentable" or "to prove patentability in response to a hypothetical argument that Petitioners[] never made." *Cf.* PO Resp. 2, 18. Rather, we recognize that the burden is—and has remained throughout trial—on Petitioner to establish by a preponderance of the evidence that claims 5 and 8, as properly construed, are unpatentable over Yoshio. *See Magnum Oil Tools*, 829 F.3d at 1375–77. For the reasons stated above, we are persuaded that Petitioner has satisfied that burden notwithstanding Patent Owner's arguments for a different claim construction.

5. Conclusion

In summary, based on the full record after trial and for the reasons explained above, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 5 and 8 of the '676 patent are unpatentable under 35 U.S.C. § 103(a) over Yoshio.

C. Motion to Exclude Evidence

In *inter partes* review proceedings, documents are admitted into evidence subject to an opposing party asserting objections to the evidence and moving to exclude the evidence. 37 C.F.R. § 42.64. Petitioner moves to exclude Exhibits 2003–2006, to which it previously objected. Mot. Excl. 1–4. As movant, Petitioner has the burden of showing that an objected-to exhibit is not admissible. 37 C.F.R. § 42.20(c). For the reasons discussed below, Petitioner's Motion to Exclude Evidence is denied.

1. Exhibits 2003 and 2004

As acknowledged by Petitioner, "Exhibit 2003 is a copy of Pace America LLC's (one of the Petitioners) Opening Claim Construction Brief

(D.I. 95), and Exhibit 2004 is a copy of the parties' Amended Joint Claim Construction Statement (D.I. 122), both in the related district court litigation in the District of Delaware." Mot. Excl. 1. Petitioner further acknowledges that Patent Owner "uses Exhibits 2003 and 2004 as support for its argument that Petitioners 'stipulated [to a] construction for [reproducing means] in the related district court litigation, where Petitioners agreed that the corresponding structure for the term includes the algorithm disclosed at 11:10–32 [of the '676 patent].'" *Id.* (citing PO Resp. 7–8; Ex. 2003, 11; Ex. 2004, 2). Petitioner contends that Exhibits 2003 and 2004 should be excluded under Federal Rules of Evidence 401 and 403 as not relevant and not probative of any fact or issue in dispute in this proceeding. *Id.* at 1–2. First, according to Petitioner, "claim constructions in district court (stipulated or otherwise) are not binding on the Board in an *Inter Partes* Review." *Id.* at 2 (citing *Novartis*, 853 F.3d at 1293–94; *Freightcar Am.*, IPR2016-00788, slip op. at 8–10 (PTAB Sept. 28, 2016) (Paper 9); *Apple v. VirnetX Inc.*, IPR2014-00481, slip op. at 12 (PTAB Aug. 24, 2015) (Paper 35); *Scentair*, IPR2013-00180, slip op. at 8–9 (PTAB July 18, 2014) (Paper 47)). Second, Petitioner contends, "even if the Board were to consider the 'stipulated construction' in the district court litigation, . . . Exhibits 2003 and 2004 show no evidence of what that construction actually is." *Id.* More particularly, Petitioner contends, "Exhibit 2003 sets forth the parties' initial opposing and contested claim construction positions in the litigation (Ex. 2003 at 11), and Exhibit 2004 indicates that the partes reached an agreement on construction of 'reproducing means' several months later (Ex. 2004 at 2), but neither of these documents places the construction itself on the record." Mot. Excl. 2.

In its Opposition, Patent Owner responds that Exhibits 2003 and 2004 "are relevant to the instant proceeding because they show that Petitioners told a federal court that the 'reproducing means' term at issue in the instant IPR is a means-plus-function term whose corresponding structure ***includes algorithmic structure from the specification***," which Patent Owner contends "is directly contrary to Petitioners' stated position in this IPR, *i.e.*, that the corresponding structure for the 'reproducing means' is simply 'a controller and a synthesizer, or the equivalent'—***without any algorithmic structure from the specification***." Opp. Mot. Excl. 2. Patent Owner further contends that, "[w]hile the exhibits may not explicitly show the ultimate agreed construction between the parties in district court, . . . the point is simply that both parties in district court—including Petitioners here—agreed that the construction required a specific algorithm." *Id.* at 3.

Petitioner replies that Patent Owner does not distinguish or address Petitioner's authorities that "proposed, stipulated, or decided claim constructions in district court litigation are not binding on the Board"; that Petitioner's "positions on claim construction in the district court litigation are not 'judicial admissions' because claims construction is a question of law and party cannot admit to a question of law"; and that Patent Owner concedes that the challenged exhibits do not show the construction to which the parties stipulated but only "that the parties proposed different, competing constructions in the district court case—and then reached an undisclosed agreement for the purposes of that case only." Reply Mot. Excl. 1–2.

As explained in Section III.A.1. *supra*, we agree with Petitioner that claim constructions in district court are not binding on the Board in *inter partes* review. Nonetheless, we disagree that Petitioner's claim construction

brief and joint claim construction statement are entirely irrelevant to our analysis. Federal Rule of Evidence 401 provides that evidence is relevant if "it has any tendency to make a fact more or less probable than it would be without the evidence" and "the fact is of consequence in determining the action." Moreover, both the Federal Circuit and the Board have recognized that there is a "low threshold for relevancy." *See, e.g.*, *OddzOn Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1407 (Fed. Cir. 1997); *Laird Techs., Inc. v. GrafTech Int'l Holdings, Inc.*, Case IPR2014-00025, slip op. at 44 (PTAB Mar. 25, 2015) (Paper 45). Petitioner's arguments concerning the relevance of Exhibits 2003 and 2004 concern the weight that we should accord to those exhibits, rather than their admissibility. As explained in *Laird Technologies*, "[a] motion to exclude . . . is not an appropriate mechanism for challenging the sufficiency of evidence or the proper weight that should be afforded an argument." Case IPR2014-00025, slip op. at 42 (Paper 45). Moreover, "[o]ur general approach for considering challenges to the admissibility of evidence was outlined in *Corning Inc. v. DSM IP Assets B.V.*, Case IPR2013-00053, slip op. at 19 (PTAB May 1, 2014)," which stated that, "similar to a district court in a bench trial, the Board, sitting as a non-jury tribunal with administrative expertise, is well-positioned to determine and assign appropriate weight to evidence presented." *Id.* (citing *Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941) ("One who is capable of ruling accurately upon the admissibility of evidence is equally capable of sifting it accurately after it has been received . . . .")).

In this case, as noted above, we have taken Exhibits 2003 and 2004—as well as the complete copy of the document underlying the latter exhibit, filed as Exhibit 2013—into account in determining the proper construction

of the reproducing means limitations recited in claims 5 and 8, but concluded that such extrinsic evidence does not outweigh the intrinsic evidence and legal precedent supporting our conclusions.

Regarding Petitioner's second argument, that Exhibits 2003 and 2004 "show no evidence of what [the stipulated] construction actually is," we determine that that argument is moot in view of Patent Owner's filing of the complete Amended Joint Claim Construction Statement represented by Exhibit 2004, including Exhibits A and B thereto, as Exhibit 2013, which shows that the parties indeed agreed to a construction that included "implementing an algorithm as described in the specification at 11:10–32 and in Figure 16," as Patent Owner contends. Ex. 2013, 21; *see* Opp. Mot. Excl. 1–2. Although Petitioner is correct that Exhibit 2003 does not state the "stipulated" construction of the reproducing means limitation, it does set forth both Patent Owner's and Petitioner's identifications of corresponding structure for that limitation. Although we determine that evidence is entitled to little weight, it is, nonetheless, relevant within the meaning of Federal Rule of Evidence 401. Moreover, although we may exclude relevant evidence under Federal Rule of Evidence 403 "if its probative value is substantially outweighed by a danger of . . . unfair prejudice, confusing the issues, . . . undue delay, wasting time, or needlessly presenting cumulative evidence," we determine that no significant risk of such danger exists here.

For the foregoing reasons, we deny Petitioner's Motion to Exclude Evidence as to Exhibits 2003 and 2004.

2. Exhibits 2005 and 2006

Exhibits 2005 and 2006 are presented by Patent Owner as printouts of definitions of the term "microcontroller" from Merriam-Webster

(www.merriam-webster.com) and PC Magazine Encyclopedia (www.pc-mag.com), respectively. Petitioner contends that these exhibits should be excluded under Federal Rules of Evidence 401 and 403 "as irrelevant and not probative of any fact or issue in dispute in this proceeding." Mot. Excl. 3. In particular, Petitioner contends, the meaning of microcontroller is "irrelevant under [Rule] 401 and confusing under [Rule] 403 because 'microcontroller' is not a term used in the specification or claims of the '676 patent, and the term appears nowhere in the prosecution history of the '676 patent." *Id.* at 3–4. Moreover, Petitioner contends, the "proffered definitions are not relevant to the understanding or meaning of any term as of the time the '676 patent was filed." *Id.* at 4. Whereas "Exhibits 2005 and 2006 contain definitions of 'microcontroller' as of about February 2, 2017," Petitioner contends, "the '676 patent has an alleged priority date of July 1991 (25 years earlier) and a filing date of May 1995 (21 years earlier)." *Id.* "As such, the definitions in Exhibits 2005 and 2006 are 'not contemporaneous with the patent' and 'do not reflect the meanings that would have been attributed to the words in dispute by persons of ordinary skill in the art' as of the date of the patent." *Id.* (quoting *Brookhill-Wilk 1, LLC. v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1299 (Fed. Cir. 2003)).

In response to Petitioner's contentions, Patent Owner argues that "[t]hese definitions are relevant to how a person of ordinary skill in the art would have understood the 'controller' that is disclosed in the '676 specification as part of the corresponding structure for the claimed 'reproducing means.'" Opp. Mot. Excl. 4. Patent Owner further contends that Dr. Russ conceded at his deposition that a microcontroller is an example

of a controller that performs the algorithm disclosed in the specification as part of the claimed reproducing means. *Id.* (citing Ex. 2012, 11:6–8; Ex. 1022 ¶ 12). According to Patent Owner, "[a]s admitted equivalent structure corresponding to the claimed reproducing means, a microcontroller is within the scope of the claims," and "[s]ince these exhibits are evidence of what a microcontroller is and that a person of ordinary skill would understand a microcontroller to be equivalent structure (Exhibits 2005 and 2006), they are, contrary to Petitioners' motion, directly relevant to understanding the scope of the claims and therefore this proceeding." *Id.* Lastly, Patent Owner contends that Petitioner "bear[s] the burden of proof" and "ha[s] not presented any evidence that the definition of 'microcontroller' has changed over the years or that the definitions provided in Exhibits 2005 and 2006 are in any way deficient or misleading." *Id.* at 4–5.

In its Reply to Patent Owner's Opposition, Petitioner largely repeats its arguments set forth in the Motion to Exclude Evidence with respect to these exhibits. Reply Mot. Excl. 2–3.

Having considered the parties' respective arguments, we determine that Petitioner's arguments regarding Exhibits 2005 and 2006—like its arguments regarding Exhibits 2003 and 2004 addressed in Section III.D.1. *supra*—go to the weight that should be accorded to those exhibits, rather than to their admissibility. Petitioner's expert Dr. Russ testified that a microcontroller is an example of a controller that could perform the function of "identifying or selecting the channel to be reproduced," as well as that microcontrollers were "very well known as of the time of the invention (*i.e.* 1991)." *See* Ex. 1022 ¶¶ 5, 9. On that basis, we decline to conclude that the proffered definitions of microcontroller are "not relevant" under the broad

definition of relevance set forth in Rule 401, even if those definitions are entitled to little weight in view of their non-contemporaneity and further in view of Dr. Russ's additional testimony that "a person of ordinary skill in the art at the time of the '676 patent's invention would have understood the term 'controller' to be used broadly in the '676 patent's specification, and would not have understood it to be limited to a 'microcontroller.'" *Id.* ¶ 9; *see also id.* ("In my opinion, nothing in the '676 patent's specification indicates that the controller is a computer, computer-implemented, or limited to implementations that are based on software."), *id.* ¶ 10 ("Furthermore, in describing the reproducing means and the controller, the '676 patent's specification does not use other words which might connote to one of ordinary skill in the art a computer-implemented function—words such as 'computer,' 'microcomputer,' 'processor,' 'microprocessor,' 'CPU,' or 'instructions.'"). With respect to Rule 403, we again determine that there is no significant risk of unfair prejudice, confusion of the issues, undue delay, waste of time, or presentation of cumulative evidence exists in our consideration of the probative value of those exhibits.

For the foregoing reasons, therefore, we also deny Petitioner's Motion to Exclude Evidence as to Exhibits 2005 and 2006.

D. Motion for Observation

In its Motion for Observation, Patent Owner identifies portions of Dr. Russ's deposition transcript allegedly demonstrating that Dr. Russ agrees "that the microcontroller and algorithm are corresponding structure to the 'reproducing means'" and "that hardware-based computing structure of the '676 patent must include an algorithm." Obs. 2–3 (citing Ex. 2012, 9:6–13:17; Ex. 1022 ¶ 4). Petitioner responds that Patent Owner's observations

are impermissibly argumentative, misstate Dr. Russ's testimony, and are not relevant "because the Board has not agreed that the 'reproducing means' is limited to a general-purpose computer." Obs. Resp. 1–2 (citing Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,768 (Aug. 14, 2012); Ex. 2012, 9:11–13:17; Reh'g Dec. 5). In rendering this Final Written Decision, we have given due consideration to the identified portions of Dr. Russ's transcript in view of Patent Owner's observations and Petitioner's responses.

IV. ORDER

Accordingly, it is

ORDERED that claims 5 and 8 of the '676 patent have been shown to be unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude Evidence is denied; and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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