

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 IPR2016-00835
Patent 6,084,643

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

BISK, *Administrative Patent Judge*.

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

INTRODUCTION

A. Background

Petitioner, listed above, filed a Petition requesting *inter partes* review of claims 1–4 (the “challenged claims”) of U.S. Patent No. 6,084,643 (issued July 4, 2000) (Ex. 1001, “the ’643 patent”). Paper 2 (“Pet.”). Sony Corporation (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). On September 29, 2016, we granted the Petition, instituting trial on whether the challenged claims would have been obvious over the combination of (1) Wasilewski,¹ Rosenberger,² and Ishikawa,³ and (2) Wasilewski and Ejima.⁴ Paper 10 (“Institution Decision” or “Inst. Dec.”). Patent Owner filed a Request for Rehearing of the Institution Decision (Paper 13, “Reh’g Req.”) and we denied that Request (Paper 21, “Reh’g Dec.”).

Following institution, Patent Owner filed a Response (Paper 22, “PO Resp.”), Petitioner filed a Reply (Paper 26, “Reply”), and, with authorization from the panel (Paper 29), Patent Owner filed a Sur-Reply (Paper 32, “Sur-Reply”). We held an oral hearing on June 29, 2017. Paper 37 (“Tr.”). After the hearing, we authorized Patent Owner to file a 3-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 35 (“Supp. Auth.”). We authorized Petitioner to file a 3-page response. Paper 36 (“Resp. Supp. Auth.”).

¹ U.S. Patent No. 5,600,378; Feb. 4, 1997 (Ex. 1005) (“Wasilewski”).

² EP 0612150 A2; Feb. 12, 1994 (Ex. 1007) (“Rosenberger”).

³ U.S. Patent No. 5,315,392; May 24, 1994 (Ex. 1020) (“Ishikawa”).

⁴ A certified English translation of Japanese Unexamined Patent Application Pub. No. H7-131727; May 19, 1995 (Ex. 1010) (“Ejima”).

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*.

B. Related Matters

The parties indicate that the '643 patent is involved in litigation in the District of Delaware. Pet. 1; Paper 5, 2.

C. The '643 Patent

The '643 patent relates to a method for swiftly selecting a desired television channel. Ex. 1001, Abstract. In particular, the '643 patent addresses the problem, in digital television broadcasting, in which continuously pressing the up/down channel button on a remote leads to a delay in the display of each of the selected channels. *Id.* at 1:25–32. This delay occurs because digital television pictures and sounds are broadcast in a compressed format, which the receiving equipment has to expand in order to display the programming of that channel. *Id.* at 1:28–36. Because switching channels in a sequential order using an up/down button causes the display of programming for each successively selected channel, the user may encounter significant delay—up to two to three seconds—between each channel switch. *Id.* at 1:18–37. This is inconvenient when the user wishes to quickly move through successive channels without necessarily seeing each channel's programming.

In response to this problem, the '643 patent describes receiving equipment with stored network information tables (“NITs”) mapping “service_id[s]” to the particular channel number to display. *Id.* at 6:56–7:19. The remote transmits the relevant service_id along with actual program data

to the receiving equipment when a user selects a channel. *Id.* at 7:25–34, Fig. 8. If the up/down keys are continuously pressed, only the channel number displayed on the screen is changed—the programming for the channel is not displayed. *Id.* at 7:62–8:3. Only when the user stops pressing the up/down key is the programming for that channel displayed. *Id.* at 8:8–23.

Of the challenged claims, only claim 1 is independent. Claims 2–4 depend directly from claim 1. Claim 1 recites:

1. A receiving equipment comprising:
 - transmission signal receiving means for receiving transmission signals including a plurality of channels;
 - command receiving means for receiving a command from a channel selection key operated by a user;
 - channel number display control means operative in accordance with the command received by the command receiving means commanding to switch the channels in a predetermined order for switching channel numbers being displayed in the predetermined order;
 - control means for controlling the transmission signal receiving means to receive the transmission signal of a channel indicated by the channel number being displayed when the command received by the command receiving means is broken,*
 - wherein the channel numbers being switched are displayed without displaying a channel selection until operation of the channel selection key is discontinued by the user; and
 - storage means for storing a plurality of the channel numbers representing channels of transmission signals actually received, wherein the channel number display control means switches the channel numbers being displayed based on the channel numbers stored in the storage means.

Ex. 1001, 10:2–30 (emphasis added).

ANALYSIS

A. Legal 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.⁵ *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.

B. Claim Construction

We construe all terms, whether or not expressly discussed here, using the broadest reasonable construction in light of the '643 patent specification. 37 C.F.R. § 42.100(b). The parties propose constructions for only the control means limitation. Prelim. Resp. 3–7; PO Resp. 9–15; Reply 7–13. Other than the claim terms discussed below, we do not find express construction required to resolve the issues in this proceeding. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy).

1. The Control Means Limitation

The parties' dispute in this case focuses on one particular limitation—"control means for controlling the transmission signal receiving means to receive the transmission signal of a channel indicated by the channel number being displayed when the command received by the command receiving means is broken" (the "control means limitation")—recited by claim 1 and inherited by claims 2–4. Prelim. Resp. 3–7; PO Resp. 9–15; Reply 7–13; Sur-Reply 2–4.

⁵ Neither Petitioner nor Patent Owner introduced objective evidence of non-obviousness or argued that the existence of secondary considerations weighs in favor of non-obviousness. Accordingly, our analysis is based upon three of the four *Graham* factors.

The parties appear to agree, at least for purposes of this proceeding, on the broadest reasonable construction of the control means limitation. First, there is no dispute that the “control means” limitation is subject to means-plus-function treatment pursuant to 35 U.S.C. § 112 ¶ 6.⁶ Pet. 18–19; PO Resp. 1. Second, there is no dispute that the function of this term is coextensive with the language of the claim—“controlling the transmission signal receiving means to receive the transmission signal of a channel indicated by the channel number being displayed when the command received by the command receiving means is broken.” Pet. 18; PO Resp. 16. Third, in post-institution briefing, the parties appear to agree that, for purposes of this proceeding, the corresponding structure disclosed in the ’643 patent is “a CPU implementing the algorithmic structure described in the specification at least at 7:58-8:10; and 9:15-30, and equivalents thereof.” See, e.g., Reply 3; Sur-Reply 2; Tr. 4:10–19, 23:3–16.

This construction, adopted in the Institution Decision (Inst. Dec. 5–8), was proposed by Patent Owner in its Preliminary Response (Prelim. Resp. 3–7). In the Institution Decision, we agreed that Patent Owner’s proposed construction reflects the broadest reasonable interpretation of the “control means” limitation. Inst. Dec. 5–8. We, however, did not agree with Patent Owner’s contention that “[n]o *inter partes* review can be instituted here because the Petitioners have failed to properly construe a critical means-plus-function term and thus failed to demonstrate how the challenged claims

⁶ Section 4(c) of the AIA re-designated 35 U.S.C. § 112 ¶¶ 1, 2, and 6 as 35 U.S.C. § 112(a), (b), and (f), respectively. Because the ’643 patent has a filing date before September 16, 2012 (effective date), we refer to the pre-AIA version of 35 U.S.C. § 112.

could possibl[y] read on the prior art.” *Id.* at 7 (quoting Prelim. Resp. 7). We explained that although the Petition states that “a POSITA would understand the corresponding structure to be: ‘a central processing unit (CPU), or equivalent’” in the section construing this limitation, that same section of the Petition also discusses the relevant algorithm and points to relevant portions of the ’643 patent. *Id.* at 6–7 (citing Pet. 18–19). Accordingly, we found that, overall, Petitioner properly gave notice to Patent Owner of an understanding that the structure corresponding to the control means limitation is equivalent to the relevant algorithm. *Id.* at 7. Yet, even if the Petition did not give Patent Owner notice of such an understanding, there can be no question that after our Institution Decision, Patent Owner was on notice that we considered Patent Owner’s proposed construction to be the broadest reasonable construction for purposes of this proceeding. *See In re NuVasive, Inc.*, 841 F.3d 966, 972 (Fed. Cir. 2016) (holding that although the Petition “did not make a clear or direct reference . . . or a clear or direct assertion” to a particular figure in the prior art as disclosing a limitation, “the citation of the text discussing Figure 18” plus the indirect reference to the limitation, “should have put [Patent Owner] on notice that it was obliged to use its Patent Owner Response to address” the issue).

Patent Owner, however, argues that “when the Petitioners expressly propose a construction for a claim term (like the ‘control means’ here), the Patent Owner and the Board are entitled to take the Petitioners at their word and rely on that proposed construction as the Petitioners’ position.” PO Resp. 13–14. To the extent Patent Owner is arguing that the Board, in instituting an *inter partes* review, may never adopt a construction different

than that proposed in the Petition, the case law indicates otherwise. *See, e.g., Rovalma, S.A. v. Bohler-Edelstahl GmbH & Co. KG*, 856 F.3d 1019, 1028–29 (Fed. Cir. 2017) (explaining that “[i]f the [AIA] statute prohibited the Board from ever determining that a claim was unpatentable under a construction that the petitioner had not addressed in its submissions, remand would have been inappropriate in [*SAS Inst., Inc. v. ComplementSoft, LLC*, 825 F.3d 1341 (Fed. Cir. 2016), *cert. granted* on other grounds]” and noting that “the petitioner [in *Rovalma*] had clear notice that the Board might adopt the claim construction ultimately adopted . . . yet it did not present a case for unpatentability under that construction when it had the opportunity, in its Reply”) (citing *SAS Inst.*, 825 F.3d at 1351); *Securus Techs., Inc. v. Global Tel*Link Corp.*, Nos. 2016-1992, 2016-1993, 2017 WL 1458867, at *4 (Fed. Cir. Apr. 25, 2017) (designated nonprecedential) (“Securus argues only that because Global did not advance this particular argument in its petition, the Board was not permitted to rely on the argument in its final decision. We find Securus’s argument unpersuasive.”); *Genzyme Therapeutic Prods. v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016) (“There is no requirement, either in the Board’s regulations, in the APA, or as a matter of due process, for the institution decision to anticipate and set forth every legal or factual issue that might arise in the course of the trial.”); *see also Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1375–79 (Fed. Cir. 2017) (adopting a construction different than that proposed by both Petitioner and Patent Owner and, nonetheless, holding that a preponderance of the evidence supports a finding of anticipation); *SAS Institute*, 825 F.3d at 1351–52 (noting that the Board is free to adopt a construction in the final decision that was not proposed by either party, but

remanding the case so that the Board could hear from Petitioner on the newly adopted construction).

Although “broad, general statements” in a petition may not give a patent owner sufficient notice of specific arguments, here the Petition included discussion of an algorithm in the relevant claim construction section and pointed to specific, relevant portions of the reference for support. *See EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1348 (Fed. Cir. 2017); Pet. 18–19. Moreover, here, even if the Petition alone does not give sufficient notice of the claim construction at issue, there can be no dispute that the Institution Decision made the claim construction explicit. Inst. Dec. 4–8; *see also* Reh’g Req.; PO Resp. 9–15; Tr. 11:10–17 (Petitioner’s counsel discussing the “Board’s construction,” which is “not in dispute here”), 23:14–22 (Patent Owner’s counsel agreeing that the “control means requires a processing element that implements an algorithm, and we identified that in the preliminary response, which includes this”).

As explained by *EmeraChem*, an institution decision’s “general statement that lists all challenged claims and all asserted prior art,” may be insufficient notice to a patent owner that “*each* of the claims may be obvious over any combination of *all* listed prior art.” *EmeraChem*, 859 F.3d at 1348–49. On the other hand, an institution decision that recognizes a deficiency in a petition and expressly describes the assumptions to be used in the *inter partes* review does not preclude a finding that the identified claims are unpatentable based on a reference the petition did not identify as grounds for those claims. *Id.* at 1349–50 (citing *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268 (Fed. Cir. 2015), *aff’d* 136 S. Ct. 2131 (2016)). Here,

as in *Cuozzo*, the Institution Decision recognizes a deficiency in the Petition and expressly articulates the claim construction to be used in the subsequent *inter partes* review. See Inst. Dec. 5–8.

In fact, the sequence of events in this case mirrors those in a case affirming the Board’s finding of unpatentability. *Skky, Inc. v. MindGeek, s.a.r.l.*, 859 F.3d 1014 (Fed. Cir. 2017). Specifically, in *Skky*, the Federal Circuit held that although the institution decision adopted a different construction than that advanced in the petition, the Board did not abuse its discretion by refusing the patent owner’s motion to strike the petitioner’s reply brief, which argued that under the Board’s construction, the claims were nonetheless unpatentable. *Id.* at 1018, 1022–23. Although in *Skky*, the patent owner did not contend that it lacked notice and the ability to respond to any particular argument, the Federal Circuit noted that “indeed, Skky filed a surreply addressing the means-plus-function argument.” *Id.* at 1023.

Similarly, in *Spherix, Inc. v. Matal*, the Board instituted trial employing the petitioner’s proposed claim construction for several terms, including “first processor means” and “second processor means.” *Spherix, Inc. v. Matal*, No. 2016-1790, 2017 WL 3142330, at *1–2 (Fed. Cir. July 25, 2017) (designated nonprecedential). This construction gave the terms their plain and ordinary meaning assuming that they should not be construed as means-plus-function limitations. *Id.* at *1. Subsequently, a district court, in related proceedings, issued an order construing those terms as means-plus-function limitations and identified the corresponding structure from the specification. *Id.* at *2. In its final written decision, the Board indicated that its patentability determination with respect to the processor means elements was the same, regardless of which claim construction applied. *Id.* On

appeal, the Federal Circuit determined that “Spherix had adequate notice of the Board’s alternative means-plus-function construction and analysis because Spherix itself introduced that construction following institution and argued that it should apply.” *Id.* at *3. Here too, Patent Owner introduced the construction of the term at issue in its Preliminary Response. Paper 8, 3–7. And, unlike Spherix, here Patent Owner had the additional benefit of the Institution Decision’s adoption of that construction. We, therefore, do not agree with Patent Owner’s implied argument that an institution decision either must adopt, without elaboration or modification, every claim construction advanced in a petition or else enter judgment in favor of a patent owner.

Patent Owner had the opportunity to respond to the Institution Decision’s claim construction both in its Patent Owner Response and its Sur-Reply. We are, therefore, not persuaded that the Institution Decision’s construction was improper. Accordingly, for this Decision we construe the control means limitation as proposed by Patent Owner in its Preliminary Response and as we adopted in the Institution Decision—governed by § 112 ¶ 6 with a function of “controlling the transmission signal receiving means to receive the transmission signal of a channel indicated by the channel number being displayed when the command received by the command receiving means is broken” and a corresponding structure of “a CPU implementing the algorithmic structure described in the specification at least at 7:58–8:10; and 9:15–30, and equivalents thereof.” Inst. Dec. 6.

We address below, the related, but separate,⁷ question of whether, using the correct construction of the claim term, a preponderance of the evidence supports a finding of unpatentability.

2. *The Remaining Means Limitations*

The challenged claims recite several other limitations using “means for” terminology. The Petition proposes constructions for these limitations including both the function and corresponding structure of those terms. Pet. 15–20. Patent Owner does not address the construction of these terms. *See* PO Resp.; Sur-Reply. We agree with and adopt Petitioner’s proposed constructions as set forth below.

Claim Term	Function	Corresponding Structure
transmission signal receiving means . . .	receiving transmission signals including a plurality of channels	a front end comprising a tuner, or equivalent Pet. 15–16 (citing Ex. 1001, Fig. 1, 2:43–50 (describing an integrated receiver/decoder for receiving satellite signals), Fig. 3, 3:28–35 (tuner of a front end demodulates an RF signal), 6:18–24; Ex. 1003 ¶¶ 106–108).
command receiving means . . .	receiving a command from a channel selection key operated by a user	front panel keys, or an IR (infrared) signal receiving unit, or equivalent Pet. 16–17 (citing Ex. 1001, Fig. 2, 4:37–42, 6:8–13; Ex. 1003 ¶¶ 109–111).

⁷ *See, e.g., Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) (explaining that, like infringement, an obviousness analysis includes two steps—first, claim construction, and second, determination of whether the prior art renders obvious the claimed invention).

channel number display control means . . .	controlling display of channel numbers in accordance with commands received by the command receiving means commanding to switch the channels in a predetermined order for switching channel numbers being displayed in the predetermined order	CPU and MPEG decoder with OSD (on-screen display), or equivalent Pet. 17–18 (citing Ex. 1001, Fig. 8, 7:39–55, 9:6–12; Ex. 1003 ¶¶ 112–114).
storage means . . .	storing a plurality of the channel numbers representing channels of transmission signals actually received	an EEPROM (electrically erasable programmable read only memory) or equivalent Pet. 19–20 (citing Ex. 1001, 6:56–7:33, 8:47–65; Ex. 1003 ¶¶ 118–120).

3. *Order of Magnitude of the Channel Numbers*

Dependent claim 2 recites: “The receiving equipment as claimed in claim 1, wherein the channel number display control means switches the channels in the *order of magnitude of the channel numbers*.” Ex. 1001, 10:31–33 (emphasis added). In the interest of clarity, we address the broadest reasonable construction of this term, which was briefly discussed at the oral hearing. In the context of the claim language, we are persuaded that the broadest reasonable construction of “order of magnitude of the channel numbers” includes the “sequential order” of the channel number. See Tr. 9:1–15 (Petitioner’s counsel agreeing with this construction), 24:7–12 (Patent Owner’s counsel declining to give an opinion on the issue).

The specification does not explicitly define the term, but is consistent with a construction that includes an arrangement of items by relative size. See, e.g., Ex. 1001, 1:61–63 (“The channel number display control means may switch the channels in the magnitude order of the channel numbers.”);

8:54–57 (“[T]he service_ids are stored in the order of the magnitude thereof, and incrementing the pointer by one and acquiring the service_id in the area indicated by the pointer can acquire a second *larger* service_id.” (emphasis added)).

Accordingly, we adopt a broadest reasonable construction of “order of magnitude of the channel numbers” that includes the “sequential order” of the channel number.

C. Level of Ordinary Skill in the Art

Petitioner adopts the definition of a person of ordinary skill in the art set forth by Dr. Samuel H. Russ. Pet. 8. Dr. Russ states that such a person would have had “at least a bachelor’s degree in digital electronics, electrical engineering, computer engineering, computer science, or a related technical degree with several years (e.g., 2–5 years) of post-degree experience in a similar field” or, alternatively, “an advanced degree, such as a Master’s Degree, in digital electronics, electrical engineering, computer engineering, computer science, or a related technical degree.” Ex. 1003 ¶ 36. Patent Owner does not address this issue. See PO Resp.; Sur-Reply.

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 *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (acknowledging that the prior art itself may reflect an appropriate level of ordinary skill in the art). Accordingly, we adopt Petitioner’s definition of a person of ordinary skill in the art.

D. Overview of Wasilewski

Wasilewski is a patent that describes adapting the MPEG-2 Systems Standard in order to accommodate additional services for subscribers of

digital video programming. Ex. 1005, 2:29–3:18. Figure 1 of Wasilewski is reproduced below.

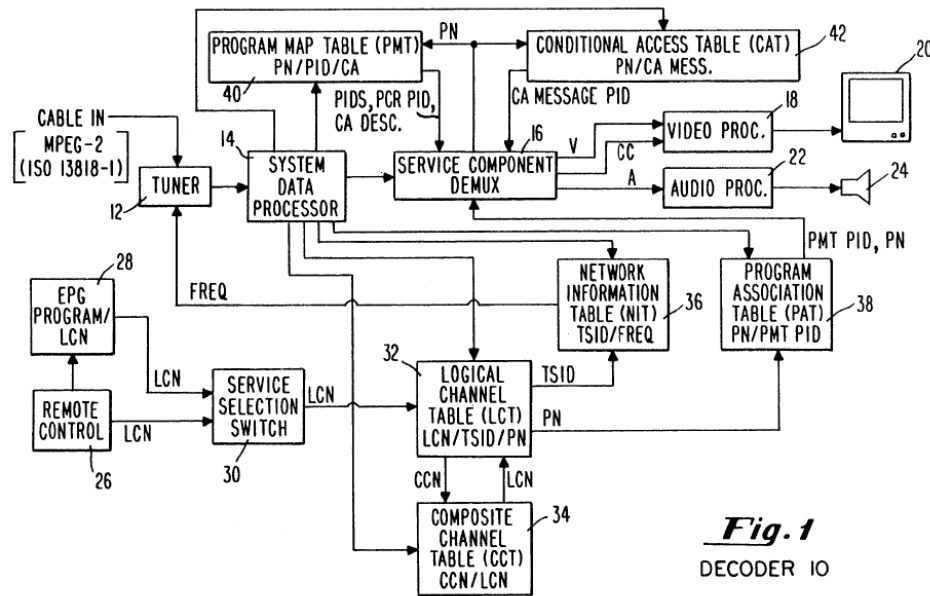


Fig. 1
DECODER 10

Figure 1 is a block diagram of a modified MPEG-2 decoder. Ex. 1005, 4:24–26. Tuner 12 is tuned by decoder 10 to the frequency carrying the desired digital programming. *Id.* at 4:65–66. The stream of programming is provided to system data processor 14 and demultiplexer 16. *Id.* at 5:2–17. A subscriber selects a channel using remote control unit 26, which provides a Logical Channel Number (LCN) and program number (PN) to service selection switch 30, which “may comprise an infrared transceiver” and “a display device which displays the channel selection to the user.” *Id.* at 6:23–34. Service selection switch 30 provides the LCN to Logical Channel Table (LCT) 32. *Id.* at 6:34–36.

E. Overview of Rosenberger

Rosenberger describes an analog television receiver “in which program selection occurs by means of so-called up and down buttons.”

Ex. 1007, [57]. When “channels are rapidly run through in the direction of lower or higher program location numbers,” “a rolling display of the program location number takes place on a display and the tuner is only tuned to the reception frequency corresponding to the newly set program location number after termination of the program selection or switching process.” *Id.*

F. Overview of Ishikawa

Ishikawa discloses an “Apparatus for Display and Selection of Available Television Channels.” Ex. 1020, [54]. Ishikawa describes memory EEPROM 14 that “stores a television channel list of channel numbers in relation to captions representing the names or abbreviations of the respective registered television channels or stations.” *Id.* at 2:37–48. “[A]fter the receipt of the channel selection command signal,” “microcomputer 13 reads the ‘CHANNEL GUIDE’ menu out of the memory 14 and displays the read ‘CHANNEL GUIDE’ menu on the cathode ray tube 18.” *Id.* at 3:25–29.

G. Overview of Ejima

Ejima discloses a TV receiver “that permits rapid tuning to the desired broadcast by a simple operation similar to sequential tuning.” Ex. 1010, Abstract. Specifically,

[w]hen the channel up key or channel down key is held continuously, the TV receiver in this invention renders it possible to rapidly select the desired broadcast by first sequentially tuning a designated number of broadcasting channels and then halting tuning processing involving the switching of channels while continuing sequential up/down display of channel numbers.

Id. ¶ 15. This continues until the user “releases the up/down key at a designated channel number, upon which the channel number at which the key was released is received.” *Id.* ¶ 20.

H. Obviousness over Wasilewski, Rosenberger, and Ishikawa

Petitioner asserts that a person of ordinary skill in the art would have found the challenged claims obvious over the combination of Wasilewski, Rosenberger, and Ishikawa. Pet. 20–36 (citing Ex. 1003 (Declaration of Dr. Russ)). Specifically, Petitioner relies on Wasilewski for disclosing at least a portion of every limitation of the challenged claims. *Id.* at 20–34. Petitioner additionally relies on the following disclosures: (1) Rosenberger for the channel number display control means (*id.* at 22, 27–28), the control means limitation (*id.* at 22–24, 28–29), and the additional limitation added by claims 2 and 3 (*id.* at 31–34); and (2) Ishikawa for the storage means limitation (*id.* at 25, 30–31). Finally, Petitioner explains why a person of ordinary skill would have combined the teachings of the three references. *Id.* at 34–36.

As explained below, we agree with and adopt Petitioner’s analysis and determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims would have been obvious over the combined teachings of Wasilewski, Rosenberger, and Ishikawa. We have reviewed both parties’ arguments and supporting evidence, including the disclosure of all three references and the testimony of Dr. Russ.⁸ Pet. 20–36; PO Resp. 9–

⁸ In its Preliminary Response, Patent Owner included testimony from Dr. Robert Stevenson. Ex. 2002. After institution, on March 29, 2017, Patent Owner informed the Board via email that it was withdrawing Dr. Stevenson’s Declaration in both this case and a related case—IPR2016-00834. *See ARRIS Int’l plc v. Sony Corp.*, Case IPR2016-00834, Paper 52 at

23; Reply 14–17; Sur-Reply 2–7; Ex. 1003. For the reasons discussed below, we do not agree with Patent Owner’s arguments to the contrary.

1. Wasilewski, Rosenberger, and Ishikawa Together Teach Each of the Uncontested Limitations of the Challenged Claims

We discuss each of the limitations of claim 1 in detail below, leaving for last the control means limitation, the only limitation addressed by Patent Owner.

First, Wasilewski describes an MPEG decoder (decoder 10 of Figure 1) and a tuner (tuner 12 in Figure 1) that receive an MPEG-2 stream composed of one or more programs on multiple frequencies. Ex. 1005, Fig. 1, 1:23–29, 4:51–55, 4:65–5:2. We agree with Petitioner that this description discloses the transmission signal receiving means limitation as we have construed that term because Wasilewski’s MPEG decoder is equivalent to a front end tuner. Pet. 20–21, 26 (citing Ex. 1003 ¶¶ 138–142).

Second, Wasilewski describes a service selection switch 30, which “may comprise an infrared transceiver for receiving the [Logical Channel Number] from the remote control unit 26.” Ex. 1005, Fig. 1, 6:28–33. We agree with Petitioner that this description discloses the command receiving means as we have construed that term because Wasilewski’s service selection switch 30 is equivalent to an IR signal receiving unit. Pet. 21, 27 (citing Ex. 1003 ¶¶ 143–146).

15:21–23 (PTAB Aug. 7, 2017) (confirming withdrawal of Dr. Stevenson’s Declaration). Consistent with this notification, Patent Owner did not rely on this testimony in any of its post-filing briefs. We, therefore, did not consider Dr. Stevenson’s Declaration for purposes of this Decision.

Third, Wasilewski describes that service selection switch 30 may also comprise “a display device which displays the channel selection to the user,” including associating “individual channels together as an ordered list.” Ex. 1005, Fig. 1, 4:47–51, 2:55–60, 6:28–33. In addition, Wasilewski discloses decoder 10, system data processor 14, and an electronic program guide (EPG) that a person of ordinary skill in the art would understand could be used together to display channel numbers in a predetermined order on the display device. Ex. 1005, Fig. 1, 2:29–54; Ex. 1003 ¶¶ 151–155. Similarly, Rosenberger discloses a microcomputer 9 that controls a DOS (display on screen) module to continuously display the channel numbers on screen as commands are received to change the channels. Ex. 1007, 3. We agree with Petitioner that the teachings of Wasilewski and Rosenberger each independently disclose the channel display control means as we have construed that term because Wasilewski’s disclosed elements and Rosenberger’s microcomputer 9 are equivalent to a CPU and MPEG decoder with on-screen display. Pet. 21–22, 27–28 (citing Ex. 1003 ¶¶ 147–157).

Fourth, the limitation “wherein the channel numbers being switched are displayed without displaying a channel selection until operation of the channel selection key is discontinued by the user” is disclosed by Rosenberger. Specifically, Rosenberger describes “the rapid running through of channels in the direction of higher program location numbers is continuously displayed on the screen . . . while an image of the TV channel set prior to start of the program switching process continues to be displayed” and “the program shown on the screen is not changed until after termination of the program switching process.” Ex. 1007, 3; see Pet. 24, 29–30.

Fifth, Wasilewski describes MPEG-2 information including Program Association Table (PAT), Program Map Table (PMT), and Conditional Access Tables (CAT), and a person of ordinary skill would appreciate that this information is used to build and display a list of channel numbers actually received. Ex. 1005, 1:47–55, 5: 5–13; Ex. 1003 ¶ 176. In addition to Wasilewski’s disclosure, Ishikawa discloses EEPROM 14 that “stores a television channel list of channel numbers in relation to captions representing the names or abbreviations of the respective registered television channels or stations,” which are read out of the EEPROM and displayed on-screen. Ex. 1020, 2:27–29, 2:39–48, 3:25–31. A person of ordinary skill would understand this list to be of channels actually received. *Id.* at 1:27–31; Ex. 1003 ¶ 178. We agree with Petitioner that the teachings of Wasilewski and Ishikawa each independently disclose the storage means as we have construed that term because Wasilewski’s tables are equivalent to, and Ishikawa’s EEPROM discloses, the corresponding structure of an EEPROM. Pet. 24–25, 30–31 (citing Ex. 1003 ¶¶ 172–180).

2. The Combination of Wasilewski and Rosenberger Teaches the Control Means Limitation

With respect to the control means limitation, as discussed above, the corresponding structure is comprised of a CPU implementing an algorithm. The relevant algorithm is described by the ’643 patent in two separate embodiments. Ex. 1005, 7:58–8:10, 9:15–30. Because the language used by the two versions of the algorithm is virtually identical, we will focus our analysis on the first embodiment. *See, e.g.*, Ex. 1001, 9:29–30 (“This channel selection processing is the same as that in step S17 in FIG. 8.”). The entirety of the algorithm is reproduced below:

Next, at step S16, the CPU 29 judges whether or not the channel up down key 94 finishes the operation. Namely, the CPU 29 judges whether or not a user's finger having been pressed the channel up down key 94 is detached therefrom and the operation is finished. If the channel up down key 94 is continued to be pressed and the operation is judged not to be finished, the step returns to step S11 and the processings after step S11 are repeated. This processing can be done quickly. In this embodiment, the processing from step S11 through S16 can be finished in 200 msec to 800 msec. In other words, the processing time is shorter than a time required for the channel selection. Thereby, only the channel number displayed on the screen is changed rapidly.

On the other hand, at step S16, if a user's finger having been pressed the channel up down key 94 is detached therefrom and the operation is judged to be finished, the step goes to step S17 to execute the channel selection processing. In this channel selection processing, the confirmation of the CA (Conditional Access) condition and the decoding of the MPEG data are executed.

Ex. 1001, 7:58–8:10. Steps S11, S16, and S17 referred to by this algorithm are depicted as steps in a flow chart shown in Figure 8, reproduced below.

FIG. 8

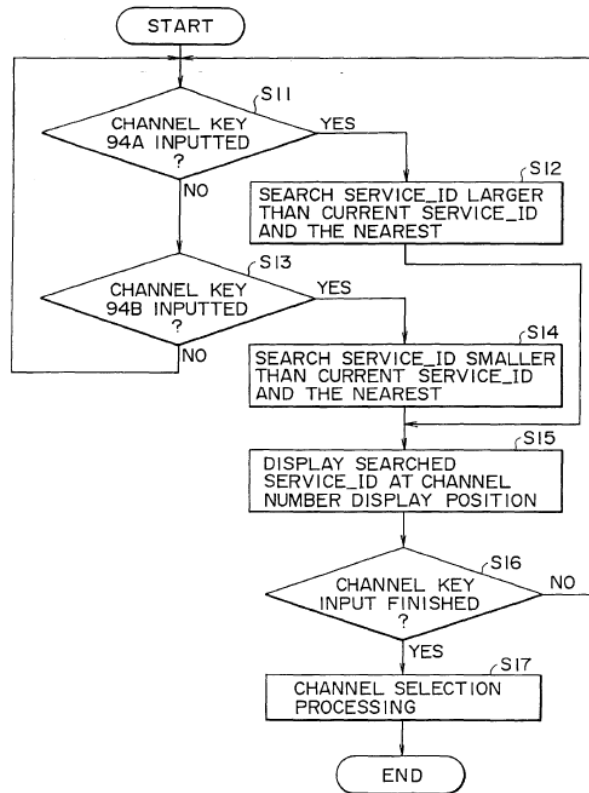


Figure 8 shows a flow chart, including step S16 “Channel Key Input Finished?” during which “CPU 29 judges whether or not a user’s finger having been pressed the channel up down key 94 is detached therefrom and the operation is finished.” Ex. 1001, 7:58–62. If CPU 29 determines that the user’s finger is still pressing the channel key, the algorithm returns to step S11 “Channel Key 94A Inputted?” *Id.* at 7:62–8:3. If, on the other hand, CPU 29 determines the user has lifted his finger off the channel key, the algorithm moves on to step S17 “Channel Selection Processing.” *Id.* at 8:4–10. In the Institution Decision, we described this algorithm as

the steps taken by CPU 29 including, “judg[ing] whether or not a user’s finger having . . . pressed the channel up down key 94 is detached therefrom and the operation is finished,” “return[ing] to step S11” if the “operation is judged not to be

finished,” and moving to step S17 “to execute the channel selection processing” if the “operation is judged to be finished.”

Inst. Dec. 7. Patent Owner does not challenge this description. *See generally* PO Resp.; Sur-Reply.

As discussed above, Wasilewski and Rosenberger each describe a CPU (Wasilewski’s system data processor 14 and Rosenberger’s microprocessor 9), decoder, and tuner. They also describe receiving channel information from a remote control. Ex. 1005, Fig. 1, 6:23–33; Ex. 1007, 3. In addition, as described in the algorithm reproduced above, Rosenberger’s microcomputer 9 receives information on the status of the channel key from remote control receiver 8 and continues displaying the channel set prior to pressing the button. Ex. 1007, 3; *see* Pet. 23. When microcomputer 9 receives information that the user has finished pressing the channel button, it “initiates the tuning of the tuner 10 to the reception frequency corresponding to the [selected program location], so that the program shown on the screen is not changed until after termination of the program switching process.” *Id.* We agree with Petitioner that this description of Rosenberger’s process is indistinguishable from the algorithm identified as the corresponding structure to the control means limitation. Pet. 23–24, 28–29 (citing Ex. 1007, 3; Ex. 1003 ¶¶ 162–165); Reply 14–17. We, therefore, are persuaded that at least Rosenberger teaches the control means limitation.

Patent Owner’s primary argument against unpatentability in its post-institution briefing is that Petitioner provided “no meaningful analysis of the specification structure, or its equivalence to the art” for the control means limitation. PO Resp. 6, 15–20. According to Patent Owner, the Petition “only discusses how the *function* of the [control means limitation] . . . is allegedly disclosed in Rosenberger” but “says nothing

whatsoever about the algorithm for carrying out that function.” *Id.* at 16. Patent Owner further argues that “simply discussing how a user interacts with the systems of Rosenberger . . . cannot demonstrate that an algorithm performed by a computing device in Rosenberger . . . is the same as or equivalent to the algorithm of the ’643 patent.” *Id.* at 17–18.

We disagree with Patent Owner’s contention. As we discussed above, the Petition points to the description of a set of steps in Rosenberger for switching program locations using a remote control receiver that is interchangeable with the set of steps agreed to be the corresponding structure described in the ’643 patent for the control means limitation. Pet. 23–24 (citing Ex. 1007, 3; Ex. 1003 ¶¶ 162–165). In particular, the Petition states that Rosenberger discloses “switching between channels when a remote control up or down key is ‘pressed and held down in the sense of a continuous actuation’” and “[w]hen the user reaches the desired program, the user terminates pressing the button, and microcomputer 9 initiates tuning of the tuner.” Pet. 23 (quoting Ex. 1007, 3). Although Rosenberger does not use the term algorithm when discussing these steps, we know of no authority that such explicit language is required. Instead, Rosenberger’s description of steps is, by definition, an algorithm. MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/algorithm> (last visited Sept. 15, 2017) (defining algorithm as “a step-by-step procedure for solving a problem or accomplishing some end especially by a computer”).

Moreover, although Patent Owner describes the Petition as “simply discussing how a user interacts with the system[] of Rosenberger,” Patent Owner does not explain how this is different from the corresponding algorithm in the ’643 patent. PO Resp. 17–18. In other words, the flow

chart shown in Figure 8 of the '643 patent and described by the corresponding language in the specification, discusses its steps in terms of how a user interacts with the system. Ex. 1001, Fig. 8, 7:58–8:10 (stating the “CPU 29 judges whether or not a user’s finger having been pressed the channel up down key 94 is detached therefrom”).

Patent Owner’s reliance on *Schulhauser* does not persuade us to the contrary. PO Resp. 9, 17 (citing *Ex parte Schulhauser*, Appeal 2013-007847, slip op. at 13–15 (PTAB Apr. 28, 2016)). The “means for” limitation at issue in *Schulhauser* incorporates, as the corresponding structure, an algorithm including several steps that only need to be performed if certain conditions precedent are met. *Schulhauser*, slip op. at 6, 13–14. *Schulhauser* explains that “[t]he broadest reasonable interpretation of a system claim having structure that performs a function, which only needs to occur if a condition precedent is met, still requires structure for performing the function should the condition occur.” *Id.* at 14. In analyzing whether the prior art “discloses or renders obvious such structure,” *Schulhauser* determines that “[t]he combined teachings of the prior art do not provide adequate guidance as to a particular order[] of performing the claimed comparisons and determinations as it relates to the claimed data,” noting that “Appellants have pointed to critical differences between the claimed system and the prior art system based on the order of the functions performed by the claimed system.” *Id.* at 15, 17.

It is unclear how *Schulhauser*’s analysis applies to the case at hand. Here, notwithstanding the similarity of Rosenberger’s described process to that of the structure at issue—as pointed out in the Petition (Pet. 23–24, 28–29), the Institution Decision (Inst. Dec. 11–12), the Rehearing Decision

(Reh’g Dec. 4–8), and Petitioner’s Reply (Reply 14–17)—Patent Owner does not point to any difference, critical or otherwise, between the two described processes. Instead, Patent Owner argues that Petitioner has not shown that the corresponding algorithm is “performed by the CPU of Wasilewski in combination with Rosenberger” because “[t]here is no discussion of how Rosenberger’s algorithm is allegedly insubstantially different from the ’643 patent’s algorithm.” Sur-Reply 5–6. As noted above, we find that the record contains sufficient supporting evidence for Petitioner’s contentions. *See* Pet. 23–24, 28–29 (citing Ex. 1007, 3; Ex. 1003 ¶¶ 162–65); Reply 14–17.

Patent Owner’s argument appears to emphasize the “structure” of the algorithm. *See* PO Resp. 17 (“[O]ne must always compare the claimed algorithmic *structure* of a computer-implemented means-plus-function term with any algorithmic *structure* allegedly disclosed in the prior art—merely comparing *functions* (as Petitioners did here) is insufficient as a matter of law.” (emphases in original)). It is unclear, however, what Patent Owner is suggesting the analysis must include with regard to the structure of the algorithm. As discussed above, we know of no requirement that the prior art must explicitly describe a set of steps as an “algorithm,” let alone as an “algorithmic structure,” in order to sufficiently disclose the structure corresponding to a means-plus-function limitation.

For example, in *Spherix*, the Federal Circuit held substantial evidence supported a finding of obviousness even where the Petition did not identify specifically the corresponding structures. *Spherix*, 2017 WL 3142330, at *3. Instead, it was sufficient that an expert testified that one of skill in the art “would have been able to derive from the claims alone the structures for

performing the corresponding functions” and “a person of skill in the art would have known that those structures could be used to perform the functions identified.” *Id.* Here, as in *Spherix*, Dr. Russ testifies that “one of ordinary skill in the art would have found it obvious to incorporate Rosenberger’s disclosure of a channel number display control means to display channels in a predetermined order into Wasilewski’s digital receiving equipment, such that together Wasilewski and Rosenberger disclose each and every element of [the control means] limitation.”

Ex. 1003 ¶ 159. Further Dr. Russ explains, in detail, that “one of ordinary skill in the art would understand Wasilewski to disclose a control means . . . because it receives inputs from channel tables to locate the correct service” and that Rosenberger discloses that its microcomputer controls a tuner using steps corresponding to those described in the ’643 algorithm. *Id.* ¶¶ 161–162. And the Petition explains how the combination of Wasilewski and Rosenberger discloses the control means limitation, and points out the specific portions of Wasilewski, Rosenberger, and Dr. Russ’s declaration as support. *See, e.g.*, Pet. 22–24, 28–29 (citing Ex. 1005, Fig. 1, Fig. 3, 4:65–5:26, 6:23–35; Ex. 1007, 3; Ex. 1003 ¶¶ 158–165).

We also are not persuaded that *IPCom* is relevant to this situation.⁹ As explained by Patent Owner, *IPCom* holds that construing a means-plus-function term linked to a processor requires identifying an algorithm that the processor executes. Supp. Auth. 1 (citing *IPCom*, 861 F.3d at 1370). In *IPCom*, the Federal Circuit found the Board’s analysis erroneous “because it

⁹ Patent Owner requested, and we granted, additional briefing to discuss this case that was decided subsequent to the oral hearing in this case. *See* Supp. Auth.; Resp. Supp. Auth.

never specified what it believed was the actual algorithm disclosed in the [challenged patent] for performing the [construed] function.” *IPCom*, 861 F.3d at 1371. Because the Board did not identify an algorithm, “the Board never engaged in a comparison of the asserted prior art’s disclosure to the ‘structure’ disclosed in the [challenged patent].” *Id.* Accordingly, the Federal Circuit vacated the Board’s claim construction and remanded “for the Board to identify the corresponding algorithm (if any) in the specification.” *Id.*

IPCom’s analysis simply does not apply to our situation. As we have noted, there is no dispute as to the corresponding algorithm to the control means limitation disclosed by the ’643 patent. Not only did the Institution Decision explicitly identify the algorithm, but the Patent Owner, in fact, proposed that very algorithm. Inst. Dec. 7–8; Prelim. Resp. 5–7; *see also* Resp. Supp. Auth. 1–3 (“[U]nlike in *IPCom*, the Board has properly identified algorithmic structure. Indeed, the Board adopted the algorithmic structure identified by Patent Owner. Both Petitioners and the Board (in the Institution Decision) have analyzed the prior art in the light of this construction of the ‘control means’ term.” (internal citations omitted)).

Based on Petitioner’s explanations and supporting evidence, we are persuaded that it would have been clear to an ordinarily skilled artisan that the combination of Wasilewski and Rosenberger discloses the control means limitation as we have construed that term.

3. Claims 2–4

Petitioner asserts that a person of ordinary skill in the art would have found claims 2–4 of the ’643 patent obvious over the combination of Wasilewski, Rosenberger, and Ishikawa. Pet. 31–34 (citing Ex. 1003

¶¶ 181–199). In particular, Petitioner asserts that Wasilewski and Rosenberger disclose claim 2’s limitation “wherein the channel number display control means switches the channels in the order of magnitude of the channel numbers.” Pet. 31–32 (citing Ex. 1005, 2:55–60, 6:28–33; Ex. 1007, 3; Ex. 1003 ¶¶ 181–187). We agree with and adopt Petitioner’s analysis regarding dependent claim 2 and determine that Petitioner has shown, by a preponderance of the evidence, that Wasilewski, Rosenberger, and Ishikawa disclose all the limitations of challenged claim 2.

Petitioner also asserts that Wasilewski and Rosenberger disclose claim 3’s limitation “wherein the channel number display control means switches the channel number in a shorter time than a time required for the channel selection by the transmission signal receiving means.” Pet. 32–33 (citing Ex. 1005, 2:55–60, 6:28–33; Ex. 1007, 1–2; Ex. 1003 ¶¶ 188–199). We agree with and adopt Petitioner’s analysis regarding dependent claim 3 and determine that Petitioner has shown, by a preponderance of the evidence, that Wasilewski, Rosenberger, and Ishikawa disclose all the limitations of challenged claim 3.

Petitioner asserts that Wasilewski discloses claim 4’s limitation “wherein the transmission signals of the channels are each compressed digital signals.” Pet. 33–34 (citing Ex. 1005, Fig. 1, 1:23–33, 4:47–55; Ex. 1003 ¶¶ 196–199). We agree with and adopt Petitioner’s analysis regarding dependent claim 4, including Dr. Russ’s unrebutted testimony that a person of skill in the art would understand Wasilewski’s disclosure of an MPEG-2 stream contains compressed, digital signals. Ex. 1003 ¶ 198. Accordingly, we determine that Petitioner has shown, by a preponderance of

the evidence, that Wasilewski, Rosenberger, and Ishikawa disclose all the limitations of challenged claim 4.

Patent Owner relies on the arguments above, regarding independent claim 1, to argue patentability of dependent claims 2–4. *See* PO Resp. For the reasons discussed above, Patent Owner’s arguments were not persuasive in the context of claim 1 and remain unpersuasive in the context of claims 2–4.

4. A Person of Ordinary Skill in the Art Would Have Had Reason to Combine Wasilewski, Rosenberger, and Ishikawa

We are persuaded that a person of ordinary skill in the art would have been motivated to combine the teachings of Wasilewski, Rosenberger, and Ishikawa. *See* Pet. 34–36. Specifically, at the time of the invention, a person of ordinary skill would have recognized that the time required to change and tune channels in a digital system was noticeably longer than that for analog channels. Ex. 1001, 1:28–36; Ex. 1007, 3; Ex. 1015, 2:59–65, 3:48–56; Ex. 1017, 1:16–20. Such artisan would have been motivated to simplify and quicken this process, especially given the proliferation of channels and services throughout the industry. Ex. 1003 ¶ 202. Because a skilled artisan would have known about both analog and digital systems, it would have been obvious to look to Rosenberger’s analog solution to this problem and apply the same technique to the digital receiver of Wasilewski. *Id.* ¶¶ 203–204. We credit Dr. Russ’s un rebutted testimony that such combination would be “very simple from a technical standpoint,” requiring “essentially . . . a change in software to prevent the system from tuning a new channel while a channel-change button is being held down.” *Id.* ¶¶ 205–207. A preponderance of the evidence, therefore, shows that this

combination is nothing more than “the predictable use of prior art elements according to their established functions.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

As for Ishikawa, we are persuaded that a person of ordinary skill would have been motivated to combine Ishikawa’s teachings of a channel number listing stored in an EEPROM with Wasilewski’s system as modified by Rosenberger. See Pet. 35–36 (citing Ex. 1003 ¶¶ 208–211). Wasilewski explicitly acknowledges the need for storage of channel information. Ex. 1005, 4:66–5:2 (“Optionally, the frequency is determined from a Network Information Table (NIT) 36 (described below) which is stored at the set top unit (STU).”). And Rosenberger discusses the use of “abbreviated channel designations . . . in relation to the program location” to display on screen. Ex. 1007, 3–4. Ishikawa describes the storage of a list of channel numbers to be used to create an on-screen display such that a user can select channels more easily. Ex. 1020, 1:27–31, 2:39–48.

Moreover, Wasilewski discloses “the service provider desires the flexibility of moving programs around to different transport streams and different frequencies without having to update the EPG service provider of each and every change.” Ex. 1005, 3:11–15. We credit Dr. Russ’s un rebutted testimony that a person of ordinary skill would have looked to the EEPROM storage disclosed in Ishikawa—which can store programming information (including channel numbers), and can be erased and reprogrammed over time—to avoid having to update information with every change in programming information or every time a receiver is turned on. Ex. 1003 ¶¶ 208–211. In addition, Dr. Russ testifies that “[u]sing a non-volatile memory, such as an EEPROM, to store channel number information

was known in the art” and “[o]ne of ordinary skill in the art would recognize it as an obvious way of storing the Network Information Tables disclosed in Wasilewski.” *Id.* ¶ 210. And, Dr. Russ persuasively testifies, “[a]dding the EEPROM disclosed in Ishikawa to Wasilewski would be [a] technically simple matter for one of skill in the art.” *Id.*

Patent Owner does not challenge Petitioner’s assertions concerning the reasons to combine Wasilewski, Rosenberger, and Ishikawa.

Accordingly, we conclude that a preponderance of the evidence supports a finding that a person of ordinary skill in the art would have found it obvious to incorporate (1) Rosenberger’s method of preventing the system from tuning a new channel while a channel-change button is being held down, and (2) Ishikawa’s disclosure of an EEPROM to store a list of channel numbers, into Wasilewski’s digital satellite receiver and on-screen display for the purpose of providing a digital system that rapidly locates and changes channels.

5. Conclusion

We determine that a preponderance of the evidence shows claims 1–4 of the ’643 patent would have been obvious in view of the combined teachings of Wasilewski, Rosenberger, and Ishikawa.¹⁰

I. Obviousness over Wasilewski and Ejima

Petitioner asserts that a person of ordinary skill in the art would have found the challenged claims obvious over the combination of Wasilewski and Ejima. Pet. 36–47 (citing Ex. 1003 (Declaration of Dr. Russ)).

¹⁰ As noted above, no evidence of secondary considerations of non-obviousness was introduced or argued by either party.

Specifically, Petitioner relies on Wasilewski for disclosing at least a portion of every limitation of the challenged claims. *Id.* Petitioner additionally relies on Ejima for the channel number display control means (*id.* at 37, 40–41), the control means limitation (*id.* at 37–38, 41–42), the storage means limitation (*id.* at 39, 42–43), and the additional limitations added by dependent claims 2 and 3 (*id.* at 43–45). Finally, Petitioner explains why a person of ordinary skill would have combined the teachings of the two references. *Id.* at 45–47.

We have reviewed both parties’ arguments and supporting evidence, including the disclosure of both cited references and the testimony of Dr. Russ. Pet. 36–47; PO Resp. 15–23; Reply 17–19; Sur-Reply 2–7; Ex. 1003. For the reasons discussed below, we do not agree with Patent Owner’s arguments to the contrary. As explained below, we agree with and adopt Petitioner’s analysis and determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims would have been obvious over the combined teachings of Wasilewski and Ejima.

1. Overview of Ejima

Ejima discloses a TV receiver “that permits rapid tuning to the desired broadcast by a simple operation similar to sequential tuning.” Ex. 1010, Abstract. Specifically, “[w]hen the channel up key or channel down key is held continuously, the TV receiver in this invention renders it possible to rapidly select the desired broadcast by first sequentially tuning a designated number of broadcasting channels and then halting the tuning processing involving the switching of channels while continuing sequential up/down display of channel numbers.” *Id.* at ¶ 15. This continues until the user

“releases the up/down key at a designated channel number, upon which the channel number at which the key was released is received.” *Id.* at ¶ 20.

2. *Wasilewski and Ejima Together Teach Each of the
Uncontested Limitations of the Challenged Claims*

We discuss each of the limitations of claim 1 in detail below, leaving for last the control means limitation, the only limitation addressed by Patent Owner. As discussed in Section G above, we find that Wasilewski discloses the transmission signal receiving means and the command receiving means. These findings apply equally to this combination of references.

Our previous findings related to Wasilewski’s disclosure of the channel display control means also apply here. *See supra* § G. In addition, Ejima discloses a tuning controller 20 with a CPU (processing portion 36) on-screen display showing received channel numbers. Ex. 1010 ¶¶ 8, 26. In describing the high-speed channel changing mode, Ejima discloses that “the channel number displayed on the CRT . . . changes sequentially.” *Id.* ¶ 20. Dr. Russ testifies that “one of ordinary skill in the art would understand Ejima to disclose a system that commands [a] display to switch the channels in a predetermined order for switching channel numbers.” Ex. 1003 ¶ 229. We agree with Petitioner that, in addition to the teachings of Wasilewski, the teachings of Ejima independently disclose the channel display control means as we have construed that term because Ejima’s tuning controller 20 with processing portion 36 and on-screen display is equivalent to a CPU and MPEG decoder with on-screen display. Pet. 37, 40–41 (citing Ex. 1010 ¶¶ 4, 8, 20, 26; Ex. 1003 ¶¶ 229–231).

The limitation “wherein the channel numbers being switched are displayed without displaying a channel selection until operation of the

channel selection key is discontinued by the user” is disclosed by Ejima. Specifically, Ejima discloses receiving channel numbers from a “channel up/down control portion . . . upon operation of an input key” and displaying those numbers on a screen display processing portion. Ex. 1010 ¶ 14. “After high speed is attained, the user looks at the channel number displayed on the CRT as it changes sequentially, and releases the up/down key at a designated channel number, upon which the . . . channel up/down key is pressed.” *Id.* ¶ 20; *see also id.* ¶ 38 (“In high-speed channel up mode, only channel up processing is performed without performing tuning processing.”), ¶ 61 (“[T]he TV receiver in this invention is furnished with not . . . a high-speed channel up/down operation that halts sequential tuning and displays the channel number while changing the channel number setting up or down.”). We agree with Petitioner that the teachings of Wasilewski and Ejima disclose “wherein the channel numbers being switched are displayed without displaying a channel selection until operation of the channel selection key is discontinued by the user.” Pet. 38–39, 41–42 (citing Ex. 1010 ¶¶ 14, 20–21, 38, 61; Ex. 1003 ¶¶ 243–246).

Our previous findings related to Wasilewski’s disclosure of the storage control means also apply here. *See supra* § G. In addition to Wasilewski’s disclosure, Ejima discloses an EEPROM that stores channel preset data, including the “setting of the current channel number, and setting of data for tuning/OSD.” Ex. 1010 ¶ 7. Dr. Russ testifies that “[o]ne of ordinary skill in the art would understand that the EEPROM disclosed by Ejima would store a list of channels actually received, because the data in the EEPROM is used for tuning and to set the channel displayed on the on-screen display.” Ex. 1003 ¶ 253. We agree with Petitioner that, in addition

to the teachings of Wasilewski, Ejima independently discloses the storage means as we have construed that term because Ejima's EEPROM discloses the corresponding structure of an EEPROM. Pet. 39, 42–43 (citing Ex. 1003 ¶¶ 248–255).

3. The Combination of Wasilewski and Ejima Teaches the Control Means Limitation

With respect to the control means limitation, as discussed above, the corresponding structure comprises a CPU implementing an algorithm. The relevant algorithm includes

the steps taken by CPU 29 including, “judg[ing] whether or not a user's finger having . . . pressed the channel up down key 94 is detached therefrom and the operation is finished,” “return[ing] to step S11” if the “operation is judged not to be finished,” and moving to step S17 “to execute the channel selection processing” if the “operation is judged to be finished.”

Inst. Dec. 7.

As discussed above, both Wasilewski and Ejima describe a CPU (Wasilewski's system data processor 14 and Ejima's tuning controller), and receiving channel information from an up/down channel key. In addition, as described in the algorithm reproduced above, Ejima's tuning controller receives information on the status of the channel key and when it is “held continuously” the tuner “halt[s] tuning processing involving the switching of channels while continuing sequential up/down display of channel numbers.” Ex. 1010 ¶ 15; *see* Pet. 38. When the tuner receives information that the user has released the up/down key “the channel number at which the key was released is received.” *Id.* ¶ 20. Dr. Russ states that

one of ordinary skill in the art would understand that Ejima discloses a system in which the transmission signal of a channel indicated by the channel number being display[ed] when the

command received by the command receiving means is broken, that is, the command is no longer being received because the key was released.

Ex. 1003 ¶ 237. We agree with Petitioner that this description of Ejima’s process is indistinguishable from the algorithm identified as the corresponding structure to the control means limitation. Pet. 37–38, 41 (citing Ex. 1010 ¶¶ 15, 20, 26, 38; Ex. 1003 ¶¶ 237–239); Reply 17–19. We, therefore, are persuaded that Wasilewski and Ejima teach the control means limitation.

Patent Owner’s primary argument against unpatentability over Wasilewski and Ejima in its post-institution briefing is no different than its argument against unpatentability over Wasilewski, Rosenberger, and Ishikawa. PO Resp. 15–20; Sur-Reply 4–7. For the reasons explained in the analysis of the Wasilewski, Rosenberger, and Ishikawa combination, we disagree with Patent Owner’s contention.

As we discussed above, the Petition points to the description of a set of steps in Ejima for switching program locations using a channel up/down key that is interchangeable with the set of steps described in the ’643 patent agreed to be the corresponding structure of the control means limitation. Pet. 37–38, 41 (citing Ex. 1010 ¶¶ 15, 20, 26, 38; Ex. 1003 ¶¶ 237–239).

Moreover, although Patent Owner describes the Petition as “simply discussing how a user interacts with the system[] of . . . Ejima,” Patent Owner does not explain how this is different from the corresponding algorithm in the ’643 patent. PO Resp. 17–18. We do not agree with this contention for the reasons discussed with respect to the Wasilewski, Rosenberger, and Ishikawa combination. Also, notwithstanding the similarity of Ejima’s described process to that of the structure at issue—as

pointed out in the Petition (Pet. 37–38, 41), the Institution Decision (Inst. Dec. 13–14), the Rehearing Decision (Reh’g Dec. 4–8), and Petitioner’s Reply (Reply 17–19)—Patent Owner does not point to any difference, critical or otherwise, between the two described processes.

Here, Dr. Russ testifies that “one of ordinary skill in the art would have found it obvious to incorporate Ejima’s disclosure of a control means for controlling the transmission signal means into Wasilewski’s digital receiving equipment, such that together Wasilewski and Ejima disclose each and every element of [the control means] limitation.” Ex. 1003 ¶ 233. Further Dr. Russ explains, in detail, that “one of ordinary skill in the art would understand Wasilewski to disclose a control means for controlling a transmission signal receiving means to receive a selected channel” and that Ejima discloses a tuning controller that performs the tuning and channel number display using steps corresponding to those described in the ’643 algorithm. *Id.* ¶¶ 235–237. And the Petition explains how the combination of Wasilewski and Ejima discloses the control means limitation, and points out the specific portions of Wasilewski, Ejima, and Dr. Russ’s declaration as support. *See, e.g.*, Pet. 37–38, 41 (citing Ex. 1005, Fig. 1, Fig. 3, 4:65–5:26, 6:23–35; Ex. 1010 ¶¶ 15, 20, 26, 38; Ex. 1003 ¶¶ 237–239).

Based on Petitioner’s explanations and supporting evidence, we are persuaded that it would have been clear to an ordinarily skilled artisan that the combination of Wasilewski and Ejima discloses the control means limitation as we have construed that term.

4. Claims 2–4

Petitioner asserts that a person of ordinary skill in the art would have found claims 2–4 of the ’643 patent obvious over the combination of

Wasilewski and Ejima. Pet. 43–45 (citing Ex. 1003 ¶¶ 256–274). In particular, Petitioner asserts that Wasilewski and Ejima disclose claim 2’s limitation “wherein the channel number display control means switches the channels in the order of magnitude of the channel numbers.” Pet. 43–44 (citing Ex. 1005, 2:55–60, 6:28–33; Ex. 1010 ¶¶ 2, 20; Ex. 1003 ¶¶ 256–262). We agree with and adopt Petitioner’s analysis regarding dependent claim 2 and determine that Petitioner has shown, by a preponderance of the evidence, that Wasilewski and Ejima disclose all the limitations of challenged claim 2.

Petitioner also asserts that Wasilewski and Ejima disclose claim 3’s limitation “wherein the channel number display control means switches the channel number in a shorter time than a time required for the channel selection by the transmission signal receiving means.” Pet. 44–45 (citing Ex. 1005, 2:55–60, 6:28–33; Ex. 1010 ¶¶ 11, 14, 18; Ex. 1003 ¶¶ 263–270). We agree with and adopt Petitioner’s analysis regarding dependent claim 3 and determine that Petitioner has shown, by a preponderance of the evidence, that Wasilewski and Ejima disclose all the limitations of challenged claim 3.

Petitioner asserts that Wasilewski discloses claim 4’s limitation “wherein the transmission signals of the channels are each compressed digital signals.” Pet. 33–34 (citing Ex. 1005, Fig. 1, 1:23–33, 4:47–55; Ex. 1003 ¶¶ 196–199). We agree with and adopt Petitioner’s analysis regarding dependent claim 4 and determine that Petitioner has shown, by a preponderance of the evidence, that Wasilewski and Ejima disclose all the limitations of challenged claim 4.

Patent Owner relies on the arguments above, regarding independent claim 1, to argue patentability of dependent claims 2–4. *See* PO Resp. Patent Owner’s arguments were not persuasive in the context of claim 1 and remain unpersuasive in the context of claims 2–4.

5. A Person of Ordinary Skill in the Art Would Have Had Reason to Combine Wasilewski and Ejima

We are persuaded that a person of ordinary skill in the art would have been motivated to combine the teachings of Wasilewski and Ejima. *See* Pet. 45–47. Specifically, at the time of the invention, a person of ordinary skill would have recognized that the time required to change and tune channels in a digital system was noticeably longer than that for analog channels. Ex. 1001, 1:28–36; Ex. 1007, 3; Ex. 1015, 2:59–65; 3:48–56; Ex. 1017, 1:16–20. Ejima, in fact, recognizes that “it will take too long with sequential tuning to find the desired broadcast if the number of receivable broadcasting stations is too numerous.” Ex. 1010 ¶ 11. A person of ordinary skill in the art would have been motivated to use the solution described in Ejima to create a faster process. Ex. 1003 ¶¶ 275, 277, 279. We credit Dr. Russ’s un rebutted testimony that such combination would be “a technically simple modification to incorporate Ejima’s disclosure to implement a fast mode to scroll through channels on a display without tuning until a key is released” and that the combination “merely combines known prior art elements that would be technically simple and would yield predictable results.” *Id.* ¶¶ 280–281.

Patent Owner does not challenge Petitioner’s assertions concerning the reasons to combine Wasilewski and Ejima.

A preponderance of the evidence, therefore, shows that this combination is nothing more than “the predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. at 417.

6. Conclusion

We determine that a preponderance of the evidence shows claims 1–4 of the ’643 patent would have been obvious in view of the combined teachings of Wasilewski and Ejima.¹¹

CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that the challenged claims would have been obvious over the combinations of (1) Wasilewski, Rosenberger, and Ishikawa, and (2) Wasilewski and Ejima.

ORDER

Accordingly, it is

ORDERED that claims 1–4 of the ’643 patent are determined to be *unpatentable*;

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.

¹¹ As noted above, no evidence of secondary considerations of non-obviousness was introduced or argued by either party.

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