

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. IPR2024-00391
Patent No. 8,141,784

**Patent Owner's Preliminary Response
to Petition for *Inter Partes* Review
of U.S. Patent No. 8,141,784**

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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 1-23 (“the challenged claims”) of U.S. Patent No. 8,141,784 (“the ’784 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 anticipation and obviousness challenges.¹

II. Level Of Ordinary Skill

PO responds to Petitioner’s grounds in light of Petitioner’s POSITA definition, but reserves the right to later dispute it should institution be granted. (Pet., 12.)

III. Claim Construction

For purposes of this response, PO responds to the proposed grounds based on Petitioner’s stance that no claim terms require construction. (Pet., 12.) In so doing, PO does not acquiesce to any implied constructions that may be gleaned from

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

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.

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); *see also* 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 meet 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 2-4 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, as is the case here, 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. Instradent 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.

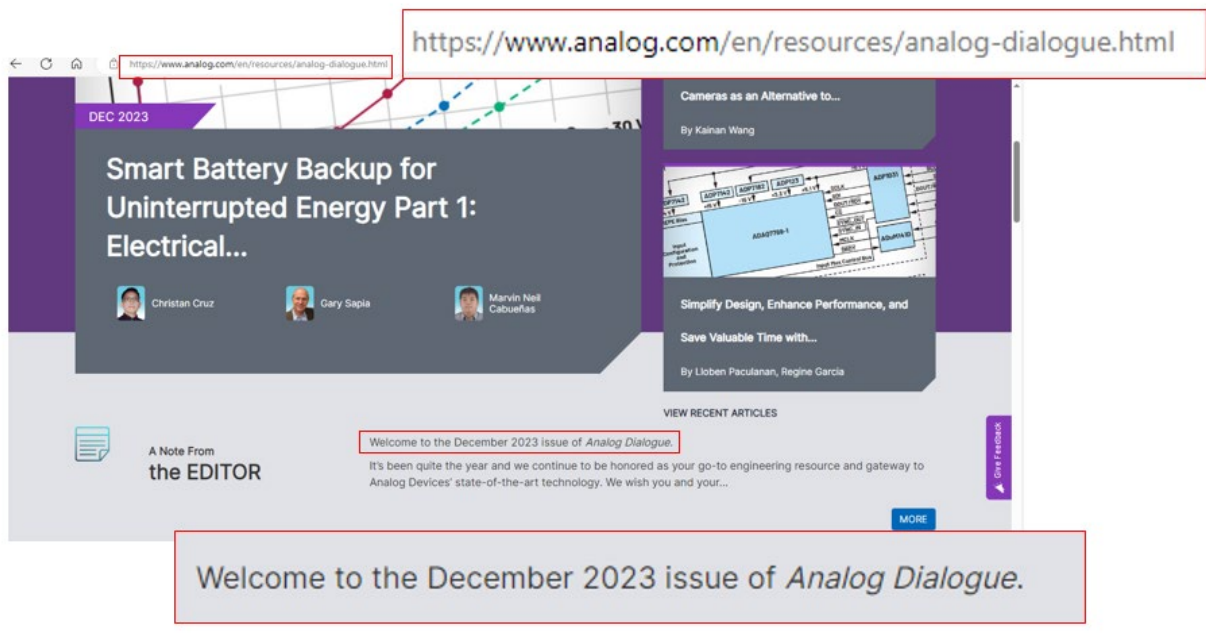
Petitioner relies on a non-patent literature (“NPL”) reference to Katz (Ex. 1006) in Grounds 2-4. (Pet., 2-3.) As such, Petitioner has the burden to “identify,

² Emphasis added herein unless noted otherwise.

with particularity, evidence sufficient to establish a reasonable likelihood that” Katz was publicly accessible before the critical date of the ’784 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 “published in 2006” (Pet., 2) is insufficient to support institution even under the “reasonable likelihood” standard applied at this stage of the proceeding. *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 ’784 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 dated 2023.

³ For purposes of this 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.



(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 ’784 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 the NPL reference at issue 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 2-4. (*Id.* at 15; Pet., 44-86.) 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 accessibility before the critical date of the '784 patent.⁴

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

⁴ Petitioner did not even allege or demonstrate how interested persons of ordinary skill in the art at the relevant time could have located and accessed Katz. *Hulu* at 10-11.

a printed publication to support institution based on Grounds 2-4.⁵

**B. Katz Does Not Incorporate By Reference Exhibits 1007-1009
Rendering Grounds 2-4 Deficient**

Petitioner represents that “Katz also incorporates by reference three datasheets,” which Petitioner introduces as Exhibits 1007-1009 and relies on those exhibits to support its challenges in Grounds 2-4. (*See e.g.*, Pet., 2-3, 47 (“Katz regularly cites and incorporates data sheets ...”), 52 (citing Ex. 1007), 57 (citing Ex. 1009), 84 (same), 66 (citing Ex. 1008).) Petitioner alleges that Exhibits 1007-1009 were “published” in 2006 or 2003 and are “prior art under 35 U.S.C. § 102(b).” (Pet., 2-3.)

Petitioner's characterizations are inaccurate and misleading. Katz does not incorporate by reference *any* disclosures, much less the specific documents

⁵ The Petition also relies on two 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 '784 patent, for similar reasons explained above. The same is true for the NPL references submitted as Exhibits 1007-1009 and 1015, which the Petition relies upon in Grounds 2-4. (*E.g.*, Pet., 46, 53, 57, 61-63, 66-67, 84.)

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).⁶

Despite these requirements, Petitioner offered nothing beyond blanket

⁶ Petitioner's expert repeats the same blanket assertions in the Petition and provides no testimony or corroborating evidence to support incorporation by reference of Exhibits 1007-1009 by Katz, especially from the perspective of a POSITA. (Ex. 1003, ¶¶127, 96, 102, 152, 154, 204.)

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), 47⁷, 52-53, 57.) 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). And because the Petition relies on Exhibits 1007-1009 to support its Katz-based challenges (Pet., 2-3, 46, 53, 57-58, 61-62, 63, 66, 84-85), Grounds 2-4 are deficient and cannot support institution.

⁷ Here, Petitioner only cites to its expert's declaration (Ex. 1003), which merely repeats Petitioner's misstatement. (Pet., 47; Ex. 1003, ¶127.)

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. *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 provides a reference to 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 shown 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., 52-53 (citing Ex. 1007, 11), 58 and 62-63, 85 (citing Ex. 1007, Fig. 1), 61 (citing

13

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. Katz again references a footnote (fn8) when describing “computation demands” handled by “dual-core convergent processors such as the ADSP-BF561” (Ex. 1006, 4). That footnote identifies 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 shifter
 - RISC-like register and instruction model for ease of programming and compiler-friendly support
 - Advanced debug, trace, and performance monitoring
 - Wide range of operating voltages, (see [Operating Conditions](#))
 - 256-bit CSP, BGA (2 sizes) and 297-ball PBGA package options

PERIPHERALS

- Dual 12-channel DMA controllers (supporting 24 peripheral DMA's)
- 2 memory-to-memory DMA's
- 2 internal memory-to-memory DMA's and 1 internal memory DMA controller
- 12 general-purpose 32-bit timers/counters with PWM capability
- SPI-compatible UART
- UART with support for IrDA
- Dual watchdog timers
- Dual 32-bit core timers
- 48 programmable flags (GPIO)
- On-chip phase-locked loop capable of 0.5 x to 64x frequency multiplication
- 2 parallel input/output peripheral interface units supporting ITU-R 656 video and glassless interface to analog front end ADCs
- 2 dual channel, full duplex synchronous serial ports supporting eight stereo I²S channels

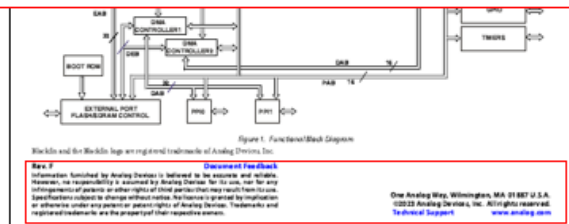
VOLTAGE REG. CONTROL ANALOG AD. CONTROL ANALOG

Rev. F

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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 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 '784 patent and thus qualify as prior art as alleged by Petitioner. *Hulu* at 13. (See also *supra* §IV.A.)

C. Ground 1 Is Deficient

1. Ground 1 Improperly Relies On Different Embodiments In Tolonen

The Petition asserts claims 1-23 “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, 12-48.) *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 EIR terminal is the embodiment corresponding to Figure 3.⁸ (*See e.g.*, Pet., 11-12 (**limitation 1[pre]**: mapping WCD 100 of Figure 3 embodiment to claimed EIR terminal), 12-13 (**limitation 1[A]**: mapping Figure 3 processor 300 in WCD 100 and exemplary bus interfaces to claimed "microprocessor" and "system bus"), 14 (**limitation 1[B]**: mapping Figure 3 memory 330 to claimed "memory"), 14-16 (**limitation 1[C]**: mapping Figure 3 module 340 to "EIR device"), 21 (**limitation 1[E]**: referencing discussion of Figure 3 processor 300 for claimed encoder/decoder programs), 22 (**limitation 1(F)**: referencing discussion of Figure 3 processor 300 for claimed

⁸ Figure 3 relates to features for Figure 2. (Ex. 1005, ¶¶17-18.)

encoded bit stream features), 22-23 (**limitation 1(G)**: referencing previous Figure 3 embodiment positions for limitations 1[D]-1[F]), 23 (**limitation 1(H)**: referencing previous Figure 3 embodiment positions for limitations 1[D]-1[G]). 24 (**limitation 1(I)**: referencing previous Figure 3 embodiment positions for limitations 1[D]-1[H]).)

For **limitation 1(D)**, Petitioner relies on different embodiments from Tolonen to support its assertion that Tolonen discloses a wireless communication interface comprising an RF front end as claimed. (Pet., 16-21.) The Petition first points to communication modules 310/312/320 from the Figure 3 embodiment for the claimed “wireless communication interface.” (Pet., 16 (citing Ex. 1005, ¶59 and referencing Figure 3)).⁹ However, for the remainder of limitation 1[D], Petitioner presents a multi-layer inherency argument (Pet., 17-20), which as discussed below in §IV.C.2.a is deficient. To support that argument, Petitioner relies on disclosures regarding the embodiment from Figures 6A-6B of Tolonen to shift focus on radio modems 610 to argue that “it is a requirement that the communication modules convert digital data”

⁹ 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.)

and that “Tolonen’s ADCs and DACs must be electrically coupled to Tolonen’s RF Front end.” (Pet., 17-19.)

However, the Figure 6A-6B configurations relate to a different embodiment requiring different components and functionalities from that disclosed 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 Figures 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.*) Communication resources of master control system 640 conveys all information, commands, etc. occurring between radio modems 610, similar devices 630, and MRC 600, as further 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 distinct 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., 20 (Tolonen "teaches using SDRs for these communication modules").) Tolonen's SDR configurations are directed to a different embodiment than that for Figure 3. (See 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 conclusory representation concerning potential SDR implementation (Pet., 20) 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 claim.

Accordingly, Petitioner's anticipation theories for limitation 1[D] 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). Thus, Ground 1 cannot support institution.

Petitioner's alternate obviousness theory for limitation 1[D] is deficient for similar reasons.¹⁰ (Pet., 20-21). Here, Petitioner relies on the use of "an SDR GSM" and a premise that "Tolonen contemplates using SDRs for GSM communications." (Pet., 20-21.) Thus, Petitioner's theory relies on the same above-discussed distinct SDR embodiments in Tolonen without explaining how those specific embodiments meet any of the other limitations of claim 1, or how such SDR embodiments relate to, or otherwise can be combined with, the Figure 3 embodiment the Petition relies on for other claim limitations. As such, for similar reasons, Petitioner's alternative SDR-based obviousness theory in Ground 1 cannot support institution.

¹⁰ Petitioner's obviousness theory is further deficient for reasons below. (§IV.C.3.)

b) Claims 3-8

The Petition's anticipation theories for claims 3-8 are likewise deficient and cannot support institution. Petitioner again relies on Tolonen's disclosures relating to multiple embodiments to allege anticipation of these claims, such as those relating to Figures 2, 5, 6C, 8A, 12-14A. (Pet., 26-38.) Petitioner digs deep into these distinct configurations to rely on features requiring the use of components not found in the Figure 3 embodiment that Petitioner relies upon for claim 1 (from which claims 3-5 depend). (See *e.g.*, Pet., 27-34 (citing Ex. 1005 at ¶¶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 found in ¶¶74-75 of Tolonen 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., 27.) The channel selection features discussed by Petitioner (Pet., 30) 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.

For instance, regarding **claim 5**, Petitioner relies on disclosures pertaining to the exemplary configuration shown in Figures 13 and 14A (Pet., 32-33 (citing Ex. 1005, ¶¶101-103, 105-106), while bouncing back to the embodiment for Figure 12 (Pet., 33 (citing Ex. 1005, ¶93) and the embodiment for Figure 8C (Pet., 33 (citing Ex. 1005, ¶78).) Petitioner does the same for **claim 6**, referencing embodiments for Figure 14 and Figure 5. (Pet., 34-35 (citing Ex. 1005, ¶¶63-64, 104.) Regarding **claim 7**, the Petition mixes features from the Figure 2 discussions (Pet., 35-36 (citing Ex. 1005, ¶48-49) and the embodiment for Figure 6C (Pet., 36-37 (citing Ex. 1005, ¶67, FIG. 6C).) For **claim 8**, the Petition bounces between embodiments for Figure 3 and Figure 6C. (Pet., 37-38 (citing Ex. 1005, FIG. 6C, ¶56.)

None of the features, components, or arrangements mentioned in the embodiments pertaining to *e.g.*, Figures 6C, 8A, 8C, and 11-14A are described in the Figure 3 embodiment, which Petitioner relies upon for features in claim 1. (Pet., 12-21; *supra* §IV.C.1.a.) Yet the Petition cherry picks disclosures from multiple distinct embodiments to conclude that Tolonen somehow anticipates dependent claims 3-8. (Pet., 26-33.) 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. *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 61.

c) Claims 9-23

Petitioner relies on its deficient analysis for claims 1 and/or 3-8 for its anticipation theories against claims 9-23.¹¹ (Pet., 38-44.) Claims 16-17 depend from claim 15 and claims 19-23 depend from claim 18. (Ex. 1001, 22:1-48.) Thus, for the same reasons discussed above, the Petition's theories 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 EIR terminal having all of the elements recited in claims 9-23 as arranged. As such, Tolonen does not support anticipation of claims 9-23, and thus Petitioner's challenges of these claims in Ground 1 cannot support institution.

¹¹ For claim 18, the Petition again relies on Tolonen's SDR embodiments without explaining how it would operate in connection with the Figure 3 embodiment or how the embodiments would have been combined to meet the claimed EIR terminal, microprocessor, system bus, EIR device, wireless communication interface recited in claim 18. (Pet., 41-42.)

2. Ground 1 Relies On Improper Inherency Theories

To show anticipation, Tolonen must disclose 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)). 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 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)).

The Petition's anticipation theories violate these requirements and thus cannot support institution.

a) Limitation 1[D]

Limitation 1[D] requires the “EIR terminal” (limitation 1[pre]) to comprise “a wireless communication interface comprising a radio frequency front end configured to perform at least one of receiving a first radio signal and transmitting a second radio signal.” (Ex. 1001, 19:14-17; Pet., 16.) Limitation 1[D] also requires “said radio frequency front end electrically coupled to at least one of an analog-to-digital converter (ADC) electrically coupled to said system bus and a digital-to- analog converter (DAC) electrically coupled to said system bus.” (Ex. 1001, 19:17-22.) The “system bus” electrically coupled to the DAC and ADC is the same “system bus” coupled to the microprocessor recited in limitation 1[A]. (*Id.*, 19:4; Pet., 13-14.)

Petitioner alleges Tolonen's communication modules 310/312/320 in the Figure 3 embodiment include the claimed “wireless communication interface.” (Pet., 16.) Acknowledging that Tolonen does not explicitly disclose the claimed RF front-end features (textually amounting to about 95% of the features recited in limitation 1[D]), Petitioner tries to fill that gap by introducing three different inherency positions, each dependent on the other. (Pet., 16-20.) First, Petitioner alleges Tolonen's communication modules “must include an ‘RF Front’ end.” (*Id.*,

16-17.) Petitioner then argues Tolonen's "Radio Modems [from Tolonen's Figure 6A-6B embodiment] "must include" an ADC and DAC. (*Id.*, 17-18.) Then, Petitioner alleges its manufactured ADCs and DACs within Tolonen's communication modules "are coupled to Tolonen's processor through a system bus." (*Id.*, 19.) However, Petitioner's reliance on Tolonen's disparate embodiments, its expert's conclusory opinions, and extrinsic material outside the four corners of Tolonen do not support Petitioner's inherency positions or establish a reasonable likelihood of in Petitioner succeeding in its anticipation challenge of claim 1 (and other claims). (*Id.*, citing Ex. 1003, ¶66, Ex. 1011, 7.)

For instance, Petitioner's conclusion that Tolonen's communication modules 310/312/320 "must include" an RF Front end relies 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 (citing Ex. 1011, 7).) That statement and the related opinion from Petitioner's expert does not convey such decomposition is always true. (Pet., 17 (citing Ex. 1003, ¶66).) "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 arranged in "the same way as they are arranged or combined in the claim." *Id.*

Petitioner's conclusion that Tolonen's communication modules "must include an 'RF Front' end" as a suggestion to the front end as arranged in claim 1 (Pet., 17) is unsupported and cannot support a finding of anticipation.

Next, Petitioner contends, "Tolonen's RF Front end is inherently electrically coupled to an ADC and a DAC, both of which are further coupled to Tolonen's WDC 100's system bus." (Pet., 17.) To get there, Petitioner relies on the different embodiments from Figures 6A-6B (*see supra* §IV.C.1) to contend that since "radio Modems operate to ... convert data from digital to analog for transmission ... "Tolonen's Radio Modems must include an ...ADC and ... DAC" as "it is a requirement that [Tolonen's] communication modules first convert the digital data (received from the processor) to an analog signal by passing it through a DAC before the signal can be communicated through the RF Front end." (Pet., 18-19.) Petitioner's inherency analysis here is likewise flawed.

First, Petitioner begins with the assumption that Tolonen actually discloses an "RF Front end," 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 above in §IV.C.1, are distinct from those of Figure 3 on which Petitioner relies for the claimed EIR terminal, processor, and system bus in limitations 1[pre]-1[A], and the wireless communication interface of limitation 1[D]. (Pet., 12-14, 16.) 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 RF front end coupled to at least one of an ADC and DAC coupled to the same “system bus” that Petitioner relies on for limitation 1[A] (*i.e.*, “bus interfaces”, “I²C bus”, Pet., 13-14).

Petitioner tries to sidestep this deficiency by introducing a nested 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.

Third, Petitioner’s analysis misses the point. (Pet., 18.) That conversions 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[D] (Pet., 16)) can only being configured with an RF front end that is arranged with an ADC and a DAC 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 (A/D converter connected to down conversion and IF processing blocks and D/A converter separately connected to output of baseband processing block and 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 nothing to rule out possible configurations where any alleged (missing) DAC and/or ADC component possibly included in Tolonen's WDC 100 is not coupled to a "system bus," processor 300, and/or to an RF Front end. (Pet., 16-20.) For example, a wireless communication system could achieve digital-analog or analog-digital conversion functionalities (Pet., 18) using circuitry/component(s) having direct connections to components (*e.g.*, a processor) while not coupled to a system bus used for other communications.

The Petition's reliance on Tolonen's discussion in ¶59 does not rectify such deficiencies. (Pet., 19.) There, Tolonen explains that processor 300 and communications modules 310/312/320, etc. "*may* comprise separate components that are coupled together via one or more wired and/or wireless bus interfaces." (*Id.*) Even if one or more bus *interfaces* "may" be used, that does not necessarily mean those "components" must only be connected by a common *system bus* or that they necessarily include ADC and DAC components coupled to an RF front end and the same "system bus" coupled to a microprocessor as claimed. Indeed, even a single bus interface can connect multiple buses, which may provide dedicated communication paths to the "separate components" in Tolonen's modules 310/312/320. *Therasense Inc.*, 593 F.3d at 1332; *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295 (Fed. Cir. 2002).

Fourth, the Petition's other anticipation theory is equally flawed. (Pet., 20.) Petitioner alleges Tolonen teaches limitation 1[D] because Tolonen's long-range communication module allegedly communicates using 3G technologies and uses SDR. (Pet., 20 (citing Ex. 1005, ¶¶53, 89, 92.)

Petitioner's conclusion cannot support anticipation. Petitioner does not allege or demonstrate that Tolonen's SDR embodiments "explicitly" or "inherently" disclose the claimed RF front end and related ADC and DAC features in limitation 1[D]. *Analog Devices, Inc.*, Paper No. 43 at 11. Instead, Petitioner contends that,

while not disclosed, 3G chipsets somehow included “an RF front end coupled to an ADC and a DAC, which are coupled to a system bus to the processor running the SDR software.” (Pet., 20.) However, the Petition fails to allege such features relate to *the claimed* RF front end, ADC, DAC, or system bus in limitation 1[D]. 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[D] in context of the other limitations in claim 1. For example, Petitioner fails to present any evidence or arguments demonstrating how any “processor running the SDR software” is the same processor 300 coupled to the same alleged system bus in the same WCD 100 in the Figure 3 embodiment that the Petition relies upon to allegedly meet limitations 1[pre]-1[A]. (Pet., 12-14, 20.)

Moreover, Petitioner’s reliance on Tuttlebee I (Exhibit 1012) is misplaced as that extrinsic document does not support Petitioner’s conclusions. (Pet., 20 (citing Ex. 1003, ¶¶69, 77; Ex. 1012, FIGS. 1.4 and 1.5).) Specifically, Tuttlebee I (Exhibit 1012) does not show an RF Front end electrically coupled to both an ADC and a DAC, each electrically coupled to a system bus that is also coupled any “processor running the SDR software” as Petitioner alleges. Instead, as shown below, Figures 1.4 and 1.5 depict an RF section, with Figure 1.5 identifying a “front end” that

transmits information to an “A/D” in a signal processing section that is separately connected to a D/A connected to an I/O device separate from the RF Section.

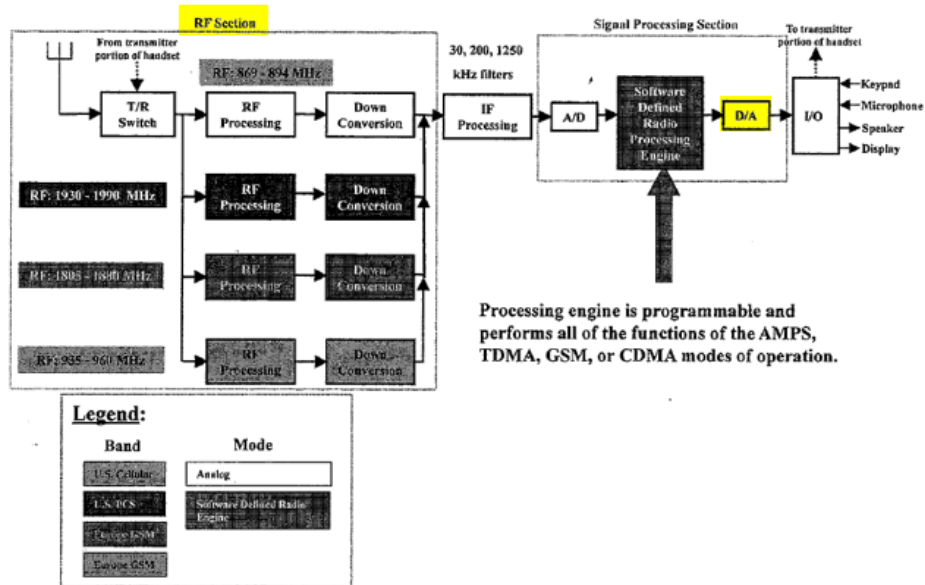


Figure 1.4 SDR Evolution – stage 3: A/D, D/A, and signal processing chips currently have the capacity to perform this IF and baseband processing. Reproduced by permission of Cingular Wireless.

(Ex. 1012, 10 (Fig. 1.4) (annotated).)

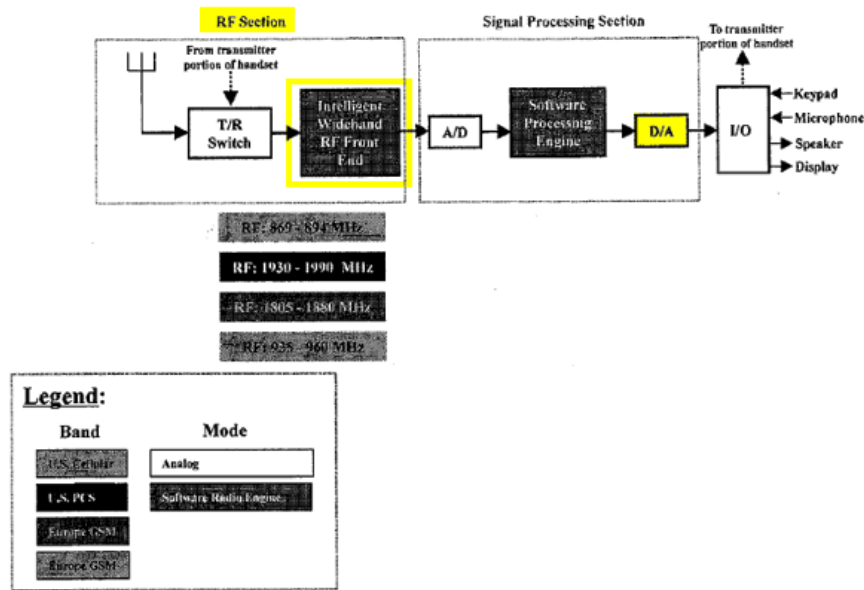


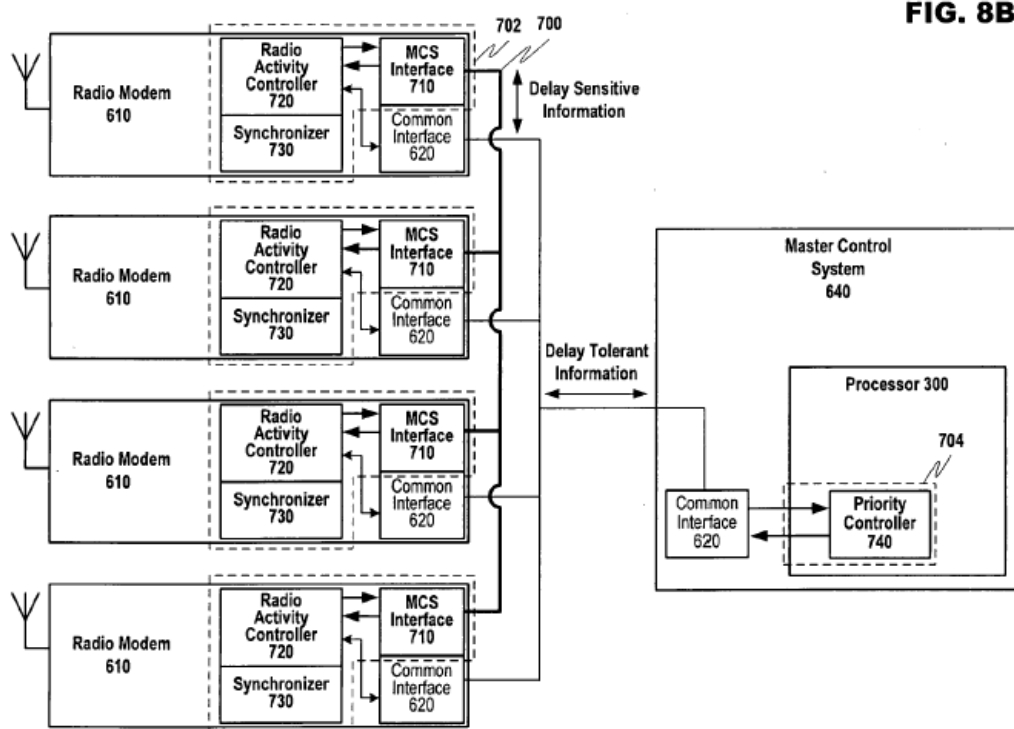
Figure 1.5 SDR Evolution – stage 4: future product as technology evolves in A/D capabilities, etc.
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(Ex. 1012, 11 (Fig. 1.5) (annotated).) Neither of these figures show an arrangement like that alleged by Petitioner (Pet., 20).

b) Limitation 1[A]

Petitioner suggests Tolonen's discussion of an I²C bus used in the Figure 8A embodiment meets the claimed "system bus" in limitation 1[A]. (Pet., 14 (citing Ex. 1005, ¶¶71-73, FIG. 8A).) However, Figure 8 "discloses an alternative configuration in accordance with at least one embodiment of the invention" requiring a "distributed multiradio control system (MCS) 700" that is "introduced into WCD 100." (Ex. 1005, ¶71; *id.*, ¶¶27-28.) It is MCS 700 that "in this example, may be implemented" using an I²C bus. (*Id.*, ¶72) There is no disclosure supporting "the use of an I²C bus to connect the processor 300 with communication modules

310, 312, 320, and 340” as Petitioner represents. (Pet., 13-14.) Indeed, the arrangement in Figure 8B allows synchronization via direct links between “distributed control components 702 in radio modems 610.” (Ex. 1005, ¶¶74.) As shown below, the MCS 700 that may include the I²C bus interconnects radio modems 610 and not a processor 300 as represented by Petitioner. (*Compare* Pet., 14 *with* Ex. 1005, ¶¶72-74, FIGS. 8A-8B.)



Thus, the I²C bus cannot disclose the “system bus” recited in limitation 1[A]. Moreover, the MCS 700 is configured for use with a distributed multiradio control system, which is different from the WCD 100 implemented for the Figure 3 embodiment mapped to the “EIR terminal” of limitation 1[pre]. (Ex. 1005, ¶¶70-

74; Pet., 12-13.) Petitioner offers no argument or evidence establishing that the alternative configuration of Fig. 8A relates to, operates with, or can be otherwise combined with the Figure 3 embodiment.¹² (Pet., 13-14.)

3. The Petition's Alternative Obviousness Theories Are Deficient

In Ground 1, Petitioner alternatively asserts claims 1–23 are “obvious over Tolonen in view of a POSITA’s knowledge.” (Pet., 3.) Yet the Petition only raises obviousness for limitation 1[D] (*id.*, 20-21) and claim 8 (*id.*, 37-38). In these limited cases, Petitioner’s obviousness theories are deficient and 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

¹² While Tolonen refers to “processor 300” in both embodiments (and others) (Ex. 1005, ¶72), the alternative configuration of Figs. 8A-8B requires different components and functionalities not attributed to the Figure 3 embodiment. These include a master control system 640, MCS interfaces 710, common interfaces 620, synchronizers 730, radio activity controllers 720, radio modems 710, priority control 740, MCS 700, and control components 702 and 704.

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) (denying institution of a petition that merely made a “conclusory assertion that a person of ordinary skill in the art would have combined the references, without sufficient explanation regarding how the combination would work or why an ordinarily skilled artisan would have made the combination”); *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, 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)).

Petitioner’s obviousness theories for limitation 1[D] and claim 8 are premised on conclusions that claimed features missing from Tolonen would have been obvious because the missing features are “straightforward” (Pet., 37) or would have been derived from a “finite number of identified solutions” (Pet., 20-21). In both instances, Petitioner does not provide any evidence demonstrating the features missing from Tolonen were disclosed in the prior art or offers insufficient

explanation regarding how any asserted modification to Tolonen 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 limitation 1[D], Petitioner simply offers an unsupported allegation that it would have been obvious to use an SDR GSM chipset with electrically coupled ADC and DAC, RF front end, and processor features allegedly because doing so would have purportedly involved a “finite number of solutions.” (Pet., 20-21.) Petitioner then baldly concludes that “a POSITA would have reasonably expected the combination to yield” use of such an “SDR GSM chipset” without any evidence showing such features in the prior art. (*Id.*) 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 Board with 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 (internal quotation marks and citation omitted).

The same is true for claim 8. (Pet., 37-38). There, the Petition does not even identify with particularity what claimed features are missing from Tolonen. Simply stating “to the extent Tolonen does not expressly connect these dots” (Pet., 37)

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 two sentence obviousness inquiry relates to Tolonen's failure to disclose a "user interacting with the bar-code scanning application [to] cause the WCD to determine a wireless communication protocol" (Pet., 37), the Petition only presents a self-serving conclusion without providing any evidence of such missing features actually being disclosed in the prior art. (*See e.g.*, Pet., 37-38 ("it would have been obvious and straightforward application to dynamically select one of these protocols in response to scanning a bar code").

Moreover, the cited evidence does not support Petitioner's conclusion. Petitioner relies on its expert's opinions in ¶¶98-99 to support the alleged notion that Tolonen's WCD is "operable to dynamically select different communication protocols." (Pet., 37-38 (citing Ex. 1003, ¶¶98-99).) However, ¶98 of Ex. 1003 relates to claim 6 and is irrelevant to the limitations of claim 1 (Ex. 1003, ¶98), and ¶99 relies on the expert's opinions from "claims 4(b) and 5(b)." (*Id.*, ¶99.) The expert's discussion of claim 4(b) does not discuss dynamically selecting different

communication protocols (*id.*, ¶90) and his discussion of claim 5(b) (*id.*, ¶¶92-94) relates to selecting a “wireless communication network and frequency channel” not wireless communication protocols—which is the basis for Petitioner’s obviousness position for claim 8.

Nor does Petitioner’s rationale make sense. Petitioner makes an unsubstantiated leap 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., 37-38.) However, Petitioner admits that using a bar code scanner in Tolonen’s WCD relates only to ““close proximity communications.” (Pet., 37; 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

¹³ As exemplified in the ’784 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 EIR terminal by, e.g., “scanning a pre-defined bar code” or interactions with a GUI or a hardware implemented control. (Ex. 1001, 9:24-32; *id.*, 9:10-23.)

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., 37.)

Lacking sufficient rationale, the Petition fails to demonstrate a reasonable likelihood of prevailing on Petitioner's obviousness theories regarding limitation 1[D] and claim 8 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 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., 20-21, 37-38.) 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 or 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, 20-21, 37-38) improperly attempts to fill the gaps in Tolonen and thus cannot support a finding of obviousness, even under the reasonable likelihood standard for institution.

D. Grounds 2 Is Deficient

In addition to the reasons discussed above in §IV.A-B, Ground 2 cannot support institution because it substantively fails to address all limitations in claims 1-23 and fails to present a viable basis to support Petitioner’s obviousness theories.

1. Ground 2 Does Not Address Limitation 1[C] or Claims 3-17, 21-23

Petitioner’s “Statutory Grounds for Challenge” represents “Claims 1-23 are obvious over Tolonen in view of Katz.” (Pet, 3; *see also id.*, 44.) However, for Ground 2, Petitioner presents no argument or evidence establishing how the Tolonen, Katz, or the combination thereof meets limitation 1[C] or claims 3-17, 21-23. (Pet., 44-59.)

The Petition states that “the discussion that follows specifically maps limitations 1[D] through 1[J], claims 2, 18-20.” (Pet., 48.) Petitioner also only references limitations 1[A]-1[B] in asserting it would have been obvious to include/substitute Katz’s Blackfin processor and memory into Tolonen’s WDC. (*Id.*, 48-49.) The Petition’s follow-on discussions focus on limitations 1[D]-1[I]. (*Id.*, 49-55.) However, Ground 2 never identifies limitation 1[C] (including via any

reference back to any other analysis in the Petition for this limitation) or addresses or demonstrates how Tolonen in view of Katz discloses or renders obvious the EIR device recited in limitation 1[C]. Moreover, following its discussion of claim 1, the Petition only addresses claims 2 and 18-20 and fails to address claims 3-17 and 21-23. (*Id.*, 55-59.) It would be improper for the Board to assume Petitioner's intentions for limitation 1[C] as well as its intentions for claims 3-17 and 21-23, as it is Petitioner's burden from the onset to demonstrate with particularity unpatentability of the challenged claims. *Harmonic Inc.*, 815 F.3d at 1363.

For independent claim 18, the Petition states "claim 18 and claim 1 have the same preamble; claim limitations 18[A]-[C] are identical to claim limitations 1[A]-1[C]; and claim limitation 18[E] is identical to claim 3" and that "only claim limitation 18[D] is separate and unique from prior analyzed claim limitations." (*Id.*, 56.) Petitioner cites to analysis in §§IV.B.1-B.3 of Ground 2 of the Petition to support its assertion that the Tolonen/Katz combination "teach[es] claim 18 for the same reasons." (*Id.*) Further, Petitioner admits that "[t]his section will only discuss claim limitation 18[D]." (*Id.*)

The Petition's challenge of claim 18 (and thus its dependent claims 19-23) is deficient for at least two independent reasons. First, for limitation 18[C], the Petition purports to rely on analysis for limitation 1[C]. However, as discussed above, the Petition never addresses limitation 1[C] and thus Ground 2 fails to demonstrate how

the prior art combination meets limitation 18[C]. Second, for limitation 18[E], the Petition purports to rely on its prior analysis for claim 3. However, Petitioner never addresses claim 3 in Ground 2 (*see supra*) and thus, Ground 2 also fails to demonstrate how the prior art combination meets limitation 18[E].

By completely ignoring limitation 1[C] and claims 3-17, 21-23, and those discussed for claim 18, the Petition fails to identify, with particularity, evidence sufficient to establish a reasonable likelihood that Petitioner will succeed in challenge of claims 1-23 in Ground 2. Accordingly, Ground 2 cannot support institution. *See SAS Inst. Inc. v. Iancu*, U.S. 138 S. Ct. 1348, 200 (2018) (“the statute envisions that a petitioner will seek an inter partes review of a particular kind—one guided by a petition describing ‘each claim challenged’ and ‘the grounds on which the challenge to each claim is based[,]’” quoting 35 U.S.C. § 312(a)(3)).

2. Petitioner's Asserted Obviousness Theories and Challenges to Claims 1, 2, And 18-20 in Ground 2 Are Deficient

The Petition begins Ground 2 with a section framing Petitioner's alleged “[m]otivation to [c]ombine” Tolonen with Katz. (Pet., 44-48.) Petitioner bases its obviousness inquiry on a condition that “a POSITA reading Tolonen *needed to find and implement hardware components corresponding to Tolonen's communication*

sections (also referred to as ‘communication modules’).” (Pet., 47.)¹⁴ Petitioner baldly claims a POSITA “would have simply chosen to use the AD9861 mixed-signal front end (‘MxFE’) described in Katz.”¹⁵ (Pet., 48.) From there, the Petition’s rationale is limited to generic positions that use buzz words to manufacture support for its asserted Tolonen-Katz combination. (Pet., 47-48 (“POSITA would have combined Tolonen with Katz according to [a] known method and would have realized predictable results”), 48 (“POSITA would have realized the predictable results of Katz’s MxFE communicating with radio frequency signals”).)

However, “conclusory assertion[s] that a person of ordinary skill in the art would have combined the references, without sufficient explanation regarding how the combination would work or why an ordinarily skilled artisan would have made the combination” is insufficient to support obviousness. *Universal Imaging Indus.*, IPR2019-01369, Paper 7 at 19-20. To satisfy its burden, Petitioner must “provide

¹⁴ Petitioner associates these “communication modules” to Tolonen’s communication modules 310/312/320. (Pet., 49 (“Tolonen discloses communication modules 310, 312, 320 (‘communication modules’) that transmit and receive radio signals.”))

¹⁵ Petitioner’s expert repeats the same unsupported statement before moving on to other conclusions concerning the alleged “chosen AD9861.” (Ex. 1003, ¶128).

persuasive evidence or argument concerning what differences exist between [the prior art] and the claimed invention, what is the modification of [the prior art] Petitioner proposes, and why the proposed modification would have been obvious.” *Tyco Fire Prods. LP v. Victaulic Co.*, IPR2016-00279, Paper 11, at 15-18 (PTAB June 14, 2016) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966)). *See also TRE Milano, LLC v. TF3 Ltd.*, IPR2015-00649, Paper 7 at 13 (June 22, 2015) (denying institution because obviousness analysis is conclusory and unsupported); *Mipox Corp. v. Int’l Test Solutions, Inc.*, IPR2017-00869, Paper 8 at 14-15 (Sept. 1, 2017) (“[c]hallenging claims under an obviousness alternative to anticipation does not relieve Petitioner of the burden of articulating ‘reasoning with some rational underpinning’ to show obviousness”); *Adaptics Ltd.*, IPR2018-01596, Paper 20 at 20; *KSR Int’l Co.*, 550 U.S. at 418; 37 C.F.R. § 42.22(a)(2).

Inconsistent with such requirements, Petitioner’s underlying rationale is conclusory, unsupported, and fails to address the requisite factors to support even a reasonable likelihood of success that the obviousness challenges in Ground 2 will succeed.

At the outset, the evidence does not support Petitioner’s motivation to combine. For example, Petitioner relies on its assertion that “because Tolonen and Katz both describe multiprotocol communication interfaces (e.g., Tolonen’s communication modules and Katz’s MxFE) the POSITA would have had a

reasonable expectation of success in combining the references. (Pet., 48.) Petitioner offers no evidence for its assertion that Katz describes the MxFE as a “multiprotocol communication interface.” (*Id.* (citing Ex. 1003, ¶¶124-125, which discuss Tolonen—not Katz).) Nor does Katz explicitly describe the MxFE as a multiprotocol communication interface. Instead, the MxFE is an example of the mixed signal block in an RFID reader that communicates with RFID tags. (Ex. 1006, 1, 3.) Other components outside the MxFE in the RFID reader may provide other forms of communications. (*Id.*, 2 (back-end server connectivity via IEEE 802.3 or IEEE 802.11 Ethernet networks separate from RF and mixed signal front end communicating with RFID tags), 4 (Figures 4-6 (showing Ethernet and Radio network blocks separate from the RF and mixed-signal front end communicating with RFID tags).) Thus, Katz does not support Petitioner’s stated reasons for combining Tolonen and Katz.

The other problem with Petitioner’s theory is that, for limitation 1[D], it relies on Tolonen’s “communication modules 310, 312, 320 (‘communication modules’)” (Pet., 49), which would not be compatible with the Katz system as proposed by Petitioner. The identified communication modules 310/312/320 in Tolonen relate to long-range, broadcast, and short-range communications. (Pet., 45; Ex. 1005, ¶¶52, 55). Katz, on the other hand, describes RFID readers. (Ex. 1006, 1-5; Pet., 9.) The MxFE referenced by Petitioner for limitation 1[D] (Pet., 47-48) describes

an example of the mixed signal portion of an RFID reader. (Ex. 1006, 1 (Figure 1), 3 (“[f]or communicating with a tag, the *mixed-signal front-end* (MxFE) IC forms the interface of interest”), 4 (Figures 4-6).) Tolonen distinguishes the long-range and short-range communications in modules 310/312/320 from close-proximity communications module 340, which Petitioner acknowledges relates to “RFID, bar code reading, etc.” (Pet., 45; Ex. 1005, ¶56.) This evidence undermines Petitioner’s reasons for combining Tolonen and Katz (e.g., inserting Katz’s MxFE into communication modules 310/312/320).

Namely, because Tolonen’s close-proximity communication module 340 addresses RFID reader and bar code scanning features, implementing Katz’s MxFE (configured for RFID reader features) in communication modules 310/312/320 (that address other types of communications) as advocated by Petitioner would conflict with the stated teachings/purpose of Tolonen’s arranged components in WCD 100. (Ex. 1005, ¶¶41, 52-56.) The Petition does not consider this issue or explain why a POSITA would look to Katz to implement the MxFE in communication modules 310/312/320, where Tolonen’s WCD 300 already has a separate module 340 configured to handle RFID reading and bar code scanning communications. (Pet., 44-55.)

Petitioner’s obviousness theory is also deficient because it relies on Tolonen’s SDR embodiments and Petitioner’s expert incorrect assertion that “Katz describes a

Blackfin processor that is operable to control the different functionalities of a software defined radio configured to operate as a RFID reader.” (Ex. 1003, ¶¶125-126.) The Petition does not show where and how Katz explicitly discloses such features. (Pet., 44-59; *see generally* Ex. 1006.) Nor does Katz state that the mixed-signal front end “is designed to ‘cover the mixed signal front end needs of multiple wireless communication systems’” as Petitioner represents. (Pet., 46 (citing Ex. 1006, 3); Ex. 1003, ¶126.) This missing evidence, combined with the fact that Katz does not incorporate any of the documents Petitioner submits as Exhibits 1007-1009 (*supra* §IV.B), undermines Petitioner’s obviousness theory.

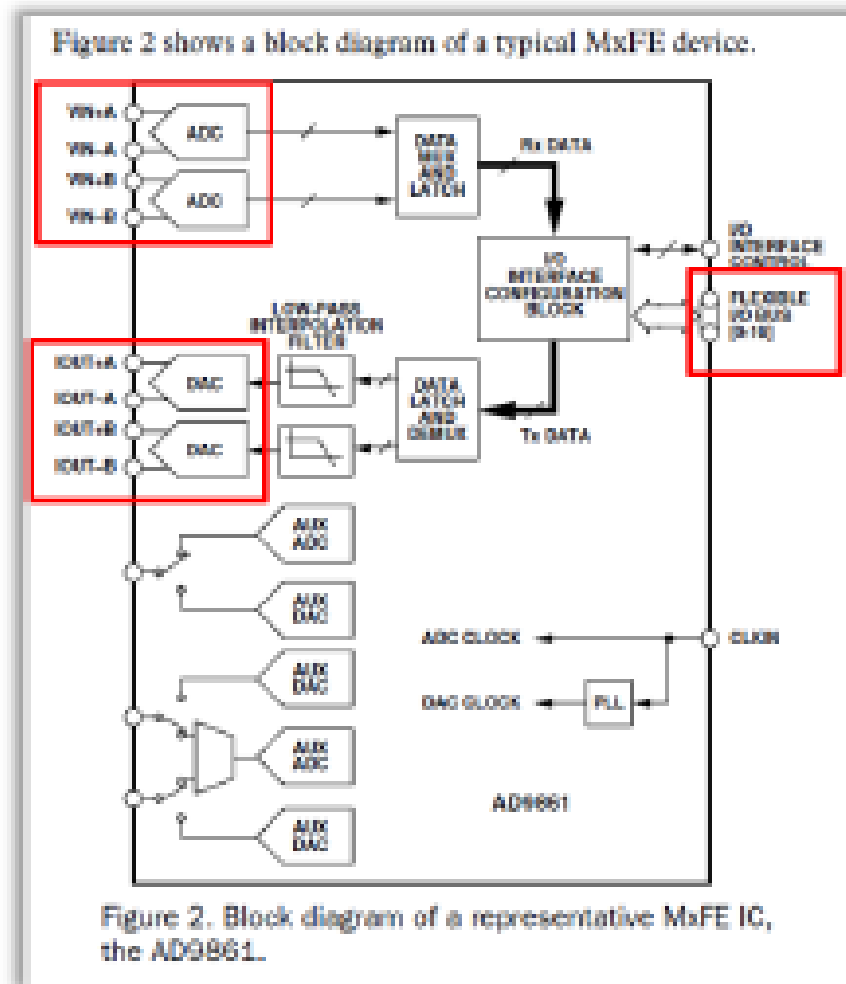
Moreover, for **limitation 1[D]**, the Petition does not clearly articulate, identify, or explain how Tolonen is combined with Katz to meet all of the elements in limitation 1[D]. (Pet., 49-51.) In discussing this limitation, Petitioner appears to rely on Tolonen’s modules 310/312/320 as the “wireless communication interface,” as Petitioner did “for limitation 1[D]” in Ground 1. (Pet., 49 (citing Petition at “Section V.A.1.e”).) Petitioner’s remaining discussion for limitation 1[D] focuses solely on Katz. (Pet., 49-51.) In doing so, Petitioner also associates Katz’s RFID reader to the claimed wireless communication interface. (Pet., 50 (“Katz discloses an RFID Reader that includes both an ‘RF and Mixed-Signal Front End’ (*i.e.*, *wireless communication interface*)” (emphasis by Petitioner).)

It is thus unclear whether Petitioner's theory involves a wholesale replacement of modules 310/312/320 with the MxFE as described in Katz (Ex. 1006), involves inserting the MxFE into Tolonen's modules 310/312/320, or relies on Katz's MxFE alone as the claimed "wireless communication interface."¹⁶ Petitioner's theory becomes more murky when considering it in context of Petitioner's challenges to claim 19, which references extrinsic material for the MxFE to address the "wireless communication interface" recited in that claim (Pet., 57), and to claim 20, which states "[i]mplementing *the entire interface, Katz's processor connects to the MxFE ...*" (*id.*, 57-58). In any event, the Petition fails to explain how Tolonen would have been modified or how Tolonen and Katz would have been combined in a way that results in an EIR terminal that includes all of the elements and features in claim 1, including the wireless communication interface as arranged in limitation 1[D].

This deficiency with the Petition becomes more apparent when considering Petitioner's discussions concerning the "ADCs and DACs" included in Katz's MxFE. (Pet., 50-51.) As alleged in the Petition, the MxFE is a "Front End," which Petitioner also points to for the claimed ADC and DAC features in limitation 1[D]. (Pet., 50-51 ("Katz's

¹⁶ Petitioner does not reconcile the double mapping issues introduced by pointing to both Tolonen's communication modules 310/312/320 and Katz's "RF and Mixed-Signal Front End" for the same claim feature ("wireless communication interface").

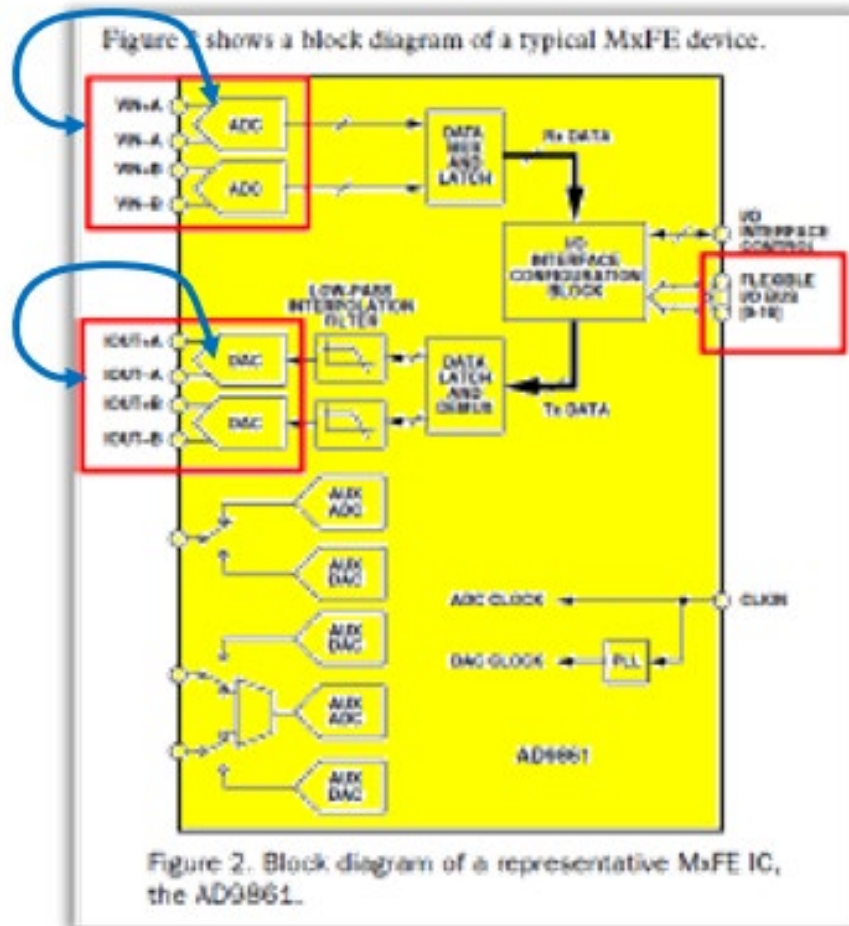
MxFE *includes* ADCs and DACs which are *electrically coupled to the RF Front* [end] (e.g., *VIN and IOUT*), and coupled to the I/O Bus"); Ex. 1006, 1 (Figure 1), 3, 4 (Figures 4-6 (“**RF and Mixed Signal Front End**”).



(Pet., 51 (showing Ex. 1006, FIG. 2 (annotated in original).)

Thus, the only mention of a “front end” in Katz referenced in the Petition is the MxFE, which according to Petitioner’s mapping (annotated below) results in the

MxFE (yellow) somehow coupling to itself (blue arrow) via VIN / IOUT to allegedly couple to the ADCs and DACs included in the MxFE. (Pet., 50-51.)



(Pet., 51 (Ex. 1006, 3, FIG. 2 (yellow and blue annotations added).)

Petitioner does not explain how such an arrangement meets limitation 1[D], which requires the claimed wireless communication interface to comprise an RF front end, which is electrically coupled to at least one of an ADC and a DAC, each of which is

electrically coupled to a system bus, which is, in turn, coupled to the microprocessor of limitation 1[A].¹⁷ (Ex. 1001, 19:4, 14-22.)

Other issues exist with Petitioner's purported mappings. For instance, Petitioner alleges it would have been obvious "to include or substitute Katz's blackfin processor and memory into Tolonen's WDC, claims 1[A]-1[B]" to "implement Katz's RF Front end."¹⁸ (Pet., 48-49.) Yet, it is unclear whether the Petition maps such a blackfin processor to limitation 1[A] or features in limitation 1[D], or both. Assuming Petitioner is suggesting to include a blackfin processor in Katz's front end (which is the MxFE), that would be contrary to Katz's disclosures, which repeatedly shows a blackfin processor separate from the RF and mixed-signal front end. (Ex. 1006, 3-4, Figures 4-6.) If, however, Petitioner is suggesting that Katz's blackfin processor would somehow be "include[d]" or "substitute[d]" in Tolonen's WDC, the Petition does not explain what component would "include," or would be "substitute[d]" by, the blackfin processor and thus fails to present any rationale underpinnings to support such a modification. Nor does Petitioner explain

¹⁷ This arrangement is consistent with examples described in the '784 patent, which include a RF front end electrically coupled to a separate ADC and DAC. (*See e.g.*, Ex. 1001, FIG. 3, 6:59-7:35.)

¹⁸ Petitioner does not identify where the claimed memory coupled to the microprocessor is found in Katz (Ex. 1006). (Pet., 49.)

how the WDC would successfully operate with the blackfin processor in a manner consistent with Tolonen, including how such an “include[d]” processor would work with other components (such as processor 300). Simply stating such an implementation “would have been obvious” (Pet., 48) does not make it so, and certainly cannot support a finding of obviousness, even under the reasonable likelihood standard. *Ioxus, Inc.*, IPR2019-01178, Paper 8 at 10; *TRE Milano*, IPR2015-00649, Paper 7 at 13; *Mipox Corp.*, IPR2017-00869, Paper 8 at 14-15.

The Petition's challenge to **limitation 1[E]** also improperly relies on a conclusory statement of obviousness. Petitioner first asserts “[i]n the same way” as Tolonen discloses a processor controlling overall device operation, “Katz discloses Analog's blackfin processor” and then alleges “[t]o implement Katz's RF Front end, it would have been obvious to implement or substitute Katz's baseband encoding software and/or Blackfin processor for Tolonen's.” (Pet. 52.) The Petition does not identify any particular feature in “Tolonen[]” that would have been allegedly “implement[ed]” or “substitute[d],” identify any supporting evidence how or why such an implementation/substitution would have been made, or otherwise present any sufficient rational underpinnings to support Petitioner's conclusion. The “unexplained quotations” from Katz relied on by Petitioner (Pet., 52) does not meet the particularity requirements of an IPR petition. *Daihen Corp.*, IPR2019-00248, Paper 11 at 12-13.

Moreover, Petitioner does not demonstrate why a POSITA would even be motivated to implement or substitute Tolonen's processor with Katz's blackfin given that Tolonen's processor already purportedly provides the same features found in limitation 1[E] as Petitioner contends. (Pet., 21 (alleging Tolonen's processor 300 provides the features in limitation 1[E]), 52 (contending Katz discloses its blackfin processor for controlling overall device operations "[i]n the same way" as Tolonen's processor).) *See 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").

Petitioner's analysis for limitation 1[E] also improperly diverges from the MxFE features the Petition relies upon to support its purported motivation to combine. (Pet., 46-48.) Specifically, rather than citing to the MxFE features in Katz, for limitation 1[E], Petitioner relies on extrinsic disclosures regarding the ADSP-BF531 (Pet., 52-53 (relying on Ex. 1007)), which is not incorporated by Katz for reasons explained (*supra* §IV.B).

Similar issues infect Petitioner's challenges to **limitations 1[F]-1[I]**. Regarding **limitations 1[F]** and **1[I]**, Petitioner again presents conclusory obviousness statements about "implement[ing] or substitute[ing]" Katz's alleged "encoding software and/or Blackfin Processor for Tolonen's" (Pet., 53) followed by quotations from Katz without identifying what is missing from Tolonen to motivate

any change or otherwise providing any rationale underpinnings to support such a conclusion (*id.*, 53-56). Petitioner's challenges to **limitations 1[G]** and **1[H]** merely quote portions from Katz without explaining how any of those features meet the claimed limitations in context of claim 1. (Pet., 54). Nor does Petitioner explain how Katz's teachings would have been incorporated into or otherwise used to modify Tolonen in context of the challenged claims. (*Id.*)

Petitioner's challenges to **claims 2 and 18-20** are likewise deficient. (Pet., 55-59.) **Claim 2** depends from claim 1, and thus is deficient for the same reasons explained above claim 1. Similarly, because Petitioner relies on its analysis for claim 1 in Ground 2 to challenge **claim 18** (Pet., 56) and **claims 19-20** depend from claim 18, the Petition's challenge to those claims are deficient for the same reasons explained above for claim 1 (§IX.D.1). Moreover, Petitioner's challenges to claims 2 and 18-20 do not support institution for the reasons stated in §§IV.A-B. Petitioner's challenge to **claim 19** is further deficient since it merely quotes from extrinsic Exhibit 1009 without reconciling the issues noted above for limitation 1[D], or explaining how the MxFE in Ex. 1009 discloses a "multi-protocol" chipset. (Pet., 57.)

For the above reasons, Ground 2 does not support institution.

E. Ground 3 Is Deficient

In addition to the reasons in §§IV.A-IV.B, institution based on Ground 3 should be denied.

1. Ground 3 Improperly Relies On Extrinsic Material Outside Of Katz

Ground 3's anticipation challenge of claim 1 is deficient because it improperly relies on disclosures outside of Katz. (*See e.g.*, Pet., 61 (relying on Ex. 1007), 62-63 (Ex. 1007) 66 (Ex. 1008), 66-67 (Atheros (Ex. 1015); *supra* §IV.B). Thus, for reasons discussed in §IV.B, Petitioner's anticipation ground under Katz fails and cannot support institution. *Net Moneyin*, 546 F.3d at 1371.

2. Ground 3 Improperly Relies On Obviousness In Petitioner's Anticipation Challenge of Claim 1

Although Ground 3 asserts unpatentability based on anticipation (Pet., 3, 60), for limitation 1[D], Petitioner relies on obviousness to fill gaps in Katz. (Pet., 66-67.) 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. By relying on obviousness, 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., 66-67; Ex. 1003, ¶166) 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. *Facebook, Inc.*, IPR2017-01524, Paper 7 at 19.

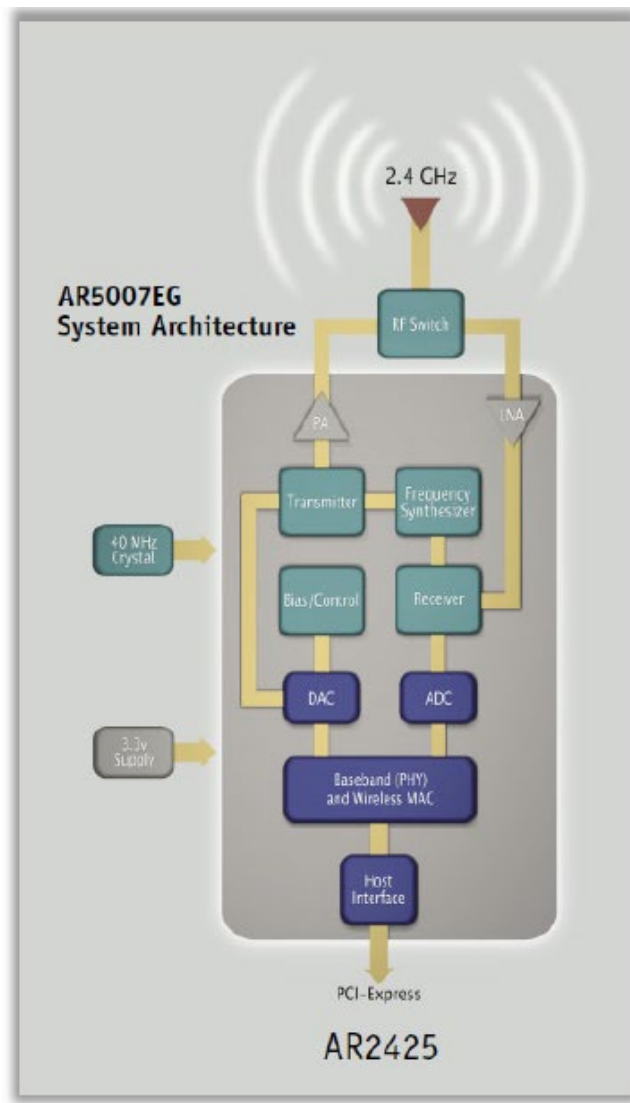
3. Ground 3 Fails To Demonstrate How Katz Discloses Each Limitation In Claims 1-2

Regarding **limitation 1[A]**, Petitioner’s fails to articulate whether its reference to a “core/system bus” in Ex. 1007 or the alleged “high bandwidth buses” is the claimed “system bus” of limitation 1[A]. “[U]nexplained quotations” does not meet the particularity requirements for an IPR petition. *Daihen Corp.*, IPR2019-00248, Paper 11 at 12-13. Additionally, Petitioner fails to follow either of these assumed “system bus” mappings to limitation 1[D], which recites the same claimed “system bus.”

As to **limitation 1[D]**, Petitioner does not mention, much less demonstrate, how Katz discloses the claimed “wireless communication interface.” (Pet., 66-67.) 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 RF front end electrically coupled to an ADC/DAC. Petitioner does not even 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., 66-67 (citing Ex. 1003, ¶¶164-165).)

The rationale offered by Petitioner's expert highlights Katz's lacking disclosure. Namely, Petitioner's expert relies on extrinsic material from Atheros (Ex. 1015) to argue that Atheros shows an "RF front end electrically connected to a DAC and an ADC." (Ex. 1003, ¶165.) However, Petitioner's expert does not identify what in Atheros (Ex. 1015) is the alleged RF front end. (*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.



(Ex. 1003, ¶165.)

Furthermore, Petitioner does not demonstrate how the “coupl[ing] by bus” allegedly found in such 802.11 chipsets results in a coupling with the same “system bus” that Petitioner maps to limitation 1[A]. (Pet., 61-62 (referring to Ex. 1007’s discussion of a core/system bus within a BF531 processor), 66.) This alone defeats

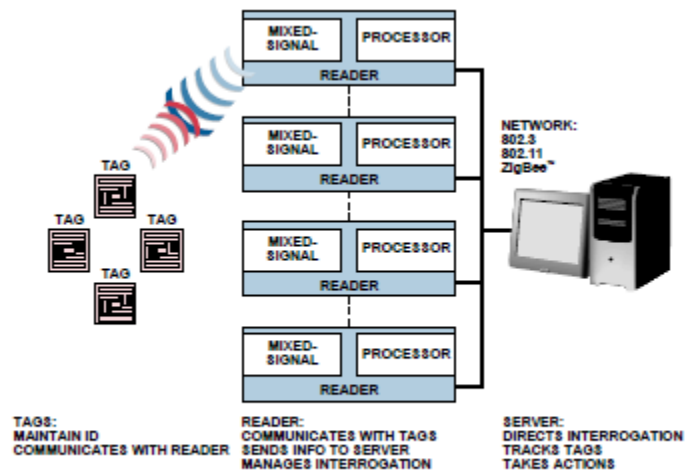
Petitioner's anticipation theory for limitation 1[D] and undermines its challenge of limitation 1[A]. (*See supra* regarding limitation 1[A].)

For **limitation 1[C]**, Petitioner maps a camera to the claimed EIR device of limitation 1[C]. (Pet., 65-66 (“the camera (e.g., EIR device)”)). However, Katz only mentions in some instances, a camera can “be connected to an RFID reader.” (Pet. 65.) This statement does not mean such a camera is part of the “RFID tag reading system,” which Petitioner maps to the claimed EIR terminal of limitation 1[A]. (Pet., 60-61.)

Regarding **limitations 1[G]-1[H]**, Petitioner relies on conclusory discussions from its expert (not Katz) to present assumptions about an 802.11 chipset receiving encoded data. (Pet., 68-69.) Yet, Petitioner never articulates how or whether Katz explicitly or even inherently discloses the features in limitations 1[G] or 1[H]. (*Id.*) Even assuming inherency, Petitioner offers no evidence demonstrating that claimed features are necessarily present in Katz, and thus Petitioner's challenge fails as a matter of law. *Therasense Inc.*, 593 F.3d at 1332; *Analog Devices, Inc.*, IPR2020-01597, Paper No. 43 at 11.

For **limitation 1[I]**, 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., 69 (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[I], that software would still need to be executed by the “microprocessor” to be relevant to limitation 1[E]. (*See e.g.*, Pet., 67; Ex. 1001, 19:23-25.) Yet, Katz actually states that the separate “server-based system” at the back-end “maintains and updates the tag database” and “generat[es] alerts.” (Ex. 1006, 1 (first paragraph).) As shown in Figure 1 of Katz (below), the server-based system is 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., 70 (citing Ex. 1006, 2).) Petitioner’s assumptions and conclusions are misplaced.

First, Petitioner’s rationale is at odds with Petitioner’s reliance on the Atheros document (Ex. 1015) to support its challenge to limitation 1[D]. (Pet., 66-67.) There, Petitioner argues that Katz’s alleged 802.11 chipset is configured similar to the Atheros chip in Ex. 1015. (*Id.*) Yet, Ex. 1015 shows that the Atheros “chip” supports modulation such as BPSK, QPSK, DBPSK, and DQPSK. (Ex. 1015, 2.) Under Petitioner’s analysis for limitation 1[D], 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 RFID system is the claimed “EIR terminal” of limitation 1[pre] (Pet., 60-61, 66), Katz’s purported “EIR terminal” would then include dedicated hardware components configured to implement at least “modulation,” according to Petitioner’s Ground 3 theories. This consequently defeats Petitioner’s anticipation challenge to claim 2.

Moreover, Petitioner’s allegations miss the requirement that such components must be “configured to implement at least one” of the listed functions in claim 2.

(Pet., 70.) Thus, on its face, Petitioner's challenge to claim 2 fails and cannot support institution.

F. Ground 4 Is Deficient

1. Ground 4 Does Not Demonstrate How The Katz-Ishizu Combination Discloses The Limitations Of Claim 1, From Which Claims 3-8 Depend And Which Petitioner Relies Upon For Challenging Claims 9-23

Ground 4 asserts claims 3-23 are obvious over Katz in view of Ishizu (Pet., 3, 70), but does not demonstrate how Katz/Ishizu meets independent claim 1. (Pet., 70-86.) While **Ground 3** presents a distinct challenge to claim 1 under Katz (Pet., 60), **Ground 4** does not rely on any of the Petition's analysis or evidence presented in Ground 3 to demonstrate how Katz and/or Ishizu meet claim 1.¹⁹ (Pet., 73-86.) This deficiency infects Petitioner's challenges to claims 3-23 since claims 3-8 depend from claim 1 and Petitioner relies on similarities between limitations in claims 1 and independent claims 9, 15, and 18 (Pet., 81, 83). Consequently, by not addressing claim 1, Petitioner failed to meet its burden to demonstrate how Katz in

¹⁹ The only reference in Ground 4 to Petitioner's Ground 3 analysis is for claims 8, 15, and 18. (Pet., 80 (citing only VII.A.1.d), 81 (citing VII.A.1 (only for "limitations 1[A]-1[E]" in context of "15[A]-[E]"), 83 (only for limitations 1[A]-1[C] and [E] in context of "18[A]-[C] and [E]"). See *infra* §§IV.F.4-IV.F.5.

view of Ishizu meet all of the limitations of claims 3-23. Thus, Ground 4 cannot support institution.

There are other reasons why Ground 4 cannot support institution.

2. Claims 3-8

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., 71.) Ishizu describes the “communication terminal” and “communication network reconfiguration management means” in connection with Figures 1-2 (below).

FIG. 1

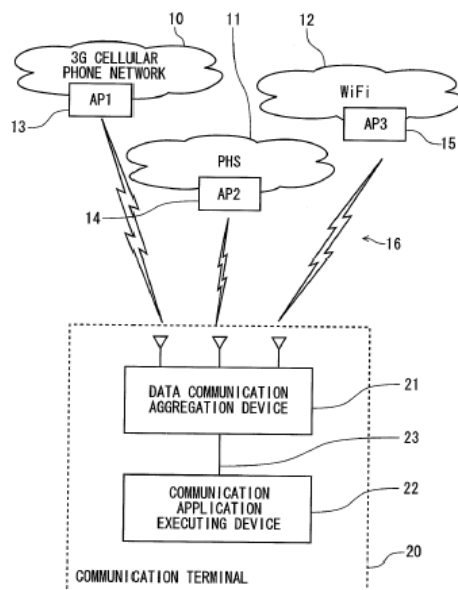
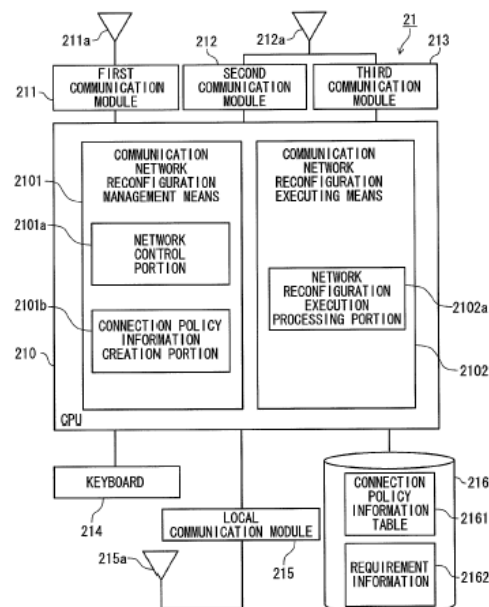


FIG. 2



(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 is “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 its disclosed 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., 72.)

However, Petitioner does not explain how implementing such features from Ishizu could be achieved using a Blackfin processor in Katz’s RFID reader device. (*Id.*) Nor does Petitioner provide any evidence or analysis that discloses/suggests Ishizu’s integrated arrangement of processing hardware and 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., 72.) 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 an implementation was 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., 72-73) 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 3-8, each of which rely on Ishizu (Pet., 73-80), Petitioner has not satisfied its burden of proving obviousness in Ground 4. *See Universal Imaging Indus., LLC.*, IPR2019-01369, Paper 7 at 19-20.

3. Claims 9-14

Petitioner’s challenges to claims 9-14 rely on its analysis for claim 3 and its association with certain limitations in claim 1 (Pet, 81), and thus are deficient for the same reasons explained above in §§IV.F.1-2.

Moreover, Petitioner alleges independent claim 9 is “*anticipated by Tolonen* for the same reasons set forth for claims 1 and 3 above” and that dependent claims 10-14 “are *anticipated* by *Tolonen* for the same reasons set forth for claims 1, 3-8.” Clearly, Petitioner failed to meet its burden to establish how **Katz in view of Ishizu** meets claims 9-14. (Pet., 3, 70.)

Yet, even if considered, the Petition does not identify with particularity what reasons “for claims 1 and 3 above” support Petitioner’s stance of anticipation for

claim 9. Assuming Petitioner refers to its Ground 1 analysis, then Petitioner's challenge against claims 9-14 are defective for the same reasons above for Ground 1. (*Supra* § IV.C.)

Likewise, even if the reference to "Tolonen" is somehow interpreted as a reference to Katz, the Petition again fails to identify with particularity what reasons "for claims 1 and 3 above" support Petitioner's anticipation challenge of claim 9. Moreover, Grounds 2 and 3 involving Katz do not address claim 3 (Pet., 3, 49-70; *supra* §§IV.D-IV.E), which would infect Ground 4 under such an interpretation. Additionally, while Ground 4 involving Katz addresses claim 3 (Pet., 73), it does so in terms of obviousness in view of Ishizu. Therefore, neither ground supports "anticipation" of claim 9, which Petitioner represents requires features like claim 3. (Pet., 81.) The same problem exists for claims 10-14, where the Petition asserts are "anticipated by Tolonen for the same reasons set forth for claims 1, 3-8." (*Id.*)

4. Claims 15-17

Petitioner relies on its analysis for claim 1 from Ground 3 (Pet., 81 (citing Pet., VII.A.1) and claim 8 from apparently Ground 4 (*id.* (citing Pet., IX(*sic*).B.8).) Accordingly, Petitioner's challenge of claim 15 is deficient for the same reasons explained for claim 1 in §§IV.E.1-2. Claims 16-17 depend from claim 15 and thus are deficient for the same reasons. (Pet., 81-82.)

5. Claims 18-23

The Petition's challenge of **claim 18** in Ground 4 also relies on a combination with Ishizu (Pet., 83) and thus is deficient for the same reason explained above in §§IV.F.1-2. Moreover, Ground 4 is deficient for similar reasons for claim 18 regarding Ground 2. Petitioner again relies on analysis for limitation 1[C] to meet limitations 18[C]. (Pet., 83.) However, as explained, the Petition does not address limitation 1[C] in its Katz-based challenges (*supra* §IV.D.1, §IV.E) and so for similar reasons, Ground 4 fails to demonstrate how limitation 18[C] is met.

Also, Petitioner represents that “claim limitations **18[A]–[C]** *and [E]* are *identical* to claim limitations **1[A]–[C]** and **[E]**.” (*Id.*, 83.) However, limitation 18[E] is not “identical” to limitation 1[E]. (Ex. 1001, 19:23-25 (1[E]), 22:21-28 (18[E]).) Petitioner's mischaracterization aside, given Petitioner relies on its arguments for claim 1 (Pet., 83 (citing Pet., Section IV.A.1)), which *does not address* the features recited in limitation 18[E], Petitioner has failed to meet its burden in establishing a reasonable likelihood that Petitioner will succeed in its challenge to claim 18 in Ground 4.

Claims 19-23 depend from claim 18, and thus are deficient for the same reasons above for claim 18. Ground 4's challenges to claims 19-20 are also deficient because they rely on Ex. 1007 and the premise that the “AD9861 MxFE” (Ex. 1009) is “incorporated into Katz,” which is not true. (*Supra* §§IV.A-B; Pet., 84-85)

Further, Petitioner's challenge to claim 19 is further deficient because it simply recites from an extrinsic document without explaining how Katz (Ex. 1006) meets claim 19. (Pet., 84.) *Facebook, Inc.*, IPR2017-01524, Paper 7 at 19.

G. 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). Petitioner did not explain how Yeakley (US2007/0152058) applied by the examiner (Ex. 1002, 365-367), or any of the other prior art considered during prosecution (Ex. 1001, Cover), is not cumulative to the disclosures of Tolonen or Katz. (*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. 1002, 286, 301-302, 367), which tracks Petitioner's allegations here (*e.g.*, Pet., 18, 22, (arguing the claimed DAC/ADC features are inherently disclosed without corroborating evidence); *supra* §§ IV.C.1-2.) As such, discretionary denial is warranted given there are no material differences between the art/arguments here with those 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 18, 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, 13,993 words. This word count does not include the items excluded by 37 C.F.R. § 42.24.

Respectfully submitted,

Dated: April 18, 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 18, 2024 to the following:

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