

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TRANSCORE, LP,
Petitioner,

V.

HAND HELD PRODUCTS, INC.,
Patent Owner.

Case No. IPR2024-00443
Patent No. 8,919,654

**Patent Owner's Preliminary Response
to Petition for *Inter Partes* Review
of U.S. Patent No. 8,919,654**

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I. Introduction

Patent Owner Hand Held Products, Inc. (“PO” or “Patent Owner”) submits this Preliminary Response responding to the Petition for *inter partes* review (Paper 1, (“Petition”)) filed by Transcore LP (“Petitioner”) against claims 1-20 (“the challenged claims”) of U.S. Patent No. 8,919,654 (“the ’654 patent”). The Board should deny institution because the Petition is replete with numerous substantive and legal deficiencies that culminate in Petitioner’s failure to meet its burden of demonstrating a reasonable likelihood of prevailing on any of its challenges of claims 1-20.¹

II. Level Of Ordinary Skill

Petitioner presents dueling POSITA definitions. (*Compare* Pet., 4 *with id.*, 12.) However, the deficiencies highlighted below do not hinge on Petitioner’s conflicting definitions and thus the Board need not reconcile them for purposes of deciding institution. Petitioner reserves its rights to later rebut or dispute Petitioner’s POSITA definitions in this or other proceedings.

¹ While this preliminary response addresses certain deficiencies in the Petition, the proposed grounds may be deficient for other reasons not identified herein.

III. Claim Construction

Outside of claims 6 and 15, Petitioner does not indicate how any other terms should be interpreted. (Pet., 12-13.) For purposes of this response, PO responds to the grounds based on the fact that the Petition does not offer construction for any terms except for claims 6 and 15. (*Id.*) In so doing, PO does not acquiesce to any implied constructions that may be gleaned from Petitioner's arguments or prior art mappings. PO reserves the right to address and/or assert claim interpretation issues in this proceeding (if instituted) or any other proceeding.

As to claims 6 and 15, the Board need not address Petitioner's proposed interpretations of these claims at this stage to decide institution because, as explained below, the Petition fails to demonstrate a reasonable likelihood of Petitioner succeeding in its challenges to these claims even under Petitioner's proposed interpretations.

IV. The Petition Suffers From Numerous Deficiencies That Warrant Non-Institution

To be instituted, a petition must "show[] that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). "[A] petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon." 37 C.F.R. § 42.104(b)(4); 35 U.S.C. § 312(a)(3); *Adaptics Ltd. v. Perfect Co.*, IPR2018-

01596, Paper 20 at 22-24 (Mar. 6, 2019) (informative). “It is Petitioner’s burden to identify, in the petition, ‘in writing and with particularity each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.’” *Google LLC v. AGIS Software Dev., LLC*, IPR2018-01081, Paper 11 at 32 (Nov. 20, 2018); *see also* *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016). “[U]nexplained quotations” do not such particularity requirements. *Daihen Corp. v. Reno Techs., Inc.*, IPR2019-00248, Paper 11 at 12-13 (May 22, 2019).

The Petition fails to meet these and other requirements or demonstrate a reasonable likelihood that Petitioner would prevail with respect to any challenged claim.

A. The Petition Fails to Demonstrate Katz Qualifies As Prior Art Rendering Grounds 2-3 Deficient

A petitioner may only seek *inter partes* review of a challenged claim based on “prior art consistent of patents or printed publications.” 35 U.S.C. § 311(b). Moreover, “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). Where a petitioner challenges claims based on a non-patent literature reference, it is the petitioner’s burden to demonstrate the reference qualifies as “printed publication” to support its grounds. *Hulu, LLC v. Sound View*

Innovations, LLC, IPR2018-01039, Paper 29 at 11 (PTAB Dec. 20, 2019) (precedential); *Nobel Biocare Servs. AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1375 (Fed. Cir. 2018); *In re Wyer*, 655 F.2d 221, 227 (CCPA 1981)) (a party asserting a reference as prior art printed publication should provide sufficient proof of accessibility). The burden of persuasion remains with the petitioner that the reference qualifies as prior art as a “printed publication.” *In re Magnum Oil Tools Int’l, Ltd*, 829 F.3d 1354, 1375 (Fed. Cir. 2016).

Whether a reference qualifies as a printed publication is a legal question based on underlying factual findings, including whether the reference was publicly accessible based on inquiries surrounding the reference’s disclosure to the public. *Hulu* at 8-9 (citations omitted). “‘Because there are many ways in which a reference may be disseminated to the interested public, ‘public accessibility’ has been called the touchstone in determining whether a reference constitutes a ‘printed publication’ bar under 35 U.S.C. § 102(b).’” *Id.* at 10 (citing *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016) (quoting *In re Hall*, 781 F.2d 897, 898-99 (Fed. Cir. 1986)).

At the institution phase, the “reasonable likelihood” standard applies to the issue of whether a reference is a printed publication. *Hulu* at 12 (citing 35 U.S.C. §314(a)). In particular:

at the institution stage, *the petition must identify, with particularity, evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible before the critical date of the challenged patent* and therefore that there is a reasonable likelihood that it qualifies as a printed publication.

Hulu at 13.² This is where the Petition fails.

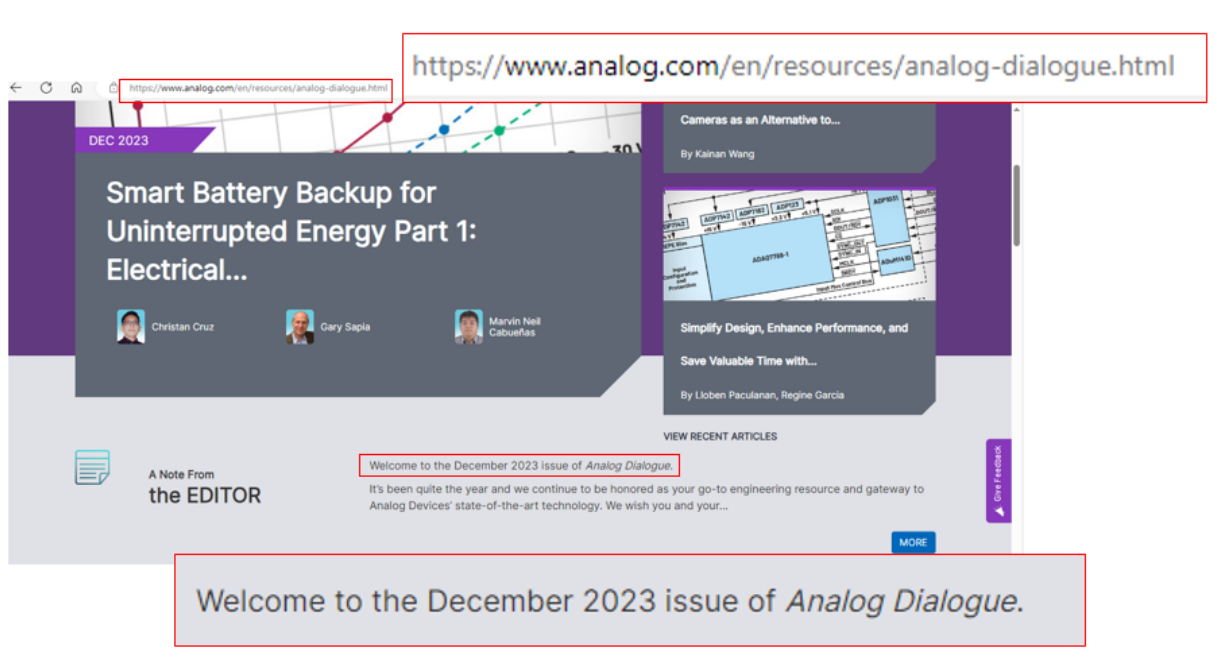
Petitioner relies on a non-patent literature (“NPL”) reference to Katz (Ex. 1006) in Grounds 2-3. (Pet., 2-3.) As such, Petitioner has the burden to “identify, with particularity, evidence sufficient to establish a reasonable likelihood that” Katz was publicly accessible before the critical date of the ’654 patent.³ *Hulu* at 13. Yet, the Petition merely relies on an uncorroborated statement that Katz “published in September 2006” and “is prior art under 35 U.S.C. § 102(b).” (Pet., 2.) Petitioner provided no additional arguments and did not introduce any supporting evidence, declarant testimony, or the like to establish that Katz was publicly accessible before the critical date. (*See generally* Pet.) A self-serving unsupported statement that Katz

² Emphasis added herein unless stated otherwise.

³ For purposes of this preliminary response, PO refers to the September 25, 2009 “critical date” identified by Petitioner (Pet., 2) without waiving any rights that an earlier date may be applicable.

“published in 2006” (Pet., 2) is insufficient evidence to support institution even under the “reasonable likelihood” standard. *Hulu* at 12.

While Katz has a “September (2006)” label in its footer (e.g., Ex. 1006, 1), that alone is not enough to establish a reasonable likelihood that Katz was publicly accessible before the critical date of the '654 patent. Katz does not identify the September (2006) label as a publication date, but rather simply states “Analog Dialogue 40-09, September (2006)” with an identified URL (“http://www.analog.com/analogdialogue”). (Ex. 1006, 1.) Accessing the identified URL now redirects the user to a different URL is dated in 2023.



(Annotated excerpt from redirected webpage accessed when searching “www.analog.com/analogdialogue” accessed February 14, 2024.)

Nothing in Katz explains what the “September (2006)” label represents. Based on the complete lack of evidence identified in the Petition, there is no way to determine whether the 2006 label represents a date of (1) submission, (2) acceptance for purported publication, or (3) when Katz was purportedly disseminated in any form to the public without restriction. The “September (2006)” label is therefore insufficient to establish Katz was publicly accessible at any time prior to the critical date of the '654 patent. *See In-Depth Geophysical, Inc. v. Conocophillips Co.*, IPR2019-00849, Paper 14 at 9 (PTAB September 6, 2019) (informative as to §1.E (printed publications)). Indeed, like the petitioner in *In-Depth Geophysical*, Petitioner here did not even attempt to establish the authenticity of Exhibit 1006. *Id.* And like in *In-Depth Geophysical*, the “single sentence provided in the Petition provides no explanation or persuasive corroborating evidence explaining how, or why the date shown on [Katz] qualifies [it] as a printed publication as a result of its public accessibility to interested person of ordinary skill in the art.” *Id.* at 9-10.

The Board frequently denies institution where petitions fail to demonstrate that an NPL reference qualifies as prior art, including in situations where petitions contain far more evidence than that offered by Petitioner here. In *Topcorn Medical Systems, Inc.*, IPR2021-00452, in its bid to establish the prior art date of the subject NPL reference, petitioner relied only on evidence from the NPL reference itself, the Internet Archive, and circumstantial evidence based on attorney argument. *Topcorn*

Medical Systems, Inc. v. Carl Zeiss Meditec, Inc. IPR2021-00452, Paper No. 14 at 12-15 (July 21, 2021). The Board denied institution because the petitioner failed to present evidence sufficient to establish a reasonable likelihood that the NPL reference was publicly accessible and thus a printed publication. *Id.* at 10-20, 22. As in *Topcorn*, Petitioner here “bears the burden to provide that the entire [reference (i.e., Katz)] was available ... prior to the critical date.” *Id.* at 14-15. Likewise, the alleged disclosures in Katz “goes to the heart of Petitioner’s invalidity argument” in Grounds 2-3. (*Id.* at 15; Pet., 43-68.) Yet, Petitioner has not met its burden to support institution of those grounds by failing to even allege public accessibility, much less “identify, with particularity” (*Hulu* at 12) any evidence to establish Katz was publicly accessible before the critical date of the ’654 patent.

Petitioner’s failure to address such a key issue is fatal to its request for *inter partes* review. Petitioner should have been aware of its burden to establish that an NPL reference qualifies as prior art especially since the Board routinely faces printed publication issues in IPR proceedings—so much so it designated its *Hulu* decision precedential to ensure stakeholders (like Petitioner) had guidance on the issue. *Hulu* at 1. Having chosen to ignore public accessibility, Petitioner should not be allowed to supplement its positions or evidence to fill gaps in its Petition to avoid non-institution as it had “the burden **from the onset** to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc.*, 815 F.3d at 1363; *Topcon*

Medical at 10.

Accordingly, the Petition fails to establish a reasonable likelihood that Katz is a printed publication to support institution based on Grounds 2-3.⁴

B. Katz Does Not Incorporate By Reference Exhibits 1007-1009 Rendering Grounds 2-3 Deficient

Petitioner represents that “Katz also incorporates by reference three datasheets,” which Petitioner introduces as Exhibits 1007-1009, and relies on Exhibits 1007-1008 to support its challenges in Grounds 2-3. (*See e.g.*, Pet., 2-3, 45-46 (Ex. 1007), 46 (Ex. 1008))⁵.) Petitioner alleges that Exhibits 1007-1009 were “published” in 2006 or 2003 and are “prior art under 35 U.S.C. § 102(b).” (Pet., 2-

⁴ The Petition also relies on other NPL documents (Tuttlebee I (Ex. 1012) and Tuttlebee II (Ex. 1011)). (Pet., 2-3.) Exhibits 1011-1012 should be given no weight because the Petition failed to identify, with particularity, evidence sufficient to establish a reasonable likelihood that those exhibits were publicly accessible before the critical date of the '654 patent, for similar reasons explained above. The same is true for the NPL references submitted as Exhibits 1007-1008 and 1015, which the Petition relies upon in Ground 2. (Pet., 45-46.)

⁵ The Petition does not cite to or rely on Ex. 1009 for any ground. (*See generally* Pet.)

3.)

Petitioner's characterizations are inaccurate and misleading. Katz does not incorporate by reference any disclosures, much less the specific documents submitted as Exhibit 1007-1009. (*See generally* Ex. 1006.) Although Katz mentions product model numbers, such disclosure does not evince incorporation by reference under the law and Petitioner never addressed the matter of incorporation by reference.

“To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.” *Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 906-07 (Fed. Cir. 2018) (quoting *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000)). Whether and to what extent material has been incorporated by reference is a question of law. *Paice* at 907 (citing *Harari v. Lee*, 656 F.3d 1331, 1334 (Fed. Cir. 2011)). “[T]he standard of one reasonably skilled in the art should be used to determine whether the host document describes the material to be incorporated by reference with sufficient particularity.” *Paice* at 907 (quoting *Advanced Display*, 212 F.3d at 1283).

Despite these requirements, Petitioner offered nothing beyond blanket statements that Katz incorporates by reference Exhibits 1007-1009. (*See e.g.*, Pet., 2-3). However, unlike the passages at-issue in *Paice* (*Paice* at 907) and the cases

discussed therein (*e.g.*, *id.* at 909-10 (discussing *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331 (Fed. Cir. 2009) and *Husky Injection Molding Systems Ltd. v. Athena Automation Ltd.*, 838 F.3d 1236 (Fed. Cir. 2016))), Katz has no incorporation clause to consider. This is because nowhere does Katz state (and Petitioner never demonstrated as such) it incorporates by reference any disclosures, much less Exhibits 1007-1009. (Ex. 1006.)

Indeed, the Petition does not even cite to Katz to support Petitioner's representations. (Pet., 2-3 (citing only Exhibits 1007-1009).) Having failed to identify specific portions of the evidence (*i.e.*, Ex. 1006) that support Petitioner's representations that Katz "incorporates by reference" any of Exhibits 1007-1009, the Board should find Katz does not incorporate by reference Exhibits 1007-1009 nor give them any weight. *See* 37 C.F.R. § 42.104(b)(5). In addition, because the Petition relies on Exhibits 1007-1008 to support its Katz-based challenges (Pet., 2-3, 45-46 (Ex. 1007), 46 (Ex. 1008)), Grounds 2-3 are deficient and cannot support institution.⁶

It is not the Board's job to "piece together" Petitioner's arguments "into a cogent and coherent explanation that supports" Petitioner's unpatentability grounds

⁶ Ground 3 relies on Petitioner's bases for claim 1 in Ground 2, and thus is deficient for the same reasons here.

(*Facebook, Inc. v. Uniloc USA, Inc.*, IPR2017-01524, Paper 7 at 19 (Dec. 4, 2017); *In re Magnum Oil Tools*, 829 F.3d at 1380–81). Nonetheless, the Katz reference does not incorporate by reference any of Exhibits 1007-1009.

As to **Exhibit 1007**, the only reference Katz makes to ADSP-BF531 is in discussing “dynamic power management capabilities of low-cost convergent processors such as the ADSP-BF531.” (Ex. 1006, 4.) Here, Katz references a footnote 7, which identifies “ADI website: www.analog.com (Search ADSP-BF531 (Go).” (Ex. 1006, 5.) Even if the Board was inclined (which the Petition did not demonstrate), searching “ADSP-BF531” at the identified website results in 169 search results of various documents and models, as the excerpts below demonstrate.

You searched for “ADSP-BF531”

Filters

Product Categories

- ☐ Audio Products 146
- ☐ Processors and Microcontrollers 146
- ☐ Product 1
- ☐ RF and Microwave 1

Resources

- ☐ Application Note 34
- ☐ Data Sheet 8
- ☐ Evaluation Board 13
- ☐ Evaluation Documentation 5

 Analog.com 169  EngineerZone 2622

Results on Analog.com 169

Sort by Relevance ▾

[ADSP-BF531/BF532/BF533 Blackfin Processor BSDL File 169-Ball PBGA Package \(02/2004\)](#)

BSDL MODEL FILE

[txt ADSP-BF531/BF532/BF533 Blackfin Processor BSDL File 169-Ball PBGA Package \(02/2004\)](#) 

[ADSP-BF531/BF532/BF533 Blackfin Anomaly List for Revisions 0.5, 0.6](#)

INTEGRATED CIRCUIT ANOMALY

You searched for "ADSP-BF531"

Filters

Product Categories

- ☐ Audio Products 146
- ☐ Processors and Microcontrollers 146
- ☐ Product 1
- ☐ RF and Microwave 1

Resources

- ☐ Application Note 34
- ☐ Data Sheet 8
- ☐ Evaluation Board 13
- ☐ Evaluation Documentation 5

 Analog.com 169  EngineerZone 2622

Results on Analog.com 169 Sort by Relevance ▾

[ADSP-BF512/BF514/BF516/BF518 Rev 0.1 1.8/2.5/3.3V I/O Blackfin Processor IBIS Datafile 12×12 168-Ball CSP_BGA Package \(09/2009\)](#)

IBIS MODEL

zip [ADSP-BF512/BF514/BF516/BF518 Rev 0.1 1.8/2.5/3.3V I/O Blackfin Processor IBIS Datafile 12×12 168-Ball CSP_BGA Package \(09/2009\)](#)  164 kB

[ADSP-BF538/ADSP-BF538F Blackfin Processors with Integrated Flash Memory](#)

(Excerpts from www.analog.com visited February 14, 2024).

Further, even if Katz's reference to "ADSP-BF531" was considered some form of incorporation by reference under the law—it *is not*, the most it would even support is discussion of "power management capabilities" (Ex. 1006, 4), which has nothing to do with what Petitioner relies on Exhibit 1007 for in its grounds. (Pet., 45-46 (citing Ex. 1007, 1, 4).) *See Paice* at 907-08 ("the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents"), 909-10.

Likewise for **Exhibit 1008**, while Katz briefly discusses the ADSP-BF561 (Ex. 1006, 4), Katz does not indicate it incorporates by reference the document submitted as Exhibit 1008. Again, Katz references a footnote 8 when describing "computation demands" handled by "dual-core convergent processors such as the ADSP-BF561." (Ex. 1006, 4.) That footnote references the same ADI website with

“Search ADSP-BF561 (Go).” (Ex. 1006, 5.) Searching “ADSP-BF531” at the identified ADI website results in 72 search results of various documents and models, as exemplified below.

You searched for “ADSP-BF561”

Filters

▼ **Product Categories**

- ☐ Audio Products 59
- ☐ Processors and Microcontrollers 59

▼ **Resources**

- ☐ Application Note 9
- ☐ Data Sheet 4
- ☐ Evaluation Board 8
- ☐ Evaluation Documentation 2
- ☐ Software Documentation 10

 Analog.com 72  EngineerZone 1048

Results on Analog.com 72 Sort by Relevance ▼

ADSP-BF561 EZ-KIT Lite® Evaluation System Manual
USER GUIDE

pdf ADSP-BF561 EZ-KIT Lite Evaluation System Manual  1416 kB

ADSP-BF561 Blackfin Processor BSDL File 297-Ball PBGA Package
BSDL MODEL FILE

(Excerpt from www.analog.com visited February 14, 2024).

The search results identify a document with a similar title to Exhibit 1008, but that document is for a 2023 revision.

ADSP-BF561: Blackfin Embedded Symmetric Multiprocessor Data Sheet

DATA SHEET

The **ADSP-BF561** processor is a high performance member of the Blackfin® family of products targeting a variety of multimedia, industrial, and telecommunications applications.

PDF [ADSP-BF561: Blackfin Embedded Symmetric Multiprocessor Data Sheet](#)  2.09 M



Blackfin Embedded
Symmetric Multiprocessor

ADSP-BF561

FEATURES

Dual symmetric 600 MHz high performance Blackfin cores
328K bytes of on-chip memory
(see [Memory Architecture](#))
Each Blackfin core includes
Two 16-bit MACs, two 40-bit ALUs, four 8-bit video ALUs,
40-bit shifters
RISC-like register and instruction model for ease of pro-
gramming and compiler-friendly support
Advanced debug, trace, and performance monitoring
Wide range of operating voltages (see [Operating
Conditions](#))
256-bit CSP, RGA (2 sizes) and 297-bit PEGA
package options

PERIPHERALS

Dual 12-channel DMA controllers
(supporting 24 peripheral DMAs)
2 memory-to-memory DMAs
2 internal memory-to-memory DMAs and 1 internal memory
DMA controller
12 general-purpose 32-bit timers/counters with PWM
capability
SPI core peripheral port
UART with support for I/OA
Dual watchdog timers
Dual 32-bit core timers
48 programmable flags (GPNP)
On-chip phase-locked loop capable of 0.5 x to 64x frequency
multiplication
2 parallel input/output peripheral interface units supporting
ITU-R 606 video and glueless interface to analog front end
ADCs
2 dual channel, full duplex synchronous serial ports support-
ing eight stereo I²S channels

VOLTAGE
INTERNAL

IO CONTROL
WATCHDOG

JTAG TEST
EMULATION

IO CONTROL
WATCHDOG

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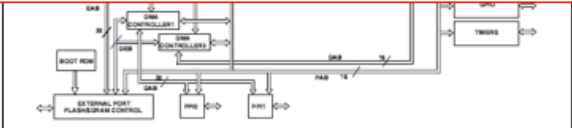


Figure 1: Functional Block Diagram

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As to **Exhibit 1009**, the only mention of the AD9861 in Katz is in Figure 2 (Ex. 1006, 3 (“Block diagram of a representative MxFE IC, the AD9861”).) Here again, there is no clause or indication of an incorporation by reference of any material, much less the specific document submitted as Ex. 1009. Katz does not even reference a footnote like that discussed above for Exhibits 1007-1008.

Petitioner’s representation is further suspect given the first page of Exhibit 1009 as submitted has no heading/title/footer (Ex. 1009, 1) and other pages support the **impossibility** that Katz incorporates by reference that document or that it was “published in November 2003.” (Pet., 2-3.) (See Ex. 1009, 2 (compare “Revision

15

History **4/2017—Rev. 0** to **Rev. A**” and “**11/2003—Revision 0: Initial Version**” with “**Rev. A** Page 2 of 51”), 3-51 (“**Rev. A** Page [] of []”); *see also id.*, 51 (“©2003-**2017**”).) Thus, even assuming the numeric labels here represent dates, Ex. 1009 refers to a Revision A, which relates to “4/2017” and not “11/2003” for “Revision 0.” Under such an assumption, Katz, which Petitioner asserts was published in **2006**, could not have incorporated such a **2017** document.

There is simply no evidence to support Petitioner’s representation that Katz incorporates by reference Exhibits 1007-1009. (Pet., 2-3.) Nor does Petitioner establish that any of the contents of Exhibits 1007-1009 were publicly accessible prior to the effective date of the ’654 patent, and thus qualify as prior art as alleged by Petitioner. *Hulu* at 13. (*See also supra* §IV.A.)

C. Ishizu Does Not Incorporate By Reference Hiroshi Rendering Ground 4 Deficient

Petitioner relies on Hiroshi (JP2003-152732) (*see* Exhibits 1020-1021) to support its anticipation challenge in Ground 4. (*See e.g.*, Pet., 70-74, 77-82.) Petitioner’s challenge fails because it incorrectly relies on a misunderstanding that Ishizu (Petitioner’s central reference in Ground 4) “incorporat[es] by reference” Hiroshi (JP 2003-152732). (*Id.*).

While Ishizu identifies JP 2003-152731 (Ex. 1010, ¶¶ 16, 27; Pet., 70), there is no statement or suggestion that any material from that document is “incorporated

by reference” under the law. Ishizu merely mentions, “Related Patent Documents include Patent Document 1 which discloses a software wireless communication device” followed by a brief discussion of the “wireless communication device.” (Ex. 1010, ¶16.) Ishizu identifies Patent Document 1 as JP 2003-152731 in paragraph 27. (*Id.*, ¶27.) Ishizu does not convey that any portion of Ex. 1021—much less the portions of Ex. 1021 (via Ex. 1020) that the Petition relies upon in Ground 4—is incorporated by reference. *Paice* at 906-07. Because Ground 4 relies on extrinsic disclosures from Ex. 1021 (as allegedly translated via Ex. 1020) to support its anticipation positions (Pet., 70-74, 77-82), Ground 4 is deficient and cannot support institution for reasons similar to that explained for Katz. (*Supra* §IV.B.)

D. Ground 1 is Deficient

1. Ground 1 Improperly Relies On Different Embodiments In Tolonen

The Petition asserts claims 1-20 “are anticipated over Tolonen” (Pet., 3.) “To show anticipation ‘it is not enough that [a] prior art reference . . . includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention.’” *Analog Devices, Inc. v. Xilinx, Inc.*, IPR2020-01597, Paper No. 43 at 61 (PTAB April 5, 2022) (quoting *Net Moneyin, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008)). “Instead, the reference must ‘teach[] that the disclosed

components or functionalities may be combined and one of skill in the art would be able to implement the combination.” *Id.* (quoting *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1344 (Fed. Cir. 2016)). Thus, “unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.” *Net Moneyin*, 546 F.3d at 1371. *See also Microsoft Corp. v. Biscotti, Inc.*, 878 F.3d 1052, 1063-64, 1068-73 (Fed. Cir. 2017) (affirming Board’s finding that a reference did not anticipate because it disclosed separate embodiments relied upon for anticipation); *Ex parte Ojha*, Appeal 2023-002987, Application No. 16/553,057, Decision on Appeal at 11 (P.T.A.B Jan 29, 2024) (finding reversible error in examiner’s reliance on multiple embodiments from a prior art reference to disclose claimed subject matter as “it is improper to combine embodiments to find a claim anticipated”).

Here, in Ground 1, the Petition improperly relies on separate embodiments from Tolonen without demonstrating how those distinct features are related or otherwise may be combined and a POSITA would be able to implement such combination. (Pet, 14-43.) *Blue Calypso*, 815 F.3d at 1344. Consequently, institution under Ground 1 should be denied.

a) Claim 1

The Petition's focus in Tolonen for the claimed apparatus is the embodiment corresponding to Figure 3.⁷ (*See e.g.*, Pet., 14 (**limitation 1[pre]**: mapping WCD 100 of Figure 3 embodiment to claimed apparatus), 15 (**limitation 1[A]**: mapping Figure 3 processor 300 in WCD 100 as the claimed “microprocessor”), 19 (**limitation 1[C]**: pointing to discussion of processor 300 for Figure 3 embodiment for claimed encoder/decoder programs), 19-20 (**limitation 1[D]**: pointing to discussion of processor 300 for Figure 3 embodiment for claimed encoded bit stream features), 20-23 (**limitation 1(E)-1(G)**: referencing previous discussions relating to Figure 3 embodiment for limitations 1[E]-1[G]).)

For **limitation 1[B]**, Petitioner relies on different embodiments from Tolonen to support its assertion that Tolonen discloses a wireless communication interface as claimed. (Pet., 15-18.) The Petition first points to communication modules 310, 312, 320 from the Figure 3 embodiment for the claimed “wireless communication interface.” (Pet., 15 (citing Ex. 1005, ¶¶59 and referencing Figure 3)).⁸ However, for

⁷ Figure 3 relates to features for Figure 2. (Ex. 1005, ¶¶17-18.)

⁸ The Petition also points to discussions in ¶¶62-63 relating to the exemplary process stack in Figure 4, which is an operational example of communication in accordance with “at least one embodiment” (Ex. 1005, ¶19.).

the remainder of limitation 1[B], Petitioner presents an inherency argument (Pet., 15-18), which as discussed below in §IV.D.2 is deficient. Namely, Petitioner relies on disclosures regarding the embodiment associated with Figures 6A-6B of Tolonen to shift focus on radio modems 610 to argue that “[t]hese communications modules are inherently coupled to an ADC and DAC” (*id.*, 15) since “it is a requirement that the communication modules convert digital data” (*id.*, 17).

However, the Figures 6A-6B configurations relate to a different embodiment requiring different components and functionalities from that for the Figure 3 embodiment. Figures 6A-6B disclose a “structural example of a wireless communicative including a multiradio controller in accordance with at least one embodiment of the present invention,” which Tolonen calls out in a separate section of the specification. (Ex. 1005, ¶¶21-22; *id.*, ¶23, FIG. 6C, Section “IV” between ¶¶64-65, ¶¶65-67.) The Figure 6A-6B embodiment introduces multiradio controller (MRC) 600 that is “dedicated to managing wireless communication” in order “to better manage communications” involving radio modems. (*Id.*, ¶65.) MRC 600 includes a common interface 620 that allows communication of information “through master control system 640.” (*Id.*) Master control system 640 conveys all information, commands, etc. occurring between radio modems 610, similar devices 630, and MRC 600, as discussed in connection with Figure 6C. (*Id.*, ¶¶66-67.)

The Figure 3 embodiment does not include a multiradio controller MRC 600, a master control system 640, common interface 620, and other arrangements and features required in the embodiment for Figures 6A-6B. (*Compare id.*, FIG. 3, ¶¶50-60, *with* FIGS. 6A-6B, ¶¶65-67.) They are different embodiments having distinct configurations, components, and features. Petitioner ignores these distinctions, and instead relies on a combination of the components/arrangements/features from Tolonen's Figure 3 embodiment with those from the Figures 6A-6B embodiment without demonstrating how "the disclosed components or functionalities may be combined and one of skill in the art would be able to implement the combination." *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 61; *Blue Calypso, LLC*, 815 F.3d at 1344.

Similar issues infect Petitioner's alternative theory focusing on Tolonen's discussions of an SDR embodiment. (Pet., 18 (Tolonen "teaches using SDRs for these communication modules" and alleging "[w]hen implemented through SDR, 3 G chipsets included an ADC and a DAC")(citing Ex. 1005, ¶¶89-98).) Tolonen's SDR configuration is directed to a different embodiment than that for Figure 3. (Ex. 1005, ¶¶89-92 (discussing an "Example Software-Defined Radio (SDR) Module" that has an "alternative communication configuration for WCD 100 as shown at 1102" of Figure 11), *e.g., id.*, ¶91.) Tolonen details "a possible implementation of a SDR 112" with respect to Figure 12 (*id.*, ¶94), which includes components and

features not found in the Figure 3 embodiment, such as an SDR module 1102, MRC 600, master control system 640, MCS 700, multiradio access interface 1108, flow controller 1112, and others. (*Id.*, FIGS. 11-12, ¶¶92-94.) Here again, Petitioner's conclusion concerning potential SDR implementation (Pet., 18) relies on disclosures pertaining to a distinct embodiment from the Figure 3 embodiment, without demonstrating how the different arrangements/components/functionalities are linked or otherwise may be combined such that a POSITA would be able to implement the combination in a manner that meets the challenged claims.

Accordingly, Petitioner's anticipation theories for limitation 1[B] improperly rely on distinct embodiments in Tolonen without reconciling the differences. *Microsoft Corp.*, 878 F.3d 1052, 1070 (affirming Board finding of no anticipation when combining "distinct teachings" across embodiments).

b) Claims 2-12

The Petition's anticipation theories for dependent claims 2-12 are likewise deficient and cannot support institution. Petitioner again relies on disclosures relating to multiple embodiments in Tolonen, such as those relating to *e.g.*, Figures 7C, 8B, 12-14B. (Pet., 22-39.) Those embodiments concern configurations requiring use of components and features not found in the Figure 3 embodiment that Petitioner relies upon for claim 1 (from which claims 2-12 depend). (*See e.g., id.*, 22 (citing Ex. 1005, ¶¶89-91), 24-27 (citing Ex. 1005, ¶¶70, 74-75, 94-98, 102, 104,

discussing *e.g.*, the need for a radio connection manager 110, and program modules 1128 in MRC 600, priority controller 740 of [MCS] 700, mobility policy manager 1130, administrator 1134, and cognitive features of an SDR module, channel selection, event occurrence, etc.).) Indeed, the priority controller 740 discussions (Ex. 1005, ¶¶74-75) cited by Petitioner relate to the “alternative configuration in accordance with at least one embodiment ... wherein a distributed multiradio control system (MCS) 700 is introduced into WCD 100” of Figure 8A. (Pet., 25; Ex. 1005, ¶71.) The channel selection features discussed by Petitioner (Pet., 27-28) relate to an exemplary configuration for SDR modules discussed for Figure 13. (Ex. 1005, ¶¶99-102.) Among other things, Tolonen explains in the Figure 12 embodiment, “SDR 1102 may interact with multiradio control features (*e.g.*, MRC 600) via MCS 700 and/or common interfaces that may be components of master control system 640.” (Ex. 1005, ¶94.) Petitioner does not explain how these distinct arrangements and features relate at all to the Figure 3 embodiment or how they collectively meet the challenged claims.

For example, regarding **claim 6**, Petitioner relies on features from Tolonen’s SDR embodiment requiring use of MCS 700, policy manager 1130. (Pet., 28-29 (citing Ex. 1005, ¶¶90-91, 95, 98, 102, 104.) For **claim 7**, Petitioner relies on disclosures pertaining to the exemplary configuration shown in Figures 13 and 14A (Pet., 30-32 (citing Ex. 1005, ¶¶100-103, 105-107), while bouncing back to the

Figure 12 embodiment (Pet., 32 (citing Ex. 1005, ¶93) and the Figure 8C embodiment (Pet., 32 (citing Ex. 1005, ¶78).) Petitioner does the same for **claims 9-10**, referencing the Figure 5 and/or Figure 14 embodiments. (Pet., 34-35 (citing Ex. 1005, ¶¶63-64, 97, 104), 36-37 (citing Ex. 1005, ¶¶ 97, 104, 109, FIG. 14A), 37-38 (citing Ex. 1005, ¶¶95, 102, 111).) Regarding **claim 12**, the Petition mixes features relating to Figure 2 (Pet., 38 (citing Ex. 1005, ¶¶42, 48-49) and the Figure 6C embodiment (Pet., 38 (citing Ex. 1005, ¶67, FIG. 6C)).

None of the features, components, or arrangements mentioned in the embodiments pertaining to *e.g.*, Figures 5, 6C, 8A, 8C, and 11-14A are described in the Figure 3 embodiment, which Petitioner relies upon for features in claim 1. (Pet., 14-15; *supra* §IV.D.1.a.) Yet, Petitioner cherry picks disclosures from distinct embodiments to conclude that Tolonen somehow anticipates dependent claims 2-12. (Pet., 22-39.) In doing so, Petitioner fails to demonstrate how those different embodiments are related, work together, or how they may be combined such that a POSITA would be able to implement the combination, and how the multiple embodiments collectively meet the challenged claims. *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 61.

c) Claims 13-20

Claims 14-20 depend from independent claim 13, from which Petitioner relies on its analysis for claims 1 and 4. (Pet., 39-40.) Thus, for at least the same reasons

explained above in §IV.D.1.a-b, Petitioner's anticipation challenges of claims 13-20 in Ground 1 are deficient. Moreover, Petitioner relies on its deficient analysis for claims 3-6 and/or 7-11 for its anticipation theories against claims 14-19. (Pet., 40-41.) Regarding claim 20, Petitioner again relies on aspects relating to Tolonen's Figure 6 embodiment, including features provided by MRC 600, and application level and service level processes discussed in connection with Figure 6C. (Pet., 41-42.)

Thus, for similar reasons discussed above for claims 1-12, the Petition's anticipation theories for claims 13-20 improperly combine and rely on distinct embodiments from Tolonen without demonstrating how they are related, can be combined, or how such combined teachings result in an apparatus having all of the elements recited in claims 13-20 as arranged. As such, Petitioner's challenges of these claims in Ground 1 do not support institution.

2. Ground 1 Relies On Improper Inherency Theories

To show anticipation, Petitioner must demonstrate that Tolonen discloses each limitation of the claimed invention, either explicitly or inherently. *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 11 (citing *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952 (Fed. Cir. 2014)). Instead, Petitioner's approach to anticipation in Ground 1 is to manufacture various claim features admittedly missing from Tolonen by relying on extrinsically generated disclosures and/or conclusory expert testimony

to and then suggest those missing features inherently exist in Tolonen. However “[t]he concept of ‘inherent disclosure’ does not alter the requirement that all elements must be disclosed in an anticipatory reference in the same way as they are arranged or combined in the claim.” *Therasense Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1325, 1332 (Fed. Cir. 2010) “[A]nticipation by inherent disclosure is appropriate only when the reference discloses prior art that must *necessarily* include the unstated limitation. . . .” *Id.* (quoting *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1373 (Fed. Cir. 2002)). “‘Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient.’” *Therasense Inc.*, 593 F.3d at 1332 (quoting *Cont'l Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) (internal citations omitted)).

Limitation 1[B] requires the “apparatus” (limitation 1[pre]) to comprise “a wireless communication interface electrically coupled to at least one of an analog-to-digital converter (ADC) or a digital-to-analog converter (DAC).” (Ex. 1001, 18:48-53.) The DAC is “configured to output an analog signal corresponding to said first encoded bit stream” that is produced by the “base-band encoder software program” that the “microprocessor is configured to execute” as recited in limitations 1[C]-1[E], and the “ADC is configured to output a second encoded bit stream

corresponding to an analog signal produced by said wireless communication interface” as recited in limitation 1[F]. (*Id.*, 18:54-67.)

Petitioner alleges Tolonen's communication modules 310/312/320 in the Figure 3 embodiment include the claimed “wireless communication interface.” (Pet., 15.) Acknowledging that Tolonen does not explicitly disclose the claimed coupled ADC and DAC features, Petitioner tries to fill that gap by introducing an inherency position (relying on a different Figure 6 embodiment) that since “radio Modems operate to [] convert data from digital to analog for transmission across an RF front end, Tolonen's Radio Modems must include” an ADC and DAC. (*Id.*, 16.) Petitioner alleges its manufactured ADCs and DACs “must be electrically coupled to Tolonen's communication modules.” (*Id.*, (relying on extrinsic material from Tuttlebee).) However, Petitioner's reliance on Tolonen's disparate embodiments, its expert's conclusory opinions, and extrinsic material outside of Tolonen do not support Petitioner's inherency positions or establish a reasonable likelihood of Petitioner succeeding in its anticipation challenges. (*Id.*, citing Ex. 1003, ¶¶67-77, Ex. 1011, 7.)

For instance, Petitioner relies on its expert's conclusion that Tolonen's communication modules 310/312/320 must include an RF Front end,⁹ which is based on a statement from Tuttlebee II (Ex. 1011) that merely states that "[a]t the highest level, all wireless systems *can be* decomposed into four subsystems [Antenna, RF Front-End, Baseband, and Controller]." (Pet., 17, 18 ("Tolonen's processor executes data processing and transmits digital to the communication modules though the system bus for transmission *through an RF front end* and antenna"); Ex. 1003, ¶¶64-66 (relying on Ex. 1011).) "Inherency [] may not be established by probabilities or possibilities." *Therasense Inc.*, 593 F.3d at 1332. "[D]ecompos[ing]" a system into block subsystems like that mentioned in Ex. 1011 is a far cry from showing Tolonen's communication modules must *necessarily* include an RF Front end (Pet., 17) that is coupled to an ADC and DAC as arranged and combined in "the same way ... in the claim." *Id.*

⁹ While claim 1 does not recite an RF front end, Petitioner's theory relies on the alleged inherent presence of such a front end coupled to ADC and a DAC in Tolonen's communication modules, and thus failure to demonstrate such an inherent disclosure undermines Petitioner's anticipation theory under Tolonen.

Moreover, Petitioner's contention that "Tolonen's Radio Modems must include" an ADC and DAC" since "radio Modems operate to ... convert data from digital to analog for transmission" (Pet., 17) is similarly flawed (*see supra* §IV.D.1).

First, Petitioner begins with the assumption that Tolonen's communication modules must include an "RF Front end" (*see supra* n.9), which is unsupported for reasons stated.

Second, Petitioner's conclusion relies on its use of embodiments from Figures 6A-6B of Tolonen, which as explained in §IV.D.1, is distinct from those relating to Figure 3 on which Petitioner relies for the claimed apparatus and microprocessor in limitations 1[pre]-1[A], and the wireless communication interface of limitation 1[B]. (Pet., 14-15.) The Petition does not explain how the WDC 100 in the Figure 3 embodiment includes the radio modems that work with an MCS 640 and MRC 600 as disclosed for the Figures 6A-6B embodiment. Nor how such a WDC includes an ADC and DAC configured as required by claim 1.

Third, while Petitioner recognizes that Tolonen does not explicitly disclose the claimed ADC and DAC features of limitation 1[B], Petitioner nonetheless assumes that the communication modules must "first convert the digital data (received from the processor)." (Pet., 17.) Petitioner tries to get past Tolonen's missing disclosures by introducing an inherency theory that relies on assumptions about what is allegedly described in documents that are external to Tolonen (*i.e.*,

Tuttlebee I (Ex. 1012) and Tuttlebee II (Exhibit 1011)). (Pet., 19 (citing “Ex. 1003, ¶¶ 69-72 (explaining that *Tuttlebee’s long-range communication modules*, which communicates according to GSM, *necessarily includes an ADC and DAC coupled to the RF Front end*”)).) Meaning, Petitioner argues Tolonen *inherently* discloses the missing claimed RF front end and ADC/DAC features because extrinsic documents to Tuttlebee purportedly *inherently*—not explicitly—disclose such features. Such circular logic (*e.g.*, a missing limitation is inherently disclosed because an extrinsic document inherently discloses it) cannot support anticipation even under the reasonable likelihood standard. *Daihen Corp.*, IPR2019-00248, Paper 11 at 12-14.

Fourth, Petitioner’s analysis misses the point. (Pet., 18.) That conversions may need to occur to facilitate wireless communications in Tolonen’s WCD does not necessarily mean Tolonen’s communication modules 310/312/320 (mapped to the wireless communication interface of limitation 1[B] (Pet., 15)) can only being configured as claimed.

Petitioner ignores that there were many ways to configure and implement wireless communication systems to provide conversion functionalities. Indeed, Petitioner’s extrinsic Tuttlebee documents illustrate the myriad of configuration and implementations available for conversion functionalities in wireless communications systems. (*Generally* Ex. 1011-1012; *e.g.*, Ex. 1011, 9

(contemplations of an ADC at the antenna—thus away from any system bus connected to a terminal's processor), 12, 14, 16-18, 24-25, 28; Ex. 1012, 5-6, 7 (Fig. 1.3 (D/A converter separately connected to output of baseband processing block and an I/O input)), (Fig. 1.4 (showing D/A block connected separate and apart from an A/D block and Rf section block)), 8 (Fig. 1.5 (similar)), 14.)

Petitioner's inherency theory does not rule out possible configurations where any alleged (missing) DAC and/or ADC component possibly in Tolonen's WDC is configured in a manner different than that as claimed. (Pet., 17-18.) *Therasense Inc.*, 593 F.3d at 1332; *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295 (Fed. Cir. 2002) ("Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." (quoting *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999))).

Fifth, the Petition's other anticipation theory is equally flawed. (Pet., 18.) Petitioner alleges Tolonen teaches limitation 1[B] because Tolonen's long-range communication module allegedly communicates using 3G technologies and uses SDR. (Pet., 18 (citing Ex. 1005, ¶¶53, 89, 92.)

Petitioner's conclusion does not support anticipation. Petitioner does not allege or demonstrate that Tolonen's SDR embodiments "explicitly" or "inherently" discloses the claimed wireless communication interface electrically coupled to the claimed ADC and/or DAC as required in claim 1. *Analog Devices, Inc.*, Paper No.

43 at 11. The Petition fails to allege such features relate to *the claimed* features of limitation 1[B]. Nor do Petitioner's allegations, and the underlying evidence relied therein, identify with particularity how Tolonen's SDR features (or extrinsically discussed 3G chipsets) actually map to each of the features in limitation 1[B] in context of the other limitations in claim 1, including how such features relate to the "apparatus" referenced from the Figure 3 embodiment. (Pet., 14.)

The Petition's deficient inherency theories for limitation 1[B] infect Petitioner's challenges to claim 1 and to claims 2-12, which depend from claim 1. And because Petitioner relies on its claim 1 positions to challenge claim 13 (Pet., 39-40) from which claims 14-20 depend, Petitioner's challenges to claims 1-20 are deficient for similar reasons.

3. The Petition Fails To Demonstrate Tolonen Discloses A Selector Software Program As Recited In Claims 4-11 and 13-20

Claim 4 requires the apparatus of claim 1 to comprise a "wireless communication protocol select software program" that is "configured to optimize a value of a user-defined criterion in order to dynamically select at least one of a wireless communication network, a wireless communication protocol, or a parameter of a wireless communication protocol." (Ex. 1001, 19:18-24.) Independent **claim 13** recites similar features. (*Id.*, 20:20-27.)

Despite these requirements, Petition does not discuss the optimization (or variations thereof) of any user-defined criterion by Tolonen for claims 4 and 13. (See Pet. 24-27, 39-40.) Instead, Petitioner relies on Tolonen's discussions of SDR embodiments (different from the Figure 3 embodiment (*supra* §IV.D.1)), where SDR configurations may be provided to support wireless transports, preferences or rules that may be based on user-defined characteristics, and where a policy manager may work with an administrator to create "implementation schedules so that communication may continue within the guidelines set forth in the preferences and/or rules." (Pet., 25-26.) However, the Petition does not demonstrate how Tolonen discloses a "value of a user-defined criterion" or how any program is configured to "optimize" that value in order to dynamically select a wireless communication network, protocol, or protocol parameter as claimed.¹⁰

The Petition also fails to specifically identify what in Tolonen meets the claimed "wireless communication protocol selector software program" that is

¹⁰ The Petition alleges configuration may happen "dynamically" because implementation schedules may be created, but does not explain or demonstrate how such features show the claimed software program configured to optimize a user-defined criterion for dynamically selecting as claimed. (Pet., 25-26.)

configured to “optimize a value of a user-defined criterion in order to dynamically select ...” as recited in claims 4 and 13.¹¹ (Pet., 24-27. 39-40.) Instead, in addressing claim 4, the Petition discusses the Figure 12 embodiment’s use of SDR without identifying specifically what in Tolonen’s Figure 3 WCD (alleged “apparatus”) is the claimed “*wireless communication protocol selector software program.*” (*Id.*) C.F.R. § 42.104(b)(4); *Adaptics Ltd.*, IPR2018-01596, Paper 20 at 22-24.

To the extent the Petition points to Tolonen’s “SDR” as the claimed protocol selector software program (which is not asserted in the Petition), Petitioner does not reconcile or explain how the SDR can be both the claimed protocol selector program of claim 4 and a wireless communication interface of limitation 1[B]. Petitioner asserts, “Tolonen’s hardware radio modems are replaced with a software-defined radio (‘SDR’).” (Pet., 24; *see also* Ex. 1005, FIG. 11.) Yet, for limitation 1[B], Petitioner contends communication modules 310/312/320 are the “wireless communication interface” while referring to the Figure 6 embodiment that purportedly “illustrates Tolonen’s communication modules as ‘radio modems’.” (Pet., 16.) The Petition does not explain how Tolonen’s Figure 12 SDR embodiment is, or would have been configured such that the SDR is, both a wireless

¹¹ The four times the Petition references this claim language merely repeats the language of claim 4 and discusses the ’654 patent. (Pet., 5, 24, 54.)

communication interface (limitation 1[B]) and the selector software program (claim 4), or how the Figure 12 embodiment operates such that the SDR meets the features of claim 1.

Likewise, Petitioner's reliance on Tolonen's "cognitive features" does not demonstrate how Tolonen discloses optimization of user-defined criterion as claimed. (Pet., 26.) Tolonen's cognitive features use sensor signals or (schedule) information known to WCD that may be used as information of potential interference signals when determining an optimum configuration for the SDR module 1102. (Ex. 1005, ¶97.) Petitioner does not demonstrate how configuring an SDR module based on sensor/schedule information discloses optimizing a value of pre-defined user criterion as claimed. (*Id.*; Pet., 26.) Nor does the Petition explain how events (*e.g.*, loss of a connection, sensed interference, or power depletion) that may result in a new configuration teaches the claimed protocol selector program configured to optimize a value of a user-defined criterion for dynamically selecting a network, protocol, or protocol parameter as claimed. (Pet., 26 (citing Ex. 1005, ¶104).)

Thus, Petitioner's challenges to claims 4 and 13 (and their respective dependent claims) fail to address all of elements/features of claims 4 and 13 or show how Tolonen discloses those elements/features as arranged in the claims. *Net Moneyin*, 546 F.3d at 1371. *See also Facebook, Inc.*, IPR2017-01524, Paper 7 at 19.

Petitioner's challenges to other claims are also deficient. For example, regarding **claim 5**, the Petition does not allege or explain how any user-defined criterion is "calculated," much less in a manner as claimed. (Pet., 27-28, citing Ex. 1005, ¶¶95, 98, 102, 104.) The Petition does not explain how Tolonen's discussion of rules/preferences that may be based on user-defined characteristics (set by a policy manager 1130), or event occurrences or SDR configuration characteristics discloses calculating "said value of said user-defined criterion," and thus fails to demonstrate a reasonable likelihood of success concerning Petitioner's claim 5 challenge.

Regarding **claim 7**, the Petition references a different aspect of Tolonen (Figure 13) regarding use of remote and local characteristic information to formulate a configuration for SDR module 1102. (Pet., 30-32.) That portion of Tolonen does not disclose, nor has Petitioner demonstrated, how Tolonen's WDC 100 of the Figure 3 embodiment (Pet., 14) searches beacon signals over a pre-defined frequency range and then selects at least one of a wireless communication network and frequency channel *which optimizes said user-defined criterion*" as recited in claim 7.

Petitioner's other theory against claim 7 is similarly deficient. (Pet., 32.) There, Petitioner offers a conclusion that "Tolonen" [in general] "is operable to communicate a beacon signal "which optimizes said user-defined criterion." (*Id.*)

Petitioner bases its conclusion on Tolonen's general discussions concerning other apparatuses filling the device's requirements (*id.*, (citing Ex. 1005, ¶¶105-107)). Petitioner again fails to demonstrate where or how Tolonen discloses selection of at least one of a wireless communication network and frequency channel *which optimizes said user-defined criterion*" as recited in claim 7.

Likewise, in addressing **claim 10**, the Petition does not demonstrate, or even address, how Tolonen meets the claimed "evaluat[ion] [of] said user-defined criterion responsive to a pre-defined event." (Pet., 36.) Instead, the Petition merely reiterates Tolonen's discussions regarding Figure 14, where a configuration may be created based on an event (e.g., requirement fulfillment, loss of connection, status change). (*Id.*) Such event-based features do not trigger an evaluation of "said user-defined criterion," and the Petition fails to allege or demonstrate it does. (*Id.*)

4. The Petition's Alternative Obviousness Theories Are Deficient

Petitioner alternatively asserts "[c]laims 1-20 are ... obvious over Tolonen in view of the knowledge of a POSITA." (Pet., 3 (Ground 1).) Yet, in discussing Ground 1, Petitioner only asserts "[a]nticipation of [c]hallenged [c]laims 1-20 by

Tolonen.” (*Id.*, 14.) The Petition only raises obviousness for claims 3, 6, and 20.¹² (*Id.*, 23, 29, 20.) Nonetheless, Petitioner’s limited obviousness theories cannot support institution.

“[T]he factual inquiry whether to combine references must be thorough and searching and [t]he need for specificity pervades [our] authority on the PTAB’s findings on motivation to combine.” *In re Nuvasive Inc.*, 842 F.3d 1376, 1381-82 (Fed. Cir. 2016) (quoting *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002) (quotation omitted). “Petitioner cannot satisfy its burden of proving obviousness by employing ‘mere conclusory statements.’” *Ioxus, Inc. v. Cap-Xx, Ltd.*, IPR2019-01178, Paper 8 at 10 (Dec. 4, 2019) (quoting *In re Magnum Oil*, 829 F.3d at 1380). “Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined or modified the prior art references.” *Id.* See also e.g., *Universal Imaging Indus., LLC, v. Lexmark Int’l, Inc.*, IPR2019-01369, Paper 7 at 19-20 (Feb. 3, 2020); *Guest Tek Interactive Entm’t Ltd. v. Nomadix, Inc.*, IPR2019-01191, Paper 9 at 37-38 (Dec. 27, 2019). In determining whether a challenged claim is obvious,

¹² The Petition never mentions obviousness for any other claim outside of claims 3, 6, and 20. (Pet., 14-43.) Thus, Petitioner’s identified challenge of claims “1-20” under 35 U.S.C. § 103 is unsupported and should be denied. (*Id.*, 3.)

the Board must avoid “hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 421 (2007)).

Here, Petitioner’s obviousness theories for claims 3, 6, and 20 are premised on conclusions that claimed features missing from Tolonen would have been obvious because the missing features are “straightforward” (Pet., 43) or would have been a “predictable solution” (*id.*, 23) or “predictabl[y] accomplish” goals (*id.*, 29). In each instance, Petitioner does not provide any evidence demonstrating the features missing from Tolonen were disclosed in the prior art or explain how any asserted Tolonen modification would work or why a POSITA would have implemented such features in Tolonen in a way that meets the claims without reliance on hindsight bias. (Pet., 20-21, 37-38.) *KSR Int’l Co.*, 550 U.S. at 419, 421.

For example, for **claim 3**, the Petition offers a single statement. (Pet., 23 (“A POSITA would further understand that either implementation [i.e., software modules being standalone or part of a single program] would constitute an obvious choice that would result in essentially the same predicable solution.”).) However, “Petitioner cannot satisfy its burden of proving obviousness by employing ‘mere conclusory statements.’” *Ioxus, Inc.*, IPR2019-01178, Paper 8 at 10. Petitioner’s analysis simply fails to provide the “relevant data” and any “satisfactory explanation ... including a rational connection between [any relevant] facts [] and the choice” that the missing limitations were indeed obvious. *In re Nuvasive Inc.*, 842 F.3d at

1382 (citing *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks and citation omitted)).

Even if considered, Petitioner's bald statement that "software modules" may be standalone or part of a single program (Pet., 23) does not demonstrate how or why a POSITA would have been motivated to configure Tolonen's WCD with base-band encoder/decoder software programs as recited in claim 1 (Ex. 1001, 18:54-62, 19:1-5)) and implemented as a single software program as recited in claim 3 (*id.*, 15-17). Instead, Petitioner alleges that "either implementation" would be an obvious choice—not that one of them *would have been* implemented in Tolonen's Figure 3 embodiment in a manner claimed. (Pet., 23.) Nor does Petitioner's conclusory statement address how the WCD in Tolonen's Figure 3 embodiment would be configured in such a manner that meets all of the claim limitations after such an implementation, or how any modification would have been achieved with a reasonable expectation of success. (Pet., 23.)

Similar issues exist for **claim 6**. (Pet., 28-30). Acknowledging that Tolonen does not teach performing a weighted sum of "these characteristics," Petitioner claims this would be "an obvious means for determining the best way of satisfying the user's preference taught by Tolonen." (Pet., 28.) Petitioner's theory relies on a premise that Tolonen's "policy manager" be configured to calculate the value of the user-defined criterion as a weighted sum. (Pet., 28-29.) However, as explained

above for claim 4 (from which claim 6 depends), the Petition does not demonstrate how Tolonen's policy manager, or any other component, optimizes any value of a user-defined criterion. (*See supra* §IV.D.3 (claim 4); Pet., 26.)

Moreover, Petitioner acknowledges that “[i]n *addition to user preferences*, Tolonen also teaches that when two devices are in communication with one another, characteristics may define the configuration of the SDR.” (Pet., 28-29 (characteristics such as error correction, QoS, operational schemes, radio module priority).) Thus, Petitioner conveys a distinction between alleged “**user preferences**” and the “**characteristics**” that may be defined “when two devices are in communication with one another.” (*Id.*) Petitioner's obviousness theory relies on performing a weighted sum on “**these characteristics**” and not the user-preferences that Petitioner references for claims 4 and 6. (Pet., 25, *id.*, 29 (Tolonen's policy manager does not teach performing a weighted sum of “these characteristics”).)

Furthermore, Petitioner's theory looks to simply plug into a WSM algorithm “radio transport alternatives” as “M” and criteria (such as QoS, power saving, error correction) as “N,” without explaining how Tolonen would have been configured to assign other variables in that algorithm, such as W_j —the “weight of importance of the j -th criterion.” (Ex. 1019, 3; Pet., 29-30.)

Regarding **claim 20**, the Petition does not identify with particularity what claimed features are missing from Tolonen to support obviousness. Simply stating

“to the extent Tolonen does not expressly connect these dots” (Pet., 43) improperly requires the Board and PO to guess the precise framework and scope of Petitioner’s obviousness theory. *Facebook, Inc.*, IPR2017-01524, Paper 7 at 19; *Adaptics*, IPR2018-01596, Paper 20 at 20 (for obviousness, the petitioner must specify what it “regards as the difference(s) between [the primary prior art reference] and the challenged claims”) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)).

Nonetheless, assuming Petitioner’s inquiry assumes Tolonen fails to disclose a “user interacting with the bar-code scanning application [to] cause the WCD to determine a wireless communication protocol” (Pet., 43), the Petition only presents a self-serving conclusion without providing any evidence of such missing features actually being disclosed in the prior art. (*See id.* (“it would have been obvious and straightforward application to dynamically select one of these protocols in response to scanning a bar code”).)

Moreover, Petitioner’s rationale does not make sense. Petitioner makes an unsubstantiated leap (motivated by hindsight) that because Tolonen’s WCD 100 includes a bar-code scanner and can also communicate using “Bluetooth, cellular, WiFi,” it would have been obvious to dynamically select *one of these protocols* in

response to scanning a bar code.”¹³ (Pet., 43.) However, Petitioner admits that using a bar code scanner in Tolonen's WCD relates only to “close proximity communications.” (Pet., 43; Ex. 1005, ¶56, FIGS. 1, 3.) Bluetooth and WiFi relate to “short-range communications” (Ex. 1005, ¶¶6, 55, FIG. 3) and cellular relates to “long-range communications” (*id.*, ¶53, FIG. 3). Petitioner does not identify or explain how long range or short range communications would be invoked when performing “close-proximity” bar code scanning. As such, Petitioner does not explain how or why Tolonen's WCD 100 would allegedly “dynamically select one of these protocols [*i.e.*, cellular, WiFi, Bluetooth] in response to scanning a bar code.” (Pet., 43.)

Lacking sufficient rationale, the Petition fails to demonstrate a reasonable likelihood of prevailing on Petitioner's obviousness theories regarding **claims 3, 6, and 20** in Ground 1. Nor can Petitioner correct these deficiencies if trial is instituted. *See, e.g.*, 84 Fed. Reg. 64,280 (Nov. 21, 2019); Consolidated Trial Practice Guide at

¹³ As exemplified in the '654 patent, selection of a wireless communication network, wireless communication protocol, or parameter(s) of a wireless communication protocol can be performed manually by a user of the apparatus by, e.g., “scanning a pre-defined bar code” or interactions with a GUI or a hardware implemented control. (Ex. 1001, 8:60-9:6.)

74-75 (Nov. 2019); *Intelligent Bio-Sys.*, 821 F.3d at 1369-70.

Petitioner's conclusory obviousness positions are no different from invoking common knowledge to supply limitations missing from Tolonen, which violates Federal Circuit law. *DSS Tech. Mgmt. Inc. v. Apple Inc.*, 885 F.3d 1367, 1374-75 (Fed. Cir. 2018). (*See e.g.*, Pet., 23 (a POSITA would recognize and understand), 43. Reliance on “common sense and common knowledge” may “have a proper place in the obviousness inquiry” but only “if explained with sufficient reasoning.” *DSS Tech. Mgmt. Inc.*, 885 F.3d at 1374 (quoting *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) (internal citations omitted)). It is improper to invoke such common sense/knowledge to supply a missing limitation. *DSS Tech. Mgmt. Inc.*, 885 F.3d at 1374. Nor is it proper to use common sense/knowledge “as a whole substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Id.* (quoting *Arendi* at 1362). Petitioner's reliance on a “POSITA's knowledge” (Pet., 3) improperly attempts to fill the gaps in Tolonen and thus cannot support a finding of obviousness, even under the reasonable likelihood standard for institution.

E. Ground 2 Is Deficient

In addition to the reasons discussed above in §§IV.A-B, institution based on Ground 2 should be denied because it substantively fails to demonstrate how Katz discloses each limitation of claims 1-3.

1. Ground 2 Improperly Relies On Extrinsic Material Outside Of Katz

Ground 2's anticipation challenge of claim 1 is deficient because it improperly relies on disclosures outside of Katz. (*See e.g.*, Pet., 45-56 (relying on Ex. 1007), 46 (Ex. 1008), 46 (Atheros (Ex. 1015))). As explained, Katz does not incorporate Exhibits 1007-1008 (*Supra* §IV.B) and Atheros (Ex. 1015) contains extrinsic disclosures not in Katz (Pet., 46; Ex. 1006). Thus, Petitioner's anticipation ground under Katz fails and cannot support institution. *Net Moneyin*, 546 F.3d at 1371.

2. Ground 2 Improperly Relies On Obviousness

Although Ground 2 asserts unpatentability based on anticipation (Pet., 3, 43), for limitation 1[B], Petitioner relies on obviousness to fill gaps in Katz. (Pet., 46-47 ("it would have been obvious to ... include such a chip ...").) Anticipation requires that a single reference discloses "each and every limitation of the claimed invention, either explicitly or inherently." *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 11. Thus, Petitioner's anticipation challenge of claim 1 fails as a matter of law.

Even if considered, Petitioner's single sentence obviousness statement and its referenced expert's conclusory analysis (Pet., 46-47; 1003, ¶120) fall short of the

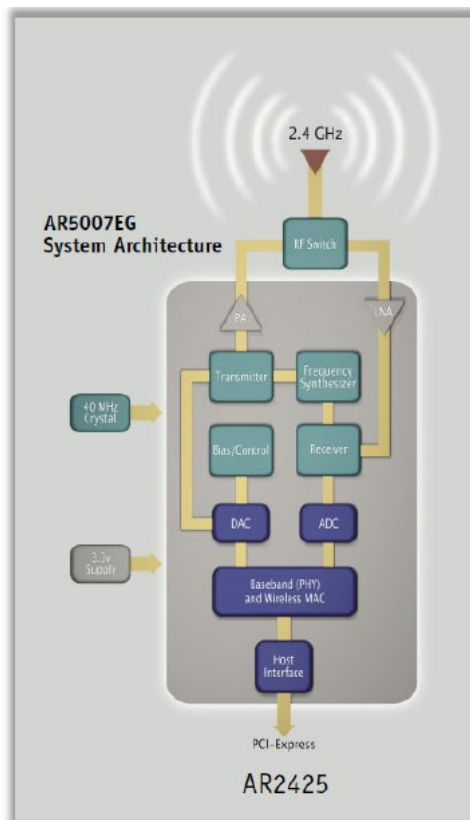
standard articulated by the Board. *E.g.*, *Mipox Corp.*, IPR2017-00869, Paper 8 at 14-15. Neither Petitioner nor its expert specify what in “Katz” is to be combined with the Atheros chip, improperly leaving it the Board to guess Petitioner’s alleged theory. (*Id.*) *Facebook, Inc.*, IPR2017-01524, Paper 7 at 19.

3. Ground 2 Fails To Demonstrate How Katz Discloses Each Limitation In Claims 1-3

Regarding **limitation 1[B]**, Petitioner does not mention, much less demonstrate, how Katz discloses the claimed “wireless communication interface.” (Pet., 46-47.) 37 C.F.R. § 42.104(b)(4); *Adaptics Ltd.*, IPR2018-01596, Paper 20 at 22-24. Assuming Petitioner relies on Katz’s IEEE 802.11 chipsets to meet the claimed “wireless communication interface,” the Petition fails to demonstrate how such an 802.11 chipset includes the claimed wireless communication interface electrically coupled to an ADC/DAC. Petitioner does not point to anything in Katz, but rather offers a single sentence that relies on its expert’s opinion that “by design” such 802.11 chipsets include a front end coupled to an ADC and DAC. (Pet., 46 (citing Ex. 1003, ¶¶115-119).)

The rationale offered by Petitioner’s expert highlights Katz’s lacking disclosure. Namely, Petitioner’s expert relies on extrinsic material in Exhibit 1015 to argue that Atheros shows an “RF front end electrically connected to a DAC and an ADC.” (Ex. 1003, ¶119.) However, Petitioner’s expert does not identify what

specifically in Atheros is the discussed RF front end or how any of the discussed features of Atheros demonstrates how Katz itself discloses the claimed wireless communication interface electrically coupled to an ADC or DAC. (*Id.*) Moreover, the referenced figure from Atheros (below) shows generic DAC/ADC blocks having connections to different blocks, none of which the expert identifies as an RF front end. (*Supra* n.9.)

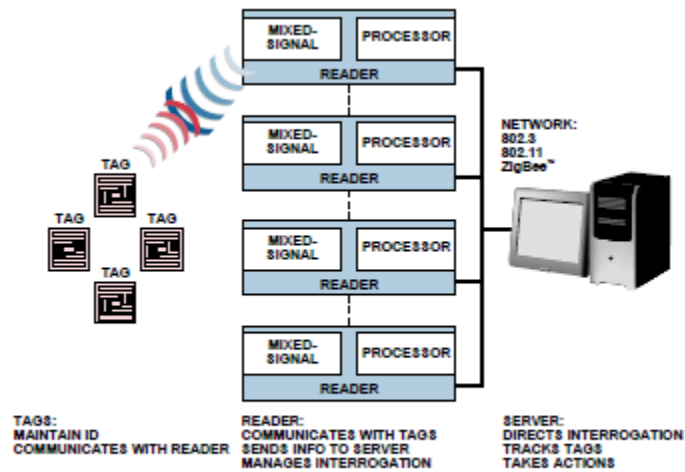


(Ex. 1003, ¶119.)

Regarding **limitations 1[E]-1[F]**, the Petition relies on its misplaced analysis for limitation 1[B] to conclude “the 802.11 chipset has a [DAC / ADC]” would receive encoded data from the Blackfin processor or through the “RF Front end.”

(Pet., 48.) As explained for limitation 1[B], the Petition does not demonstrate how the Atheros chip discloses a wireless communication interface that is “electrically coupled to” the claimed ADC or DAC, much less how Katz discloses the 802.11 radio block in Katz is implemented as the Atheros chip. (*See supra* (regarding limitation 1[B]); Ex 1006).)

For **limitation 1[G]**, the evidence does not support Petitioner's anticipation theory. Namely, Petitioner represents that “Katz's RFID system is directed to ... ‘maintain[ing] and update[ing] the tag database, generating alerts or initiating other information-based processes within the enterprise.’” (Pet., 49 (quoting Ex. 1006, 1).) Petitioner relies on that disclosure to allege “the software must inherently ... decode the bit stream into data that can be matched, tracked, stored, and retrieved later from a database in readable form.” (*Id.*) Assuming “the software” referenced by Petitioner here refers to the claimed “base-band decoder software program” of limitation 1[G], that software would still need to be executed by the “microprocessor” to be relevant to limitation 1[C]. (*See e.g.*, Pet., 47; Ex. 1001, 18:54-56.) Yet, Katz actually states that the separate “server-based system” at the back-end “maintains and updates the tag database” and “generate[es] alerts.” (Ex. 1006, 1 (first paragraph).) Figure 1 of Katz (below) shows the server-based system separate from the processor in the RFID reader (which Petitioner associates to limitation 1[A]), and thus does not support Petitioner's anticipation theory.



(Ex. 1006, 1.)

Regarding **claim 2**, Petitioner assumes “Katz’s RFID system is devoid of dedicated hardware components” because Katz indicates three identified elements of the “software architecture” that can “run concurrently on a single Blackfin processor.” (Pet., 50 (citing Ex. 1006, 2).) Petitioner’s conclusion is misplaced.

First, Petitioner’s rationale for claim 2, which depends from claim 1, is at odds with Petitioner’s reliance on the Atheros 802.11 document (Ex. 1015) to support its challenge to limitation 1[B]. (See Pet., 46-47.) There, Petitioner argues that Katz’s alleged 802.11 chipset is configured similar to the Atheros chip in Ex. 1015. (*Id.*) Yet, Ex. 1015 describes the Atheros “chip” supports modulation such as BPSK, QPSK, DBPSK, and DQPSK. (Ex. 1015, 2.) Under Petitioner’s logic for limitation 1[B], the “RFID system” including the IEEE 802.11 radio block that is configured similar to the Atheros chip discussed in Ex. 1015 would likewise support

modulation. And since Petitioner alleges that Katz's RFID system is the claimed "apparatus" of limitation 1[pre] (Pet., 43-44), Katz's purported "apparatus" would then include dedicated hardware components configured to implement at least "modulation," according to Petitioner's Ground 2 theories. This defeats Petitioner's anticipation challenge to claim 2. (Pet., 50.)

Moreover, Petitioner's allegation miss the requirement that such components must be "configured to implement at least one" of the listed functions in claim 2. (Pet., 50 (simply alleging Katz's systems is devoid of "dedicated hardware components").) Thus, on its face, Petitioner's challenge to claim 2 fails and cannot support institution.

Regarding **claim 3**, the Petition does not demonstrate that Katz discloses the same "base-band encoder software program" and "base-band decoder software program"¹⁴ in claim 1 is implemented as a single software program. (Pet., 50-51.) Instead, Petitioner merely presents statements from Katz that all three components of the RFID reader's (back-end server interface, middleware, and front-end tag reader algorithms) "concurrently run on Katz's Blackfin processor." (*Id.* (citing Ex.

¹⁴ The Petition crops out from the language of claim 3 that the software programs are the "*said* base-band encoder software program" and "*said* base-band decoder software program" from claim 1. (Pet., 50.)

1006, 1-2).) However, that discussion encompasses a configuration where all three such “elements” may be separate in order to run “concurrently” with each other, which distinguishes the requirement in claim 3 that the base-band encoder and decoder software programs is implemented as a single software program. In fact, Petitioner’s follow-on conclusion that a “POSITA would recognize that software architectures may either be standalone or implemented as part of a single software program” (*id.*, 51 (citing Ex. 1003, ¶130)) actually supports the understanding that Katz neither explicitly nor inherently discloses the features recited in claim 3. *Therasense Inc.*, 593 F.3d at 1332. Petitioner’s two sentence-based anticipation theory does not even allege or demonstrate how Katz actually meets the claimed features of claim 3, and thus fail to demonstrate with particularity how Katz allegedly meets the claim.

F. Ground 3 Is Deficient

1. Ground 3 Does Not Demonstrate How The Katz-Ishizu Combination Discloses The Limitations Of Claim 1, From Which Claims 4-12 Depend And Which Petitioner Relies Upon For Challenging Claims 13-20

Ground 3 asserts claims 4-20 are obvious over Katz and Ishizu (Pet., 3, 51), but does not demonstrate how Katz-Ishizu discloses each limitation of independent claim 1. (Pet., 51-68.) While Ground 2 presents a distinct challenge to claim 1 under Katz (Pet., 43), Ground 3 does not rely on any of the Petition’s analysis or evidence

presented in Ground 2 to demonstrate how Katz and/or Ishizu disclose each limitation of claim 1. (Pet., 51-68.) This deficiency infects Petitioner's challenges to claims 4-20 since claims 4-12 depend from claim 1 and Petitioner relies on similarities between limitations in claims 1 and 4 and those in independent claim 13 (Pet., 66-67). Consequently, Petitioner failed to meet its burden to demonstrate how Katz in view of Ishizu meet all of the limitations of claims 4-20.

There are also other reasons why Ground 3 does not support institution.

2. Claims 4-12

Petitioner's purported Katz-Ishizu combination lacks the rationale underpinnings required to support obviousness of claims 4-12. (Pet., 54-66 (repeatedly asserting "Katz in view of Ishizu discloses [claim limitations]").) *Ioxus, Inc.*, IPR2019-01178, Paper 8 at 10; *Universal Imaging Indus., LLC.*, IPR2019-01369, Paper 7 at 19-20. As discussed below, Petitioner does not explain how implementing Ishizu's integrated arrangement of components of components and features could be incorporated into and/or achieved using a Blackfin processor in Katz's RFID reader device, which undermines its position that it would have been obvious to integrate Ishizu's connection policy and reconfiguration management means "in Katz's blackfin processor." (See *e.g.*, Pet., 53.)

According to Petitioner, Ishizu discloses "'a communication terminal'" that "employs a 'connection policy information table' and a 'communication network

reconfiguration management means for selecting a connection method of a wireless communication network.” (Pet., 52.) Ishizu describes the “communication terminal” and “communication network reconfiguration management means” in connection with Figures 1-2 (below).

FIG. 1

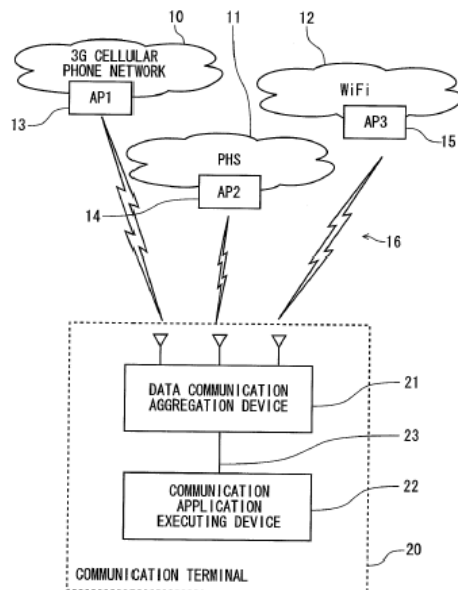
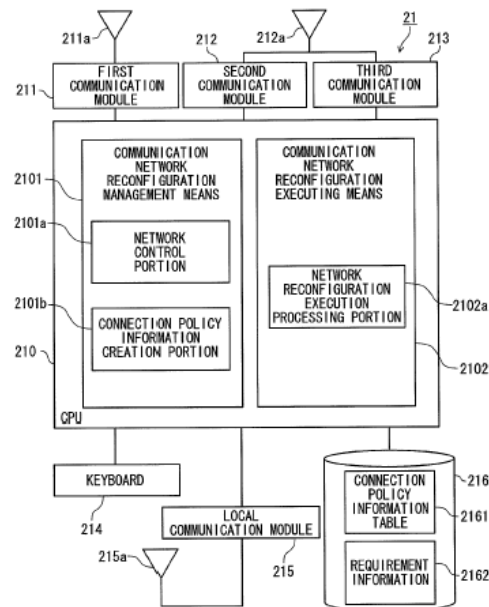


FIG. 2



(Ex. 1010, FIGS. 1-2.) Ishizu explains that,

The **communication terminal** (20) is not configured ... integrally as in the prior-art mobile terminal but is **configured separately into a data communication aggregation device (21) and a communication application executing device (22).**

(*Id.*, ¶50.) Aggregation device 21 and application executing device 22 are “connected by a wired or wireless local communications path (23)” (*id.*, ¶52), which may be a wireless/wired LAN or Bluetooth (*id.*, ¶55).

Ishizu associates aggregation device 21 (Figure 2 above) with a “personal computer, server computer and the like or a network router.” (*Id.*, ¶57.) As a personal computer, the components are implemented, including, *inter alia*, an external hard disk 216 and communication network reconfiguration management means 2101. (*Id.*) Management means 2101 commands execution of network reconfiguration based on connection policy information and creation portion 2101b. (*Id.*, ¶¶64-65.) Disk 216 stores policy information table 2161 and requirement information 2162 referred by the policy information creation portion 2101b. (*Id.*, ¶67.)

Device 22 (part of terminal 20) can be realized as a personal computer, cell phone terminal or PDA (*id.*, ¶68, FIG. 3) and also includes a CPU and hard disk or the like (*id.*, ¶69).

Thus, Ishizu describes a sophisticated arrangement of components (*e.g.*, PCs, phone or PDA terminals, hard disk(s), etc.) in order to provide the connection and associated policy functionalities. (*E.g.*, *id.*, ¶¶73-78, 97, 131-132, 140, 144, 147-151.) Despite this, Petitioner contends that “[a] POSITA would have implemented Ishizu’s []*communication network reconfiguration management means*,

including Ishizu's connection policy in Katz's blackfin processor as part of Katz's RFID control software" (Pet., 53.)

However, Petitioner does not explain how implementing such features from Ishizu could be achieved using a Blackfin processor or that Ishizu's integrated arrangement of processing hardware/software components, internal networks, and hard disk storage devices is applicable to, or could even be incorporated into an RFID reader using a Blackfin processor as described by Katz.

Indeed, Petitioner's obviousness theory relies on integrating Ishizu's connection policy and reconfiguration management means "**in Katz's blackfin processor.**" (Pet., 53.) However, that would require implementing many of the above noted components and features from Ishizu into a Blackfin processor chip. Petitioner never demonstrates how such implementation would have been feasible or would actually work. (Pet., 71-73.) At bottom, Petitioner's assertion that "a POSITA would have expected the combination to predictably result in an RFID reader system as described by Katz that relies on the connection policy methodologies described by Ishizu" (Pet., 53-54) is an unsupported self-serving conclusion devoid of any meaningful and persuasive evidence or analysis that addresses the complications and roadblocks facing Petitioner's purported integration. *Ioxus, Inc.*, IPR2019-01178, Paper 8 at 10.

Given these issues infect Petitioner's challenges to claims 4-12, each of which rely on *Ishizu* (Pet., 73-80), Petitioner has not satisfied its burden of proving obviousness in Ground 3. *See Universal Imaging Indus., LLC*, IPR2019-01369, Paper 7 at 19-20.

Also, Petitioner's challenge of **claim 6** relies on the premise that "*Ishizu* must employ a weighting system" (Pet., 58-59) and then looks to *modify Ishizu* [not *Katz*] based on an extrinsic reference (Ex. 1019) to use a weighted sum model (*id.*, 59). There are several issues with Petitioner's theory.

First, the obviousness analysis for Petitioner's purported **Ishizu** modification does not identify what in *Ishizu* is being modified, explain how or why a POSITA would have been motivated to modify **Ishizu** as suggested, describe the resulting modification, or explain how such modification would have been successfully implemented into **Katz's** apparatus in a manner that discloses the limitations of claims 1 and 6 (after such an **Ishizu** modification).

Second, Petitioner's theory improperly relies on disclosures in Triantaphyllou (Ex. 1019), which is not asserted Ground 3. (Pet., 59 (asserting "the calculation that would be performed" in *Ishizu* is from Ex. 1019).)

Third, Petitioner's theory focuses on what would have been "predictably accomplish[ed]" in terms of "*Ishizu's* goal"—**not Katz's goal**. (Pet., 59.) Indeed, even if the model depicted in Triantaphyllou (Exhibit 1019) was somehow

performed in Ishizu (*id.*), the Petition's only analysis (*albeit* lacking in substance) is directed to Ishizu, and not the alleged Katz-Ishizu combination. Consequently, the Petition fails to demonstrate how Katz as modified in view of Ishizu meets the challenged claims.

Fourth, Petitioner's obviousness theory looks to simply plug into a WSM algorithm "communication link alternatives" as "M" and criteria (such as QoS, power saving, error correction) as "N," without explaining how Katz would have been configured to assign other variables in that algorithm, such as W_j —the "weight of importance of the j -th criterion." (Ex. 1019, 3; Pet., 59.)

Petitioner's challenge to **claim 7** is deficient since it simply conveys disclosures from Ishizu without explaining, demonstrating, or even alleging, how any of those disclosures would have motivated a POSITA to modify Katz's RFID system in any way, what the modification would have been, or how any resulting modified Katz system discloses the limitations in claim 7. (Pet., 60.) *See Daihen Corp.*, IPR2019-00248, Paper 11 at 12-13. The Petition's reliance on its "Motivation to Combine" section (Pet., 60 (citing Pet., §VII.A (found at pages 51-54 of the Petition))) does not rectify these deficiencies since that section merely discusses implementing Ishizu's reconfiguration management means and connection policy" without addressing the specific features recited in claim 7. (*See e.g.*, Pet., 53-54 ("A POSITA would have implemented Ishizu's []communication network

reconfiguration management means, including Ishizu's connection policy in Katz's blackfin processor as part of Katz's RFID control software ...").) Indeed, Petitioner makes clear that "the mappings of claims 4-12 and 14-20 *of ground 3 are exclusively to Ishizu's teachings*" (Pet., 83), thus confirming the deficiencies in Petitioner's obviousness noted above.

Petitioner's challenges to **claims 8-12** simply discuss Ishizu without any analysis as to how Katz would have been modified to implement any features in a manner that meets the limitations recited in these claims. (Pet., 61 (only discussing Ishizu without mention of Katz or any modification thereof), 62 (similar with respect to claim 9), 63 (similar regarding claim 10), 63-65 (similar regarding claim 11), 64 (similar regarding claim 12).) (*See also id.*, 83 ("mappings of claims 4-12 and 14-20 of ground 3 are exclusively to Ishizu's teachings").) Accordingly, the Petition fails to present adequate rationale underpinnings to support Petitioner's position that "Katz in view of Ishizu discloses ..." the limitations of claims 8-12—including how any resulting modified Katz system maps to these claims. (Pet., 61-63, 66.)

3. Claims 13-20

Petitioner's challenges to claims 13-20 rely on its analysis for claim 4 and its association with certain limitations in claim 1—which as explained above is not

addressed in Ground 3¹⁵ (Pet., 66), and thus are deficient for the same reasons discussed above in §§IV.F.1-2. Further, Petitioner's challenge that "[c]laim 13 is ***anticipated*** by Katz in view of Ishizu" (Pet., 66) is legally deficient because it relies on the Katz-Ishizu combination. Petitioner's assertions that "claims 14 and 16 to 18" and "claim 19" are "***anticipated*** by Katz in view of Ishizu for the same reasons set forth for claims [3 and 7 to 9 / either claim 10 or claim 11]" (Pet., 67) are likewise deficient.

Additionally, while Ground 3 is based on obviousness under Katz-Ishizu (Pet., 3, 51), Petitioner alleges "**Tolonen** teaches Claim limitation 15[A] for the same reasons" (*id.*, 67). Thus, Petitioner failed to meet its burden to establish how **Katz** **in view of Ishizu** meets claim 15.

Moreover, Petitioner's analysis for claims 14, 16-18 relies on its "reasons set forth for claims 3 and 6 to 9" and Petitioner's analysis claim 19 relies on its analysis for "either claim 10 or claim 11" without identifying where in the Petition those "reasons" are explained. (Pet., 67.) While not clear, Petitioner's rationale against claims 14, 16-18 and 19 are defective for at least the reasons discussed above in §§IV.E and IV.F.1-2.

¹⁵ As explained, Ground 3 does not demonstrate how Katz-Ishizu discloses each limitation of independent claim 1. (*Supra* §IV.F.1.)

Ground 3's challenge of **claim 20** is deficient for an additional reason. Petitioner contends that a POSITA "would have implemented Ishizu" to "react to the increased transmission requirements from a CMOS image sensor." (Pet., 68.) Petitioner's premise is based on Ishizu allegedly teaching changes to emphasize communication quality when an "image transmission is started by a user." (*Id.*) However, Katz describes an example where a CMOS image sensor may be paired with RFID technology.¹⁶ (Ex. 1006, 4 ("High-Performance Systems"), FIG. 6). Employing Ishizu as proposed by Petitioner would result in the CMOS sensor being activated in response to the user starting an image transmission (Ex. 1010, ¶96; Pet., 68), not in response to any RFID tag reading functions. Petitioner's conclusory analysis does not address how the Katz-Ishizu combination discloses claim 20, which requires the "apparatus of claim 13" to be configured to "dynamically select at least one of a wireless communication network, [] protocol, and a [protocol] parameter [] *responsive to scanning a pre-defined bar code*." (Ex. 1001, 21:12-16.)

¹⁶ Petitioner's representation that "Katz's RFID system can also integrate with a CMOS image sensor *to function as a bar code reader*" is unsupported. (Pet., 68 (citing Ex. 1006, 4).)

G. Ground 4 Is Deficient

In addition to reasons above in §IV.C, Ground 4 is deficient and does not support institution for the following reasons.

1. Petitioner Improperly Conflates Teachings in Ishizu

Petitioner's analysis of claim 1 in Ground 4 is misplaced out of the gate. For limitation 1[pre], Petitioner alleges Ishizu's "communication terminal" that is "represented by figure 2, below" is an "apparatus" as recited in limitation 1[pre]. (Pet., 68-69 (citing Ex. 1010, ¶57 and FIG. 2).) However, Ishizu's Figure 2 is not a communication terminal. Figure 2 actually depicts the data communication aggregation device (21), which, while included within a communication terminal (20), is only a portion thereof.

FIG. 1

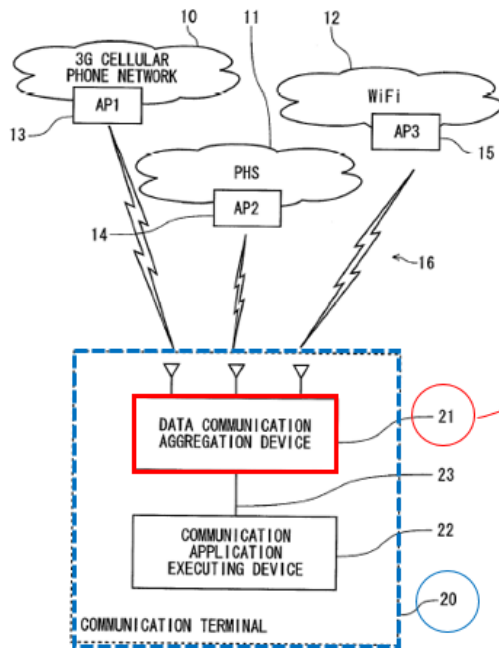
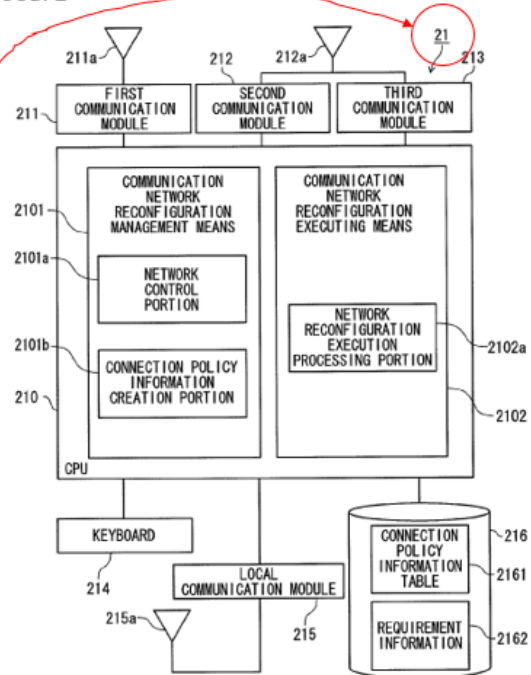


FIG. 2



(Ex. 1010, FIGS. 1-2 (annotated).) (See also *id.*, ¶50 (discussing “communication terminal (20)” that is “configured separately into a data communication aggregation device (21) and a communication application executing device (22)”), ¶57 (“FIG. 2 is a configuration diagram of the data communication aggregation device (21)”)¹⁷.)

Petitioner’s misstep is fatal to Ground 4. For example, claim 1 of the ’654 patent requires the “apparatus” to comprise the “microprocessor.” (Ex. 1001, 18:46-47.) For **limitation 1[A]**, the Petition identifies Ishizu’s “CPU (221)” as the

¹⁷ Petitioner misrepresents Ishizu in citing to this paragraph to allege “Ishizu’s communication terminal is represented by figure 2.” (Pet., 68.)

claimed “microprocessor.” (Pet., 69 (citing Ex. 1010, ¶69).) However, Ishizu explains that CPU 221 is part of the communication application executing “device (22).” (Ex. 1010, ¶69.) As shown above, and explained by Ishizu, device 22 is separate from the data communication aggregation device (21) of Figure 2 that Petitioner referenced for the claimed “apparatus.” (See Ex. 1010, FIGS. 1-2 (above), ¶¶57, 68-69.) As such, Petitioner has not demonstrated how Ishizu discloses an “apparatus ... compris[ing] a microprocessor” as recited in limitations 1[pre]-1[A]. For at least this reason, Petitioner’s anticipation arguments for claim 1, its dependent claims 2-12, and claims 13-20 (which Petitioner relies on its claim 1 analysis (Pet., 83)) are deficient and do not support institution.

2. Petitioner Fails To Demonstrate That Ishizu Discloses Every Limitation In Claims 1-20

In addition to the reasons above (§IV.G.1), the Petition’s analysis regarding **limitation 1[B]** is deficient. Petitioner argues that “Ishizu’s communication terminal includes first, second, and third communication modules, each of which are wireless communication interfaces” without any reference to supporting disclosure from Ishizu. (Pet., 70.) Assuming Petitioner relies on the communication modules 211-213 mentioned in paragraph 100 of Ishizu (referenced by Petitioner in the next sentence (*id.*, (citing Ex. 1010, ¶¶ 99-100))), Ishizu provides no disclosure that any of those modules is “electrically coupled to at least one of an ...ADC or ...DAC” as

claimed. (*See generally* Ex. 1010.) In an effort to overcome this deficiency, Petitioner improperly relies on extrinsic disclosures from Hiroshi (JP 2003-152732),¹⁸ which discloses a device and includes a passing reference to an “AD converter.” (Pet., 71.) But even if that disclosure somehow supports Petitioner’s conclusion that “Ishizu’s communication modules *can be* implemented through software radios” (Pet., 71), that does support Petitioner’s conclusion that Ishizu discloses that its communication modules 210-213 are electrically coupled to an ADC or DAC as claimed. Nor can it, since even Petitioner admits the referenced Hiroshi discussion in Ishizu only suggests modules that “*can be* implemented through software,” not that they are necessarily always so implemented as required for a finding of anticipation. (*Id.*) *Therasense Inc.*, 593 F.3d at 1332.

Petitioner’s challenge to **limitation 1[C]** is also defective. First, it relies on an improper incorporation by reference to Hiroshi (Ex. 1020), which, as explained, is inaccurate. (Pet., 71-72; *supra* §IV.C.) Second, even if extrinsic discussions in Hiroshi were considered, Petitioner fails to demonstrate how such disclosures evince that Ishizu’s CPU (221) (mapped to the claimed “microprocessor” (Pet., 69)) is configured with the encoder and decoder software programs recited in limitation

¹⁸ As explained in §IV.C, Ishizu does not incorporate by reference teachings from Hiroshi.

1[C]. Indeed, Petitioner's representation that "Ishizu relies on Hiroshi to describe SDRs and describes communications, such as 3G" is unsupported. (*Id.*, 72.) Ishizu's only mention of "Patent Document 1" (Hiroshi) has no discussion of 3G communications or "SDR." (Ex. 1010, ¶16.) Moreover, Petitioner concludes that "Ishizu disclosed a base-band encoder software program ..." (Pet., 72), but provides no analysis or evidence to demonstrate that CPU 221 (the alleged "microprocessor") in device (21) (Petitioner's alleged "apparatus") is configured to execute a base-band encoder software program.

Last, putting aside Petitioner's misstatement about "Ishizu and Hiroshi's explicit disclosures" (*id.*, 72), the Petition's allegation that "Ishizu also *inherently* teaches the baseband encoder/decoder software" is deficient. First, Petitioner does not allege/demonstrate the claimed "microprocessor" (*e.g.*, Ishizu's CPU 221) is configured to execute the claimed encoder and decoder software programs of limitation 1[C]. Second, Petitioner's theory relies solely on its expert's opinions, which, in turn, never point to or otherwise rely on any teachings from Ishizu. (*Id.* (citing Ex. 1003, ¶¶163-165).) Instead, Petitioner's expert makes unsupported statements like "Ishizu's SDR must have a baseband encoder/decoder software" without identifying where Ishizu supports such a conclusion or how that SDR includes the CPU 221 (mapped to the claimed "microprocessor"). (Ex. 1003, ¶163.) The expert relies on extrinsic disclosures in Tuttlebee (Ex. 1012) to allege "this is

how Software Defined Radios *inherently* operate.” (*Id.*, ¶164 (citing Ex. 1012, FIG. 1.4).) Petitioner’s expert also reverts to unsupported statements to argue that Ishizu refers to “digital decoding and encoding performed by the SDR’s microprocessor” without citing any evidence or identifying what in Ishizu is the “SDR[] microprocessor” that purportedly performs such functions. (Ex. 1003, ¶165.) Indeed, Petitioner’s expert does not demonstrate that CPU 221 in device (21) (which is the component Petitioner maps to the claimed “microprocessor” of claim 1, *see* Pet., 69) is configured to execute the encoder/decoder programs in limitation 1[C].

Petitioner’s challenge of **limitation 1[D]** is likewise defective. (Pet., 73-75.) Again, Petitioner does not demonstrate how Ishizu’s CPU 221 (which is in device 22) and device 21 (the alleged claimed “apparatus”) is configured to execute a base-band encoder program configured to produce an encoded bit stream as recited in limitation 1[D]. (*Id.*) Petitioner again improperly relies on extrinsic disclosures from Hiroshi (Ex. 1020) and nearly verbatim inherency opinions from its expert used for limitation 1[C]. (*See e.g.*, Pet., 75; Ex. 1003, ¶¶169-171.)

For **limitations 1[E]-1[G]**, Petitioner’s arguments only further highlight the differences between claim 1 and Ishizu. Petitioner argues that “Ishizu’s communication modules work in connection with *a microprocessor*, such that the microprocessor performs the encoding of digital information.” (Pet., 75-77.) Here, Petitioner alleges that Ishizu’s communication modules work with a different

microprocessor (*i.e.*, “a” microprocessor) from CPU 221 (which Petitioner mapped to the claimed “microprocessor” of limitation 1[A]). Moreover, for limitation 1[G], Petitioner again improperly relies on disclosures from Hiroshi (Ex. 1020) and verbatim inherency opinions from its expert for limitation 1[C]. (*See e.g.*, Pet., 79; Ex. 1003, ¶¶187-189.)

Petitioner's challenges to **claims 2-3** are similarly deficient. Regarding claim 2, the Petition again improperly relies on disclosures from Hiroshi (Ex. 1020). (Pet., 79-82; *see supra* §IV.C). Regarding claim 3, the Petition relies on obviousness to fill gaps in Ishizu (*id.*, 82 (“either implementation would constitute an obvious choice”), which is improper for an anticipation ground. *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 11. Moreover, the Petition does not demonstrate that Ishizu itself discloses the “encoder”/“decoder” programs recited in limitations 1[C]-1[D] and 1[G] (Pet., 71-75, 77-79) are implemented as a single software program recited in claim 3 (*id.*, 82). Petitioner's conclusion that a “software modules may either be standalone or implemented as part of a single software program” (Pet., 82) does not demonstrate that Ishizu's CPU 221 is configured to execute the claimed encoder/decoder programs or that they are implemented as a single software program as required by claims 1 and 3.

Petitioner challenge of **claim 13** relies on its rationale for claim 1 (Pet., 83) and thus is deficient for at least the same reasons. (*See supra* regarding Ishizu/claim

1.) Ground 4 also relies on Petitioner's analysis for claims 4-12 and 14-20 in Ground 3. (Pet., 83 (citing Pet., §§VIA.A1-9, VII.A.11-14).) However, Ground 3 is an obviousness ground based on an alleged combination of Katz in view of Ishizu (Pet., 51-68.) and thus Petitioner's reliance on material from Ground 3 is unpersuasive. Nonetheless, Ground 4's challenges to claims 4-12 and 14-20 are deficient for at least the same reasons discussed above for those claims in Ground 3. (*See supra* §IV.F.)

H. Institution Should Be Denied Under §325(d)

Discretionary denial under §325(d) is appropriate here given the Petition presents the substantially the same prior art or arguments previously presented to the Office during prosecution. (Ex. 1002, 302-306, 365-367; Ex-1001, Cover (pp. 1-3); Pet., 5-6.) *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6 at 8 (Feb. 13, 2020) (precedential). While Petitioner recognized the '654 patent is a division of the '784 patent and the rejection based on Yeakley (US2007/0152058) during prosecution of the '784 patent (Pet., 6), Petitioner did not explain how Yeakley, or any of the other prior art considered during prosecution of the '654 patent (Ex. 1001, Cover; Ex. 1002, 136-138), is not cumulative to the disclosures of Tolonen, Katz, or Ishizu. (*Generally* Pet.) Indeed, Petitioner acknowledged the Office already rejected the argument that "A/D conversion is typical and old and well known" (Pet., 6; Ex. 1023, 286, 301-302, 367),

which tracks Petitioner's allegations here (*e.g.*, Pet., 16-18 (arguing the claimed DAC/ADC features are inherently disclosed without corroborating evidence); *supra* §§ IV.D.1-2.) As such, discretionary denial is warranted given there are no material differences between the Petitioner's art/arguments and the art/arguments raised during prosecution. *Becton, Dickinson & Co., v. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 16-28 (Dec. 15, 2017).

V. Conclusion

For the reasons above, institution should be denied.

Respectfully submitted,

Dated: April 30, 2024

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Patent Owner's Preliminary Response contains, as measured by the word-processing system used to prepare this paper, 13,712 words. This word count does not include the items excluded by 37 C.F.R. § 42.24.

Respectfully submitted,

Dated: April 30, 2024

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CERTIFICATE OF SERVICE

I certify that I caused to be served on the counsel identified below a true and correct copy of the foregoing Patent Owner's Preliminary Response by electronic means on April 30, 2024 to the following:

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