Filed: August 16, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS
PETITIONER

v.

GENERAL ACCESS SOLUTIONS, LTD.
PATENT OWNER

Case No. IPR2023-00978[1]
U.S. Patent No. 7,230,931

PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY

[1] The Board joined Ericsson Inc. and Nokia of America Corporation as petitioners in this proceeding in IPR2024-00392 and IPR2024-00461, respectively.

TABLE OF CONTENTS

I. ARGUMENT 1

A. Petitioner Has Not Demonstrated that a POSA Would Have Combined Atsuta with Vornefeld. 1

1. Atsuta Utilizes an FDD Frame Structure. 1

2. Petitioner's Arguments that Atsuta is TDD Fail. 5

3. Petitioner Has Failed to Prove that a POSA Would Have Combined Atsuta's FDD System with Vornefeld's Incompatible TDD Frame Structure. 11

B. Petitioner Has Not Demonstrated that a POSA Would Have Combined Vornefeld with Goldburg. 19

1. The Petition's Motivation to Combine Analysis Was Premised on Goldburg's Disclosure of a TDD System. 19

2. The Petition's Motivation to Combine Analysis Was Limited to a Construction of "Sector" Rejected by the District Court. 23

C. Petitioner Has Not Demonstrated that a POSA Would Have Combined Youseffmir with Atsuta. 25

D. Petitioner's Characterizations of the Trial Record are Incorrect and Irrelevant 25

II. CONCLUSION 27

TABLE OF AUTHORITIES

Cases

Ariosa Diagnostics v. Verinata Health, Inc.,
805 F.3d 1359 (Fed. Cir. 2015) 22

Corephotonics, Ltd. v. Apple Inc.,
84 F.4th 990 (Fed. Cir. 2023) 21

Google LLC v. Nobots LLC,
IPR2022-00940 (PTAB Nov. 29, 2023) (Paper 38) 17

In re Magnum Oil Tools Int'l, Ltd.,
829 F.3d 1364 (Fed. Cir. 2016) 19, 24

Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.,
821 F.3d 1359 (Fed. Cir. 2016) 21

Netflix, Inc. v. DivX, LLC,
84 F.4th 1371 (Fed. Cir. 2023) 22

Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.,
853 F.3d 1272 (Fed. Cir. 2017) 22

Xerox Corp. v. Bytemark, Inc.,
IPR2022-00624 (PTAB Aug. 24, 2022) (Paper 9) 18

Statutes

35 U.S.C. § 312(a)(3) 17

37 C.F.R. § 42.23 17

Other Authorities

U.S. Patent Trial and Appeal Board, Consolidated Trial Practice Guide, (Nov. 2019) 17

I. ARGUMENT

Petitioner's Reply is littered with hand-waving to distract from the true issues. It repeatedly ignores the key claim language. It contains so many egregious mischaracterizations of the record that they cannot all be addressed. And many of the citations fail to support the propositions for which they are cited. As shown in detail below, Petitioner has failed to demonstrate that the Challenged Claims are obvious.

A. Petitioner Has Not Demonstrated that a POSA Would Have Combined Atsuta with Vornefeld.

1. Atsuta Utilizes an FDD Frame Structure.

None of the strawman arguments in Petitioner's Reply change the fact that its proposed combination of Vornefeld and Atsuta fails. As the evidence below shows and Petitioner all but admits, Atsuta discloses an FDD system, which is incompatible with a TDD system like Vornefeld's.

Although Petitioner makes a half-hearted attempt at arguing that Atsuta discloses a TDD frame, it is clear from both the Petition and Reply that Petitioner understands Atsuta does not, in fact, disclose a TDD frame. This is evident in Petitioner's repeated description of Atsuta as merely a "TDMA reference." (Reply, 1 ("And as a **TDMA reference, Atsuta**'s teachings would be easily and naturally

combined with **Vornefeld's TDMA/TDD frame**.")[2], 9 ("**Vornefeld describes a TDMA/TDD frame** with a downlink portion for transmission to different devices, and the Petition establishes that **Atsuta's TDMA design** is 'compatible with a TDD frame.'").)

In the face of evidence that Atsuda discloses a FDD frame, which is indisputably incompatible with Vornefeld's TDD frame, Petitioner's expert has all but abandoned its previous, erroneous reliance on Atsuta as a TDD reference. Specifically, after hinging his first declaration's analysis on his assertion that Atsuta discloses "TDD frames" (EX1002, ¶¶ 90, 101, 105-106, 110), in his second declaration, Petitioner's expert has shifted his analysis, now stating that "a POSA would at most view [Atsuta's] discussion as being agnostic to FDD and TDD…." (EX1025, ¶27.)

But Petitioner's expert's downgrade of confidence in his previous analysis—while telling as to the unreliability of his opinions—does not go far enough because a POSA would have understood that Atsuta unequivocally discloses an FDD system. As GAS's expert attests, Atsuta's disclosure of an uplink frequency band that is smaller than the downlink frequency band necessarily means that the system is not using the same frequency band (or "channel") in both directions. By

[2] All emphases added unless otherwise indicated.

definition, Atsuta is thus FDD; by definition TDD uses the same frequency band (or "channel") in both directions (EX2028, ¶104 (citing EX1001, 5:62–6:5).)

This can be further understood by the '931 patent's discussions of FDD versus TDD. The '931 patent states that "[i]n FDD, a first channel (frequency) is used for transmission and a second channel (frequency) is used for reception." (EX1001, 5:64-66.) The '931 patent does not put any constraints on these two FDD channels other than to say they are separated by a "duplex spacing." (EX1001, 6:1-2). Notably, there is no requirement that two FDD channels have the same bandwidth—and Petitioner does not contend otherwise.

The '931 patent further explains that "[i]n **TDD, a single channel is used for transmission and reception** and specific periods of time (i.e., slots) are allocated for transmission and other specific periods of time are allocated for reception." (EX1001, 6:2-5.). "Channel" in this context means a radio frequency (RF) channel, a.k.a. an RF frequency band, which is equivalently defined by either 1) a lower frequency and an upper frequency, or 2) a center frequency and a bandwidth. (*See* EX1001, 5:59-6:5.) And a POSA would understand that a "single channel" has a single center frequency and a single bandwidth. In other words, TDD as defined in the '931 patent uses the same channel for uplink and downlink, meaning the same lower frequency, center frequency, upper frequency and

bandwidth. Consequently, if a system does not use the same bandwidth for uplink and downlink, it is not TDD, but FDD. (EX2028, ¶104.)

Atsuta discloses a system that does not use the same bandwidth for uplink and downlink, and so—per the '931 patent—discloses a system that is FDD, not TDD. Specifically, Atsuta discloses:

> As an example in which the **frequency band <u>and</u> transmission capacity** can be increased without a problem, a picture providing system is known.…Consequently, since the **transmission capacity <u>and</u> the frequency band** of data sent in the up link direction are small, the increases of the transmission capacity and the frequency band…may not become a problem in many situations.

(EX1005, 5:65-6:12.)

GAS's expert explains why Atsuta's disclosure is FDD, and it is not merely "because the term 'frequency' appears in the text" as Petitioner argues. (Reply, 12.) As GAS's expert explains, "Atsuta describes that the uplink frequency band is 'small,' which a POS[A] recognizes to mean 'small' relative to the larger downlink frequency band, because of the asymmetric data rates.…Having an uplink frequency band that is smaller than the downlink frequency band necessarily means that the system is not using the same frequency band (or "channel") in both directions. By definition, such a system is FDD not TDD, since TDD uses the same frequency band (or "channel") in both directions." (EX2028, ¶104.)

2. Petitioner's Arguments that Atsuta is TDD Fail.

Ignoring the facts, Petitioner first alleges—in contrast to its expert's testimony—that "[a] POSA would have understood Atsuta to be a TDD system based on its asymmetry discussion." (Reply, 11). Not so. Petitioner's argument conflates TDD being *well-suited* to asymmetric applications with asymmetry being *indicative* of a TDD system. For the latter to be true, it would need to be the case that *only* TDD can be used in asymmetric applications. Tellingly, there is no evidence that this is the case.

Rather, Petitioner has argued only that "FDD presents a challenge for asymmetry because [1] reassigning frequency bands would require retuning radios and [2] because existing protocols often dictate uplink/downlink frequency bands, thus precluding reassignment to create asymmetry." (Reply, 12.) But this falls far short of establishing that Atsuta's system is TDD. Petitioner's first argument is directed to the *difficulty* in *dynamically* changing the frequency, which GAS's expert explains in Petitioner's citation to his declaration. (EX1024, 33:4-35:11 (answering the question "Why is TDD *more efficient* for *dynamic* shifting than FDD?).) But Atsuta does not teach *dynamically* changing the frequency, instead disclosing a *fixed* asymmetry that would not have required dynamically changing the bandwidth. (EX1005, 5:65-6:12.)

In its second argument, Petitioner does not identify any protocol in Atsuta that would dictate its uplink/downlink frequency bands. Indeed, by stating that this "often" occurs, Petitioner concedes that this is not always the case. Notably, although Petitioner argues that these "challenge[s] "preclud[e] reassignment to create asymmetry" in FDD, this is merely attorney argument, as Petitioner's second expert declaration cited in support says nothing about preclusion. Instead, Petitioner's expert incorrectly opines that Atsuta's discussion of asymmetric transmission "would suggest to a POSA a TDD methodology." (EX1025, ¶ 25.) Thus, neither the '931 patent nor any other evidence precludes an FDD system from utilizing asymmetric transmission, while the '931 patent *does preclude* Atsuta's system from being TDD because it does not use "a single channel…for transmission and reception." (EX1001, 6:2-5.)

Petitioner then doubles down on its failing TDD argument, further alleging that "GAS's argument that an asymmetric transmission would indicate FDD rather than TDD is contradicted by GAS's expert's admissions, as well as dictionary definitions of 'TDD' and 'FDD.'" (Reply, 11.) This mischaracterizes GAS's arguments and expert testimony in two respects. ***First***, GAS has never argued that it is Atsuta's *asymmetric transmission* that "indicate[s] FDD rather than TDD." Rather, a POSA would understand that in the same sentence that Atsuta discloses asymmetric transmission, it *also discloses that its system* ***does not use "a single***

channel…for transmission and reception," (EX2028, ¶104.) Specifically, Atsuta's disclosure that "the **transmission capacity <u>and</u> the frequency band** of data sent in the up link direction are small" makes clear that Atsuta is discussing a smaller uplink bandwidth than downlink bandwidth, which is one way to obtain asymmetric data rates in an FDD system. (*Id*.) However, this smaller uplink bandwidth than downlink bandwidth precludes Atsuta's system from being TDD, which require that the uplink and downlink use the same channel. (*Id*.)

Second, GAS's argument contradicts neither its "expert's admissions" nor "dictionary definitions of 'TDD' and 'FDD.'" (Reply, 11 (citing EX2028, ¶¶152, 44, EX1024, 32:4-17).) In support of this mischaracterization, Petitioner cites to the declaration and deposition of Petitioner's expert—citations examined further below.

- EX2028, ¶44 explains: TDMA "systems use '***either*** FDD or TDD,'" with no mention of asymmetry.
- EX2028, ¶152 explains: a POSA "seeking to develop a protocol for the transmission of multiple beamformed signals in a TDD wireless network would not turn to a patent directed to FDD," in light of TDD's better "ability to **dynamically** allocate portions of a frame allocated between the downlink and the uplink." This does not contradict GAS's arguments, which have never disputed that TDD systems are "better suited" to *dynamic*

asymmetry than FDD. Notably, GAS's expert does not state that all cases of asymmetric transmission are TDD, "admit[ing] that asymmetry indicates a TDD operation" as Petitioner alleges. Instead, Petitioner cites a dictionary definition of FDD stating that it is "appropriate for symmetrical services," which says nothing about whether FDD *may* be used for asymmetrical services. (Reply, 12 (citing EX1021, 349-350).)

- In EX1024, 32:4-17, GAS's expert does not mention FDD, only explaining the difference between fixed and dynamic asymmetry. He explains that "[i]n ***some*** TDD systems it is…possible by design to allocate larger or more time slots to downlink or uplink transmissions" and that "an engineer could design and deploy a TDD system to the world that is…not dynamically capable, in which case it would never be able to change its uplink versus downlink capacity." Instead of contradicting GAS's arguments, a POSA would recognize GAS's expert's discussion of fixed asymmetry as matching the use case depicted in Atsuta. (EX2028, ¶104.) That *dynamic* asymmetric transmission is used more often in TDD than FDD does not nullify the determining fact that Atsuta's system utilizing fixed asymmetry does not use a "single channel…for transmission and reception" which is the *sine qua non* of a TDD system.

Similar to its "asymmetry" argument, Petitioner again points to Atsuta's discussion of transmission capacity (ignoring its discussion of bandwidth in the same breath) by arguing, incorrectly, that Atsuta's discussion of "transmission capacity" "would indicate to a POSA a TDD operation" because the relevant "section of Atsuta explains that the asymmetrical communication is needed to handle the differences in 'transmission capacity' (along with bandwidth)." (Reply, 12.) ***First***, in so arguing, Petitioner improperly diminishes the importance of Atsuta's bandwidth disclosure which makes clear that Atsuta's system does not use "a single channel…for transmission and reception," thus precluding Atsuta from disclosing a TDD system. (EX2028, ¶104.)

Second, in support of its argument, Petitioner mischaracterizes GAS's expert testimony as "admit[ing] that 'capacity generally refers to the timeslots that can be reallocated to provide asymmetry in TDD methods." (Reply, 12 (citing EX1024, 31:20-34:1, 40:13-17, 42:1-6, 43:15-44:5.) The transcript shows that he never limited capacity to asymmetry in TDD systems, as FDD can support asymmetric data capacity needs by using different bandwidths for uplink and downlink frequency bands as in Atsuta. Indeed, GAS's expert never mentioned TDD when discussing "capacity" at deposition, except when asked about capacity *in the context of TDD*, as shown in the below analysis of Petitioner's citations:

- In EX1024, 31:20-34:1, GAS's expert answered questions "in the context of TDD." His answers discussing "capacity" in the context of TDD say nothing about "capacity" being exclusive to TDD such that Atsuta's "capacity discussion would indicate to a POSA a TDD operation" as Petitioner asserts.

- In EX1024, 40:13-17, GAS's expert confirms the '931 patent's discussion of *dynamic* asymmetry in the context of TDD refers to "capacity." This does not indicate the inverse—that all "capacity" discussions must refer to TDD—as Petitioner alleges.

- In EX1024, 42:1-6, GAS's expert testified: "dynamically allocat[ing] more to the downlink than to the uplink or vice versa" means "your capacity allocation would be asymmetric." This says nothing about TDD, much less TDD having ownership over all things related to "capacity" as Petitioner argues.

- In EX1024, 43:15-44:5, GAS's expert discussed the '931 patent's discussion of *dynamic* asymmetry in the context of TDD. He refused to draw broad conclusions based only on the knowledge that the system was asymmetric, testifying:

"Q: So if the system was asymmetric, that would indicate that there are more time slots allocated to, for example, downlink as compared to uplink, correct?

A: I would flip that around. I would say…if there was more capacity allocated to uplink than downlink, then that capacity allocation is asymmetric."

By focusing only on "capacity," Petitioner ignores that in the same breath as capacity, Atsuta discloses that its system **does not use "a single channel…for transmission and reception"**—the '931 patent's explicit requirement for TDD. (EX1001, 5:59-6:5; EX1005, 5:65-6:12 ("since the **transmission capacity and the frequency band** of data sent in the up link direction are small, the increases of the transmission capacity and the frequency band of the communicating method…").) Thus, while the '931 patent precludes Atsuta's system from being TDD, nothing precludes an FDD system from regulating transmission capacity.

3. Petitioner Has Failed to Prove that a POSA Would Have Combined Atsuta's FDD System with Vornefeld's Incompatible TDD Frame Structure.

Recognizing that its argument for classifying Atsuta's system as TDD fails, Petitioner argues: "Regardless of how one labels Atsuta's frame, the described frame includes (in the downlink) transmissions to devices in different sectors, which, in combination with Vornefeld, renders the claims unpatentable." (Reply,

11.) But this presupposes that a POSA would have combined Atsuta's FDD system with Vornefeld's TDD system—which Petitioner has failed to allege. And as shown below, the unrebutted evidence shows that Atsuta's FDD frame structure is incompatible with Vornefeld's TDD structure. For this reason, a POSA would not have combined the references, and the '931 patent would not have been obvious over Vornefeld and Atsuta.

As Petitioner acknowledges, compatibility among references' frame structures is required for a POSA to have been motivated to combine those references. (*See* Petition, 32 (arguing that "Vornefeld already teaches TDD frames" and a POSA would understand that the frames in Atsuta "are compatible with a TDD frame"); Reply, 9 ("Vornefeld describes a TDMA/TDD frame with a downlink portion for transmissions to different devices, and the Petition establishes that Atsuta's TDMA design is 'compatible with a TDD frame'"), 13 ("the Petition asserts that Atsuta's frame structure is *compatible* with a TDMA/TDD frame" (emphasis original)), 1 ("as a TDMA reference, Atsuta's teachings would be easily and naturally combined with Vornefeld's TDMA/TDD frame.").) Despite this acknowledgment, Petitioner never even alleges that if Atsuta's system discloses an FDD system, then a POSA would have combined Atsuta with Vornefeld, despite their incompatible frame structures.

The closest Petitioner comes to alleging that Atsuta is compatible with Vornefeld even if Atsuda is FDD is Petitioner's puzzling argument that "[t]he question of transmissions to *different* devices is one of multiplexing, which makes the common TDMA teachings of Vornefeld and Atsuta relevant to the question at hand regardless of whether Atsuta is TDD." (Reply, 11 (emphasis original).) But the Challenged Claims recite transmission "in said downlink portion of said ***TDD frame***," which both the Board and Federal Circuit found that Vornefeld does not disclose. (EX1009, 22-24; EX1010, 3.) Thus, duplexing using the same ***TDD frame*** is also required.

Aside from any "question at hand" to which Petitioner seeks to artificially limit the issues, Petitioner cannot run from the fact that a POSA would not combine references having incompatible frame structures. And the evidence is unrebutted that TDD and FDD frame structures are fundamentally incompatible. (EX2028, ¶¶44, 148.) As GAS's expert testified:

> Q Could a system use combinations of FDD and TDD?
> A To the best of my knowledge, they are mutually exclusive. And I believe that in all of the references in this matter they are mutually exclusive.
> Q And why do you believe they're mutually exclusive?
> A Well, I think the best answer is to read again from Rappaport at page 4 of 13, native page 395, "Time division duplexing uses **time instead of frequency** to provide both a forward and a reverse link."

> So it doesn't say time possibly instead of, or time maybe alone, or maybe along with frequency. It says time instead of frequency, and that is what I understand…and that's what Rappaport—that's what Rappaport states.

(EX1024, 30:21-31:19; *see* EX2022, 4, 6; EX2030, 9-10 (in LTE, either FDD or TDD can be chosen as the frame type, to the exclusion of the other).)

Yet running from this issue is exactly what Petitioner attempts, arguing that "the Petition asserts that Atsuta's frame structure is *compatible* with a TDMA/TDD frame." (Reply, 13 (emphasis original).) This is incorrect in two respects.

First, Petitioner emphasizes the fact that Vornefeld and Atsuta share a common MAC layer—TDMA—and so allegedly must be compatible. (Reply, 8-11.) However, Petitioner ignores the fact that, if Atsuta discloses an FDD system—which it does—then Vornefeld and Atsuta's mutually-exclusive frame structures render the two systems incompatible. It is telling that, despite GAS's evidence that Atsuta discloses an FDD system, Petitioner has never alleged that TDD and FDD systems are compatible. Indeed, the evidence is unrebutted that Atsuta and Vornefeld are incompatible if Atsuta discloses an FDD system as GAS has shown that it does. (EX2028, ¶104; EX1024, 30:21-31:19, 167:11-168:3; EX2022, 4, 6; EX2030, 9-10.)

Second, Petitioner's argument that "the Petition asserts that Atsuta's frame structure is *compatible* with a TDMA/TDD frame," is not accompanied by any citation. (Reply, 13.) Elsewhere in its Reply, Petitioner makes a similar allegation, this time citing in support "Pet., 15-21, 31-32, 23-26; EX1004, 53, Fig. 3; EX1024, 70:10-17, 167:6-168:20; EX1025, ¶¶6-13, 18-20, 27; EX2028, ¶77." (Reply, 9.) A review of Petitioner's citations shows the Petition provided zero evidence that Atsuta is compatible with Vornefeld's TDD frame, as shown below:

- Petition, 15-21 discusses Vornefeld, so cannot establish Atsuta's compatibility with a TDD frame.
- Petition, 31-32 contains attorney argument alleging that Atsuta is compatible with a TDD frame, but only cites ¶105 from its expert's original declaration in support. ¶105, although largely parroting the Petition, omits the Petition's assertion that "a POSA would understand that [Atsuta is] compatible with a TDD frame."
- Petition, 23-26 discusses reasons the Petitioner alleges a POSA would have combined Vornefeld with Atsuta, but says nothing about Atsuta's frame structure being compatible with a TDD frame.
- EX1004 is Vornefeld, so cannot establish Atsuta's compatibility with a TDD frame.

- EX1024 is GAS's expert's deposition testimony, which did not exist at the time of the Petition, and so cannot support Petitioner's statement that the Petition establishes that Atsuta's TDMA design is 'compatible with a TDD frame." (Reply, 9.) Further, these citations are either: (1) irrelevant (EX1024, 70:10-17 (discussing whether Vornefeld's Figure 3 shows a TDD frame), 167:6-10, 168:4-20 (stating, without reference to Atsuta, that TDMA and TDD can be used together) or (2) ***refute*** Petitioner's assertion that Atsuta is compatible with Vornefeld's TDD frame:

> Q: So what would prevent, ***separate and apart from Atsuta***, what would prevent any given TDMA frame from not being compatible with a TDD frame?…
> A: …If a TDMA frame is already employed in an existing system that is designed for FDD, and **you would have to completely rip that system up and start over to change it to TDD**, which is typically the case, they are that different, then **the TDMA frame of that given FD[D] system is not compatible with TDD**. That's -- **they are that fundamentally different**.

(EX1024, 167:11-168:3.)

- EX2028, ¶77 did not exist at the time of the Petition and states that "Atsuta discloses a basic, conventional TDMA method," but is silent about Atsuta's compatibility with a TDD frame.

- EX1025 is an expert declaration submitted on Reply, so did not exist at the time of the Petition. While in this declaration, Petitioner's expert for the first time asserts that "Atsuta's frame structure would still be compatible with Vornefeld regardless of the duplexing method," this statement is too little, too late. (EX1025 ¶27.)

First, this is support for Petitioner's *prima facie* obviousness case, and so must have been provided in the Petition, if at all. *See* 35 U.S.C. § 312(a)(3); U.S. Patent Trial and Appeal Board, Consolidated Trial Practice Guide, 73-75 (Nov. 2019) (A petitioner "**may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability**.…a **reply**…that…**belatedly presents evidence may not be considered.**…It is also **improper for a reply to present new evidence (including new expert testimony) that could have been presented in a prior filing**, for example newly cited prior art references **intended to 'gap-fill'** by teaching a claim element that was not present in the prior art presented with the petition."); *Google LLC v. Nobots LLC*, IPR2022-00940, Paper 38 at 25 (PTAB Nov. 29, 2023) ("Although a petitioner may respond to patent owner's arguments as a part of a Reply (*see* 37 C.F.R. § 42.23), it is not appropriate in a reply to introduce entirely new argument and evidence that is necessary to address

evidentiary gaps successfully identified by a patent owner, and which could have been previously presented by a petitioner.").

Second, it is telling that after submitting two declarations totaling 144 pages, this single conclusory sentence—without any explanation or citation to support it—is all the support Petitioner's expert could muster for this incorrect statement. Standing in stark contrast to the contrary evidence from GAS discussed above, the Board's precedent holds that this unsupported and belated assertion from Petitioner's expert is entitled to little, if any, weight. *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (Precedential) (where the expert's declaration repeats "the conclusory assertion for which it is offered to support" and "does not cite to any additional supporting evidence or provide any technical reasoning to support his statement[,]…the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight.").

Thus, Petitioner is incorrect in arguing that "the Petition asserts that Atsuta's frame structure is *compatible* with a TDMA/TDD frame, making this question a strawman." (Reply, 13.) Because Atsuta discloses an FDD system under the '931 patent's definitions of FDD and TDD, and the unrebutted evidence shows that a POSA would not have combined Atsuta's FDD system with Vornefeld's TDD

system in light of their incompatible frame structures, Petitioner's challenge based on the combination of Vornefeld and Atsuta fails. *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements," but "must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.").

B. Petitioner Has Not Demonstrated that a POSA Would Have Combined Vornefeld with Goldburg.

1. The Petition's Motivation to Combine Analysis Was Premised on Goldburg's Disclosure of a TDD System.

Petitioner's challenge based on Goldburg and Vornefeld suffers from many of the same issues as Petitioner's Atsuta combination—namely, that the Petition failed to establish Goldburg's frame structure is compatible with Vornefeld's. As with Atsuta, Petitioner argues that "whether Goldburg describes TDD or FDD methods does not change the outcome of the combination" with Vornefeld. (Reply, 22.) For the same reasons as discussed above, Goldburg's frame structure matters very much, as a POSA would not have combined an FDD system with Vornefeld's TDD frame structure. (*See* Section I.A., *supra*.)

The Petition alleges that Goldburg discloses a TDD frame in two instances—its motivation to combine and claim 28[a] analyses. In the first instance—alleging that a POSA would have combined Goldburg with Vornefeld—

the Petition alleges that "Goldburg describes transmitting to subscribers in different 'regions' within a single TDD frame." (Petition, 39 (citing EX1006, 12:11-24.) However, the Petition provides no explanation for how Goldburg possibly discloses a TDD frame, and the citation to Goldburg references a "GSM downlink frame." As GAS explained in its POR and Petitioner seems to acknowledge, GSM is an FDD system. (*Id.*; *see* Reply, 23 (acknowledging that Goldburg describes TDMA/FDD).)

In the second instance, in the analysis of claim 28[a], Petitioner similarly alleges that "Goldburg describes dividing an area into distinct regions and then transmitting to subscribers in those different regions within a single TDD frame." (Petition, 43-44 (citing EX1006, 12:11-18).) But the Petition supports this statement with a citation to Goldburg that references a "GSM downlink frame," and even included a parenthetical to this citation quoting Goldburg's discussion of "form[ing] a GSM downlink frame" which is FDD. (*Id*.) Similarly, for the claim element "transmit[ting], in said downlink portion of said TDD frame," Petitioner again relies on citations providing details about Goldburg's GSM frames, including that "[t]he GSM frames are Gaussian Minimum Shift Key (GMSK) modulated according to the GSM specifications." (EX1006, 12:11-33.) Finally, the Petition alleges that, "[r]egarding 'transmit path circuitry,' Goldburg describes a 'subsystem' for building TDD frames in a TDMA system." (Petition, 44 (citing

EX1006, 12:11-13:13, Figs. 1(a), 1(b)).) Here, again, Goldburg references forming GSM downlink frames, noting that its disclosed "GSM system" is its "preferred embodiment." (EX1006, 13:9-10.)

Despite the Petition's exclusive and erroneous reliance on Goldburg's disclosure of FDD GSM downlink frames as allegedly disclosing TDD, the Reply faults GAS for "wholly ignor[ing] the PHS protocol—a TDMA/TDD design." (Reply, 22.) Specifically, the Reply argues that "Goldburg in fact teaches TDD methodology" because portions of Goldburg—that Petition did not cite in its motivation to combine or claim 28[a] allegations that Goldburg discloses a TDD frame—disclose an alternative (PHS) protocol that allegedly includes TDD frames. (Reply, 22 (citing EX1006, 1:48-61, 2:6-12).)

This is the type of belated disclosure going to Petitioner's *prima facie* case that neither the statutes nor the Federal Circuit allow for the first time on Reply. *See Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1001-02 (Fed. Cir. 2023) ("The IPR ***petition[] must provide*** an understandable explanation of the ***element-by-element*** specifics of the patentability challenges, including the ***identification of particular portions of prior art on which the petitioner is relying***."); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) ("It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence

that supports the grounds for the challenge to each claim…[T]he expedited nature of IPRs bring[s] with it an obligation for petitioners to make their case in their petition to institute. While the Board's requirements are strict ones, they are requirements of which petitioners are aware when they seek to institute an IPR."). As such, Petitioner cannot cure this failure on Reply. *See Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (affirming refusal to consider Petitioner's argument on Reply where the Petition relied on one passage in a reference, but "after patent owner pointed out the flaws of this position," argued on Reply that a POSA "would have looked to a different passage of" that reference, because Petitioner is not permitted to "to cure the petition's deficiencies in its subsequent briefing to the Board.").

If Petitioner wanted to rely on Goldburg's PHS embodiments in combination with Vornefeld, it needed to discuss these embodiments in the Petition, rather than relying exclusively on Goldburg's disclosure of FDD GSM downlink frames as allegedly disclosing TDD. *See Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) ("no error in the Board's rejection of [Petitioner's] reliance, in its Reply submissions, on previously unidentified portions of a prior-art reference"); *Netflix, Inc. v. DivX, LLC*, 84 F.4th 1371, 1378–79 (Fed. Cir. 2023) (where "the petition explained that [a reference] disclosed two embodiments—a new manifest and a pre-existing manifest—[and] the petition's

explanation for how [the reference] taught the filtering limitation was limited to just [the reference's] pre-existing manifest," affirming the Board's refusal to consider Petitioner's mapping the reference's new manifest embodiment to the filtering limitation on Reply).

Petitioner should therefore be limited to the arguments in its Petition incorrectly relying on Goldburg's FDD GSM downlink frames as allegedly disclosing TDD. For these reasons, as well as those described in Section I.A., above, Petitioner has failed to allege that Goldburg discloses a frame structure compatible with Vornefeld's TDD system, and so Petitioner's challenge based on the combination of Vornefeld and Goldburg fails.

2. The Petition's Motivation to Combine Analysis Was Limited to a Construction of "Sector" Rejected by the District Court.

In addition to Goldburg's FDD frame structure's incompatibility with Vornefeld, Petitioner also failed to allege that a POSA would have combined Vornefeld with Goldburg to achieve the invention of the Challenged Claims under the District Court's construction of "sector"—which Petitioner has not contested. (Reply, 4-5.) While Petitioner's Reply argues that "the Petition explicitly states that Goldburg applies under any construction," Petitioner neglects to mention that this conclusory statement is the ***only*** thing the Petition says with respect to a POSA's alleged motivation to combine Goldburg and Vornefeld under any

definition of sector other than the broad construction not adopted by the District Court. (Reply, 24.) Other than this conclusory sentence—which is entirely attorney argument not supported by any citation or other evidence—the entirety of the Petition's allegations regarding a POSA's motivation to combine Vornefeld with Goldburg is explicitly limited to a broad construction of "sector" the District Court has subsequently rejected. (*See* Petition, 39-43 ("To the extent Patent Owner defines **'sector' as simply a 'portion of a cell site,'…Goldburg's 'regions' describe these 'sectors**[.]'" "A POSA would have been motivated to combine Goldburg's use of **regions** with Vornefeld's transmission system…".) Under the District Court's definition of sector—which Petitioner advocated for in the District Court and has not contested here—the Petition's motivation to combine allegations are insufficient for Petitioner to carry its burden of proving obviousness. (*See* EX2027, 13-18.) *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d at 1380. For this additional reason, Petitioner's challenge based on Vornefeld and Goldburg fails.

Two of Petitioner's additional misstatements regarding its analysis of an alleged motivation to combine Goldburg with Vornefeld warrant mention. ***First***, Petitioner alleges that in his deposition, Petitioner's expert "made clear that his analysis of Goldburg was not limited to one construction." (Reply, 24.) Not so. When Petitioner's expert was asked to locate his discussion of each construction, he could only locate a discussion of the broad "any portion" construction rejected

by the District Court. (*See* EX2029, 27:20-37:3.) ***Second***, Petitioner asserts that GAS has made the "demonstrably false" assertion "that 'there is nothing in Goldburg that teaches 'transmit[ting] to multiple subscribers within the same frame." (Reply, 25.) Again, Petitioner grossly mischaracterizes GAS's argument, which reads—in full—"there is nothing in Goldburg that teaches 'transmit[ting] to multiple subscribers within the same frame' **beyond what Vornefeld teaches**." (POR, 64.) While GAS lacks space in this Reply to point out all of Petitioner's mischaracterizations, those described herein should give the Board pause in taking the statements in Petitioner's Reply at face value.

C. Petitioner Has Not Demonstrated that a POSA Would Have Combined Youseffmir with Atsuta.

Petitioner's challenge based on Youseffmir and Atsuta fails for the same reasons as described in Section I.A., above—a POSA would not combine Youseffmir's TDD frame with Atsuta's FDD system.

D. Petitioner's Characterizations of the Trial Record are Incorrect and Irrelevant

Petitioner attempts to distract from its failure of proof by repeatedly quoting snippets of the record of a District Court trial that occurred shortly before it filed its Reply. Yet Petitioner's use of the trial record as a distraction are transparent, with Petitioner repeatedly characterizing the trial record as "unnecessary to Petitioner's grounds" and "unnecessary to the Petition." (Reply, 3.) Indeed,

Petitioner argues that "under GAS's trial read, the claims would be obvious over Vornefeld alone"—a stance that is not only incorrect, but also irrelevant, as this is not a Ground for the current IPR, and is contradictory to prior holdings of both the Board and Federal Circuit. As such, Petitioner's "unnecessary" characterizations of the trial record should be disregarded as merely the distraction they were intended to be.[3]

Moreover, Petitioner's assertion that GAS's recent trial positions contradict positions it advanced in a prior IPR is incorrect. Petitioner ignores the fact that the recent District Court trial was conducted based on a construction that limited the claimed "sectors" to "areas defined by an arc around the cell site, ***each covered by its own antenna***." (EX2027, 18). Under the District Court's construction, Vornefeld discloses only transmissions to a single sector. Contrary to Petitioner's argument, Vornefeld does not disclose a "TDD frame timing" ***for the whole cell***. (Reply at 3.) Vornefeld's passing references to the "whole radio cell" come

[3] In addition to being irrelevant, Petitioner's characterizations of the trial record are also incorrect. For example, Petitioner's argument that GAS described a TDD frame merely as a "timetable" is taken out of context. (Reply, 2.) Rather, this point was merely responsive to Petitioner's argument that a TDD frame was a form of physical "container." (EX1030, 1279:5-8.)

nowhere close to disclosing the claimed broadcast beam signal, let alone the additional requirements of the Challenged Claims, including downlink beamformed transmissions to multiple sectors in the same downlink portion of a TDD frame.

II. CONCLUSION

GAS requests the Board confirm the Challenged Claims of the ’931 patent are patentable.

Dated: August 16, 2024

Respectfully submitted,

By: */Sarah E. Spires/*

Sarah E. Spires (Reg. No. 61,501)
SKIERMONT DERBY LLP
1601 Elm Street, Suite 4400
Dallas, Texas 75201
Tel: (214) 978-6600
Fax: (214) 978-6601
sspires@skiermontderby.com
Lead Counsel for Patent Owner

Michael J. Valaik (*pro hac vice*)
BARTLIT BECK LLP
54 W. Hubbard Street, Suite 300
Chicago, IL 60654
Tel: (312) 494-4400
michael.valaik@bartlitbeck.com

Nosson D. Knobloch (*pro hac vice*)
BARTLIT BECK LLP
1801 Wewatta Street, Suite 1200
Denver, CO 80202
Tel: (303) 592-3100
nosson.knobloch@bartlitbeck.com
Back-Up Counsel for Patent Owner

CERTIFICATE OF WORD COUNT

Under the provisions of 37 C.F.R. § 42.24(c), the undersigned hereby certifies that the Microsoft Office word count for the foregoing Patent Owner's Sur-Reply to Petitioner's Reply, excluding the table of contents, table of authorities, claim listing, certificate of word count, and certificate of service, totals 5,588 words, which is less than the 5,600 words allowed under 37 C.F.R. § 42.24(c)(4).

Dated: August 16, 2024

By: */Sarah E. Spires/*

Sarah E. Spires (Reg. No. 61,501)
SKIERMONT DERBY LLP
1601 Elm Street, Suite 4400
Dallas, Texas 75201
Tel: (214) 978-6600
Fax: (214) 978-6601
sspires@skiermontderby.com
Lead Counsel for Patent Owner

Michael J. Valaik (*pro hac vice*)
BARTLIT BECK LLP
54 W. Hubbard Street, Suite 300
Chicago, IL 60654
Tel: (312) 494-4400
michael.valaik@bartlitbeck.com

Nosson D. Knobloch (*pro hac vice*)
BARTLIT BECK LLP
1801 Wewatta Street, Suite 1200
Denver, CO 80202
Tel: (303) 592-3100
nosson.knobloch@bartlitbeck.com
Back-Up Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned certifies that on this 16th day of August, 2024, the foregoing document is being served by e-mail on counsel of record for Petitioner as follows:

VerizonIPR@venable.com
Justin J. Oliver
USPTO Reg. No. 44,986
VENABLE LLP
joliver@venable.com

Stephen K. Yam
USPTO Reg. No. 64,927
VENABLE LLP
syam@venable.com

Chad C. Walters (Reg. No. 48,022)
BAKER BOTTS L.L.P.
chad.walters@bakerbotts.com

Douglas M. Kubehl (Reg. No. 41,915)
BAKER BOTTS L.L.P.
doug.kubehl@bakerbotts.com

Jeffery S. Becker (Reg. No. 68,533)
BAKER BOTTS L.L.P.
jeff.becker@bakerbotts.com

Andrew Grado (Reg. No. 80,316)
BAKER BOTTS L.L.P.
Andrew.grado@bakerbotts.com

John D. Haynes (Reg. No. 44,754)
ALSTON & BIRD LLP
John.Haynes@alston.com

Wesley C. Achey (Reg. No. 56,487)
ALSTON & BIRD LLP
Wes.Achey@alston.com

Steve McNiff (Reg. No. 53,305)
ALSTON & BIRD LLP
Steve.Mcniff@alston.com

Michael C. Deane (Reg. No. 70,389)
ALSTON & BIRD LLP
Michael.Deane@alston.com

Christopher TL Douglas (Reg. No. 56,950)
ALSTON & BIRD LLP
Christopher.Douglas@alston.com

GAS-Alston@alston.com

By: */Sarah E. Spires/*

Sarah E. Spires (Reg. No. 61,501)
SKIERMONT DERBY LLP
1601 Elm Street, Suite 4400
Dallas, Texas 75201
Tel: (214) 978-6600
Fax: (214) 978-6601
sspires@skiermontderby.com
Lead Counsel for Patent Owner