UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS AMERICA, INC., AND SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

COBBLESTONE WIRELESS, LLC,
Patent Owner.

IPR2024-00319
Patent 8,891,347 B2

Before NATHAN A. ENGELS, NORMAN H. BEAMER, and RUSSELL E. CASS, *Administrative Patent Judges.*

CASS, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Samsung Electronics America, Inc., and Samsung Electronics Co., Ltd. (collectively, "Petitioner") filed a Petition requesting an *inter partes* review of claims 1–4, 6–12, 14–17, and 19–23 of U.S. Patent No. 8,891,347 B2 (Ex. 1001, "the '347 patent"). Paper 3 ("Pet."), 3. Cobblestone Wireless, LLC ("Patent Owner") filed a Preliminary Response. Paper 13 ("Prelim. Resp."). With our permission, Petitioner filed a Preliminary Reply (Paper 14), and Patent Owner filed a Preliminary Sur-reply (Paper 15).

An *inter partes* review may not be instituted unless it is determined that "the information presented in the petition filed under section 311 and any response filed under section 313 shows 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 (2018); *see also* 37 C.F.R § 42.4(a) (2021) ("The Board institutes the trial on behalf of the Director."). The reasonable likelihood standard is "a higher standard than mere notice pleading," but "lower than the 'preponderance' standard to prevail in a final written decision." *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

For the reasons provided below and based on the record before us, we determine that Petitioner has not established a reasonable likelihood that any of the challenged claims are unpatentable. Accordingly, we do not institute an *inter partes* review based on the Petition.

B. Real Parties in Interest

Petitioner identifies Samsung Electronics America, Inc. and Samsung Electronics Co., Ltd. as real parties in interest. Pet. 73. Petitioner also states that, "[o]ut of an abundance of caution and to avoid additional issues associated with real parties-in-interest, Petitioner[] likewise identif[ies] T-Mobile USA, Inc., AT&T Services Inc., AT&T Corp., AT&T Mobility LLC, and Cellco Partnership d/b/a Verizon Wireless because Petitioner['s] products are accused of infringement in their respective patent infringement actions." *Id.* at 73–74. Patent Owner names itself as the real party in interest. Paper 7, 2.

C. Related Proceedings

Both parties identify, as matters involving or related to the '347 patent, the following district court proceedings: *Cobblestone Wireless, LLC v. T-Mobile USA, Inc.*, No. 2:22-cv-00477 (E.D. Tex.); *Cobblestone Wireless, LLC v. Cellco Partnership d/b/a Verizon Wireless*, No. 2:22-cv-00478 (E.D. Tex.); *Cobblestone Wireless, LLC v. AT&T Inc.*, No. 2:22-cv-00474 (E.D. Tex.); and *Cobblestone Wireless, LLC v. Samsung Electronics Co.*, No. 2:23-cv-00285 (E.D. Tex.). Pet. 74; Paper 7, 2. Also, T-Mobile USA, Inc., AT&T Services Inc., AT&T Corp., AT&T Mobility LLC, Cellco Partnership d/b/a Verizon Wireless, Nokia of America Corporation, and Ericsson Inc. filed a petition on December 4, 2023, challenging the '347 patent in IPR2024-00136.

D. The '347 Patent (Ex. 1001)

The '347 patent relates to a method for wireless communication in a system including a transmitter, a receiver, and multiple propagation paths formed between the transmitter and the receiver that are capable of carrying

a signal transmitted by the transmitter to the receiver. Ex. 1001, code (57). The method performs a channel estimation of a first signal from the transmitter on one propagation path to obtain parameter information on the propagation path, predistorts a second signal at the transmitter according to the channel estimation, and transmits the predistorted signal from the transmitter to the receiver via the propagation path. *Id.*

A schematic representation of a wireless communication system capable of performing the claimed method is shown in Figure 1, reproduced below.

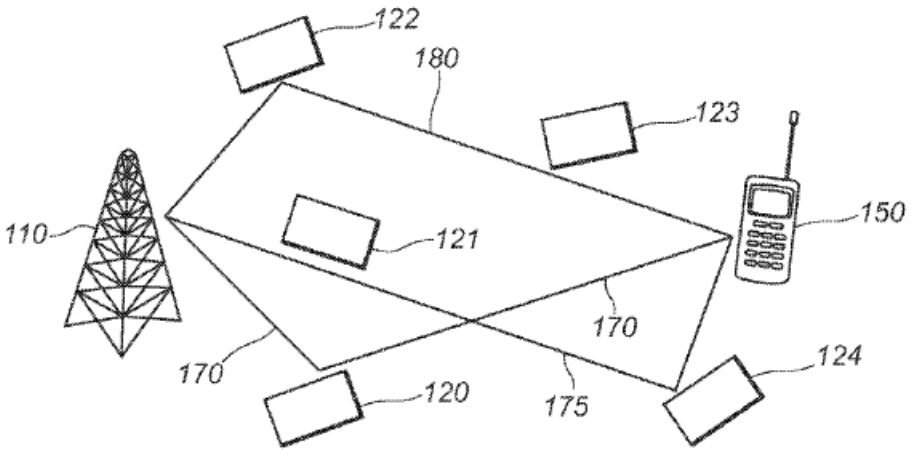

FIG. 1

Figure 1 is a schematic representation of a wireless communication system capable of performing the claimed method. Ex. 1001, Fig. 1, 2:45–47.

As the '347 patent explains, Figure 1 "illustrates a single-link communication scenario between a base station which is configured so as to act as a transmitter 110 and a mobile station which is configured so as to act as a receiver 150." Ex. 1001, 3:23–26. Between transmitter 110 and receiver 150 "are a number of buildings 120–124, which act as scatterers and bouncing points of communication signals traveling between the transmitter 110 and the receiver 150 via propagation paths 170, 175, and 180." *Id.* at

3:26–30. These propagation paths "are different in delay, direction of arrival, direction of departure and Doppler frequency," and the signals traveling along these paths "experience different distortions" so that the same signal traveling along these paths "may arrive at the receiver with different phases." *Id.* at 3:47–50, 7:44–46. As a result, "[t]he resulting multiple replica of the originally transmitted signals are added at the receiver 150, either destructively or constructively." *Id.* at 7:47–49.

The '347 patent explains that "[t]ypically, equalization techniques known in the art are used in the receivers 150 to recover the original transmitted signal by removing the distortions." Ex. 1001, 7:50–52. "[U]nlike the equalization technique which corrects the distortion at the receiver 150 after receiving the technique," the system of the '347 patent "adds a pseudo 'distortion' before the signals are transmitted at the transmitter 110." *Id.* at 7:63–67. "These 'pre-distorted' signals," the '347 patent explains, "are then transmitted in such a way that the signal distortion can be successfully removed while propagating." *Id.* at 7:67–8:3.

The '347 Patent's pre-distortion process is shown in more detail in Figure 4, reproduced below.

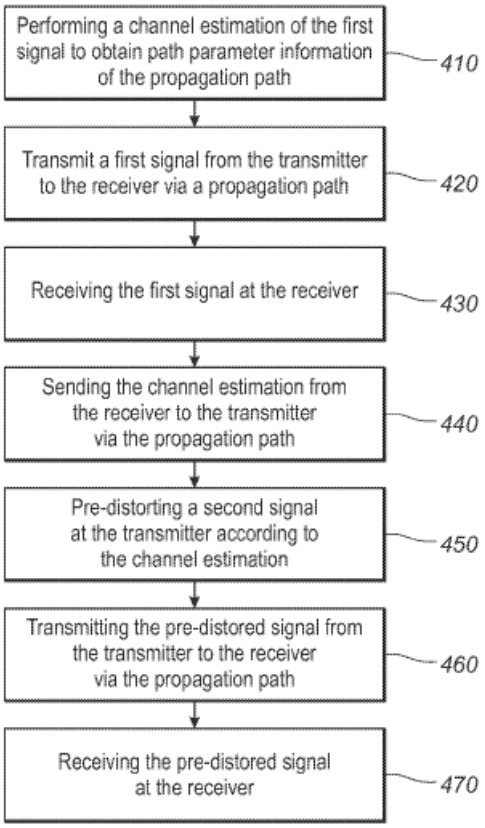

FIG. 4

As shown in Figure 4, the system first performs a channel estimation of the first signal to obtain path parameter information of the propagation path (step 410). Ex. 1001, Fig. 4, 8:4–7. Next, the transmitter transmits a first signal to the receiver via a propagation path (step 420). *Id.* at Fig. 4, 8:7–9. The receiver receives the first signal and performs a channel estimation algorithm to obtain estimates of the delay, Doppler frequency, direction of arrival, direction of departure, and complex amplitude for each of the propagation paths (step 430). *Id.* at Fig. 4, 8:11–16. The receiver then sends the channel estimation to the transmitter via the propagation path. *Id.* at Fig. 4, 9:1–3. Then, for the next frame or block to transmit, the transmitter "pre-distorts" a second signal and generates multiple signal replica with

appropriate settings of the transmitting time, transmitting pace and directions, receiving directions, and complex weight of the signal (step 450). *Id.* at Fig. 4, 9:6–10. The transmitter sums up and transmits these "pre-distorted" signal replica (step 460), which are received by the receiver (step 470). *Id.* at Fig. 4, 9:12–14.

E. Claim 1

Of challenged claims 1–4, 6–12, 14–17, and 19–23, claims 1, 8, 15, and 19 are independent. Challenged claim 1 is illustrative, and is reproduced below.

> [1.0] A method for wireless communication in a system including a transmitter, a receiver, and a plurality of propagation paths formed between the transmitter and the receiver which are capable of carrying a signal transmitted by the transmitter to the receiver, the method comprising:
>
> [1.1] transmitting a first signal from the transmitter to the receiver via a first propagation path of the plurality of propagation paths;
>
> [1.2] receiving the first signal at the receiver;
>
> [1.3] performing channel estimation based on the first signal to obtain path parameter information of the first propagation path;
>
> [1.4] sending the channel estimation that includes the path parameter information from the receiver to the transmitter via the first propagation path;
>
> [1.5] predistorting a second signal at the transmitter in a time domain, a frequency domain, and a spatial domain, according to the channel estimation based on the first signal;
>
> [1.6] transmitting the predistorted second signal from the transmitter to the receiver via the first propagation path; and
>
> [1.7] receiving the predistorted second signal at the receiver.

Ex. 1001, 16:40–61 (indents and bracketed paragraph identifiers added).

F. Applied References

Petitioner relies upon the following references:

> Stefania Sesia, "LTE: The UMTS Long Term Evolution from Theory to Practice," Second Edition, published by Wiley (Ex. 1003, "Sesia");
>
> Forenza, US 8,654,815 B1, issued Feb. 18, 2014 (Ex. 1014, "Forenza").

Pet. iii–iv, 3. Petitioner submits declarations from Kevin C. Almeroth, Ph.D (Ex. 1005) and Sylvia Hall-Ellis (Ex. 1004).

G. Asserted Ground of Unpatentability

Petitioner challenges the patentability of claims 1–4, 6–12, 14–17, and 19–23 of the '347 patent on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–4, 6–12, 14–17, 19–23	103(a)[1]	Sesia
1–4, 6–12, 14–17, 19–23	103(a)	Forenza

Pet. 3.

[1] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), included revisions to 35 U.S.C. § 103 that became effective after the filing of the application for the '136 patent. For purposes of this Decision, we apply the pre-AIA version of 35 U.S.C. § 103.

II. DISCUSSION

A. Principles of Law

With respect to claim construction, a claim "shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b)." 37 C.F.R. § 42.100(b).

A claim is unpatentable under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, objective evidence of non-obviousness.[2] *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of prior art elements would have produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–417.

In an *inter partes* review, the petitioner must show with particularity why each challenged claim is unpatentable. *Harmonic, Inc. v. Avid Technology, Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); 37 C.F.R.

[2] At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

§ 42.104(b). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Relying on Dr. Almeroth, Petitioner argues that one of ordinary skill "would have had at least a bachelor's degree in electrical engineering, computer engineering, computer science, physics, or the equivalent, and at least two years of experience working in the field." Pet. 6 (citing Ex. 1005 ¶ 41). Petitioner further states that "[r]elevant work experience would include experience with cellular telecommunications and networking, radio-access network architectures, protocols, and signal propagation in wireless networks," and that "[m]ore education can supplement practical experience and vice versa." *Id.*

At this stage of the proceeding, Patent Owner does not set forth a proposed level of ordinary skill in the art. *See* Prelim. Resp.

For purposes of this Decision, we adopt the assessment of the level of ordinary skill in the art proposed by Petitioner and not disputed by Patent Owner as reasonable and consistent with the prior art. *See Okajima v Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir 2001) (the prior art may reflect an appropriate level of skill in the art).

C. *Ground 1:*[3] *Asserted Obviousness of Claims 1–4, 6–12, 14–17, and 19–23 Based on Sesia*

Petitioner contends that claims 1–4, 6–12, 14–17, and 19–23 would have been obvious over Sesia. Pet. 3, 28–57. Patent Owner disagrees. Prelim. Resp. 2–21.

1. *Overview of Sesia (Ex. 1003)*

Sesia is a book entitled "LTE – The UMTS Long Term Evolution From Theory to Practice," authored by Stefani Sesia, Issam Toufik, and Matthew Baker, and published by Wiley with a copyright date of 2011. Ex. 1003, 1, 6.[4] Sesia explains that it "provides a thorough, authoritative and complete tutorial of the LTE system, now fully updated and extended to include LTE-Advanced," and "gives a detailed explanation of the advances made in our theoretical understanding and the practical techniques that will ensure the success of this ground-breaking new radio access technology." *Id.* at 29. One aim of Sesia is "to chart an explanatory course through the LTE specifications, to support those who design LTE equipment." *Id.* at 32.

Sesia discloses the use of a base station (also referred to as an eNodeB) in communication with one or more mobile devices or user equipment (UE). Ex. 1003, 480. Sesia illustrates in Figure 20.1, reproduced below, a base station with an omnidirectional antenna that transmits a signal along three different propagation paths, shown as Path 1, Path 2, and Path 3.

[3] Here, and elsewhere in the Decision, the identification of the grounds using designations such as "Ground 1" and "Ground 2" refers to the designation of the grounds as presented in the Petition.
[4] The cited pages of Sesia refer to the page numbers added by Petitioner, not the original pages in the book.

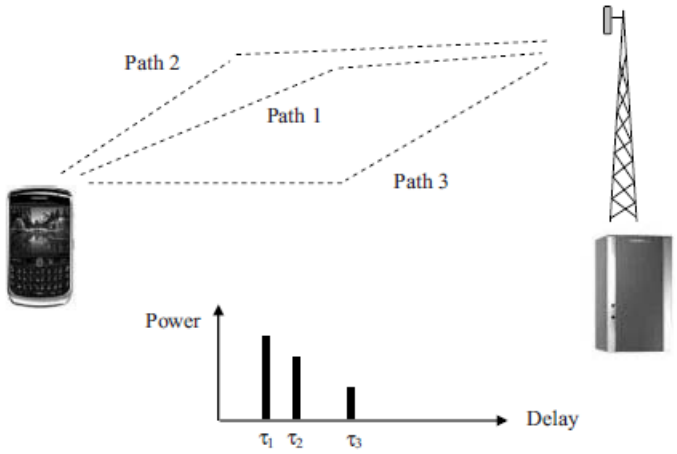

Figure 20.1: Multipath propagation and PDP.

Sesia's Figure 20.1 shows a base station (right) with an antenna that transmits a signal along three propagation paths, Path 1, Path 2, and Path 3. Ex. 1003, 480–481.

Sesia explains that, as shown in Figure 20.1, "[t]he transmitted signal traverses three paths with different delays." *Id.* at 480.

Sesia also explains that LTE "is a coherent communication system," meaning that its detection method "exploits channel knowledge." Ex. 1003, 207–208. "Coherent detection," Sesia states, "can make use of both amplitude and phase information carried by the complex signals, and not of only amplitude information as with non-coherent detection." *Id.* at 207. "Optimal reception by coherent detection," according to Sesia, "typically requires accurate estimation of the propagation channel." *Id.* "A common and simple way to estimate the channel is to exploit known signals which do not carry any data" and, "[i]n order to estimate the channel as accurately as possible, all correlations between channel coefficients in time, frequency and space should be taken into account." *Id.* at 208. LTE can use reference signals embedded into a transmitted signal to perform these estimations. *Id.* at 208–209.

Sesia also includes sections describing "frequency-domain channel estimation," "time-domain channel estimation," and "spatial-domain channel estimation." Ex. 1003, 220–227. Sesia discloses that a UE can report these channel estimations to an eNodeB using implicit feedback, which "provides an implicit representation of the channel consisting of an indication of the data rate that could be achieved if the eNodeB used a certain precoder." *Id.* at 316, 704. This can be compared to "explicit feedback," which is "not supported in LTE or LTE-Advanced," in which "a UE would instead explicitly report a quantized representation of the physical CSI [(Channel State Information)] without making assumptions about the nature of the eNodeB precorder." *Id.* at 705. Sesia further discloses that LTE supports beamforming techniques. *Id.* at 295–298.

2. Analysis of Independent Claim 1

For the reasons discussed below, we determine, based on the present record, that Petitioner has not made a sufficient showing for limitations [1.3] and [1.5] for purposes of institution.

a) [1.3] performing a channel estimation based on the first signal to obtain path parameter information of the first propagation path;

Petitioner bases its argument as to this limitation on a construction of the term "path parameter information" that it represents is "Patent Owner's apparent interpretation of" this term "in the co-pending district court litigations" based on Patent Owner's infringement contentions, although it acknowledges that "Patent Owner has not formally provided [a] proposed construction[]" of this term. Pet. 10.

More specifically, Petitioner argues that "[i]n the co-pending district court litigation, Patent Owner interprets 'path parameter information'

broadly to capture any channel state information feedback, regardless of whether that channel state information is an explicit or implicit channel estimation." Pet. 11. However, although Petitioner relies on this construction, Petitioner also criticizes the construction, asserting that "the ['347] patent ***expressly excludes*** implicit estimation from path parameter information." *Id.* (emphasis added). Petitioner also does not assert that Patent Owner's purported construction represents the plain and ordinary meaning of the claim language, and Petitioner indeed suggests otherwise by characterizing this construction as a "broad interpretation" and distinguishing it from other terms "not expressly construed" which "should be given their ordinary and customary meaning." *Id.* at 10–12. In its claim construction discussion, Petitioner does not offer alternative constructions but instead exclusively relies on the construction it ascribes to Patent Owner and criticizes. *Id.*

Petitioner further introduces the testimony of Dr. Almeroth that the construction it relies on in this proceeding (based on its interpretation of Patent Owner's infringement contentions) "is construing 'path parameter information' ***broader than, and contrary to its plain and ordinary meaning***." Ex. 1005 ¶ 63 (emphasis added). Dr. Almeroth states that the proposed construction "include[s] any channel state information feedback, regardless of whether that channel state information is an explicit or implicit channel estimation," but "[a]n implicit estimation is not path parameter information as a [person of ordinary skill in the art] would understand the term in the '347 [p]atent." *Id.* (citing Ex. 1001, 11:60–12:6, 14:18–21; Ex. 1006, 7–8, Ex. 1009, 7–8; Ex. 1010, 7–8; Ex. 1015, 6–7). According to Dr. Almeroth, this is because the '347 patent distinguishes between "path

parameter information" and "codebooks," which he states "is an implicit measurement because conditions of the channel may be implied by the value of the codebook." *Id.* ¶ 64. "Thus," Dr. Almeroth testifies, one of ordinary skill "would understand that implicit measurements can be used to 'imply' the condition of the path but are not measurements of the path itself." *Id.*

When applying Sesia to limitation [1.3], Petitioner makes clear that it is relying on Patent Owner's purported construction of "path parameter information." Pet. 34–36. Specifically, Petitioner asserts that:

> Based on Sesia's disclosure, a [person of ordinary skill in the art] would understand, ***under Patent Owner's apparent interpretation of the claims***, that the information that is obtained from performing channel estimation on a reference signal and subsequently provided to the eNodeB by the UE as either implicit or explicit feedback corresponds with the claimed "path parameter information." Furthermore, ***under Patent Owner's apparent interpretation of the claims***, based on Sesia's disclosure, a [person of ordinary skill in the art] would understand that this information is 'path parameter information of the first propagation path" given that channel estimation attempts to define the channel model of a propagation path.

Id. at 35 (emphasis added) (citing Ex. 1005 ¶ 135); *see* Ex. 1005 ¶ 135 (explaining that Sesia discloses "path parameter information" "under the Patent Owner's apparent interpretation of the claims"). At the end of the discussion of this claim element, Petitioner states that Sesia discloses or teaches the claim language "under either Patent Owner's apparent interpretation ***or the plain and ordinary meaning of the term***," but Petitioner never explains what the plain and ordinary meaning of the term is, or how that plain and ordinary meaning is disclosed by Sesia. Pet. 36 (emphasis added); *see id.* at 11–12 (discussing only Patent Owner's purported construction in the claim construction section); Ex. 1005 ¶ 137

(repeating Petitioner's statement that Sesia discloses "path parameter information" "under either Patent Owner's apparent interpretation or the plain and ordinary meaning of the term," but not explaining what the plain and ordinary meaning is).

To support its reliance on Patent Owner's purported construction of "path parameter information," Petitioner cites several cases for the proposition that a petition may rely on a claim construction from Patent Owner that the petitioner subjectively believes is incorrect. Pet. 10. For example, Petitioner cites *10X Genomics, Inc. v. Bio-Rad Labs., Inc.*, IPR2020-00086, Paper 8 at 17–22 (PTAB Apr. 27, 2020) for the proposition that 37 C.F.R. § 42.104(b) "does not prohibit Petitioner from submitting a claim construction it believes is incorrect and relying on that construction to show how the claim is unpatentable." *Id.* Petitioner also relies on *Donnelly Distribution LLC v. Russo Trading Co., Inc.*, IPR2019-00761, Paper 8 at 17–18 (PTAB Sept. 6, 2019). *Id.*

In its Preliminary Reply, Petitioner again argues that it is permissible for a petitioner to rely on a claim construction that it subjectively disagrees with, and Petitioner disputes that "by disagreeing with these constructions, Patent Owner is entitled to the extreme remedy of discretionary denial for failure to satisfy Rule 42.104(b)(3)." Prelim. Reply 1–3. Specifically, Petitioner cites *Philip Morris Products, S.A. v. Rai Strategic Holdings, Inc.*, IPR2020-00921, Paper 13 at 42–44 (PTAB Aug. 5, 2021) for the proposition that Rule 42.104(b)(3) "does not require a petitioner to express a subjective belief in the correctness of its proffered claim constructions" and that a petitioner can "rely[] on claim constructions that it believes are incorrect." *Id.* at 1–2. Petitioner also cites additional cases for this proposition,

including *Google LLC V. AGIS Software Development, LLC*, IPR2018-01085, Paper 10 at 10 (PTAB Nov. 19, 2018); *General Electric Co. v. Vestas Wind Sys. A/S*, IPR2018-00928, Paper 9 at 12–17 (PTAB Nov. 5, 2018); *Apple, Inc. v. AGIS Software Development, LLC*, IPR2018-00821, Paper 9 at 10 (PTAB Oct. 23, 2018). *Id.* at 2.

Patent Owner responds that the Petition "rests on an infirm foundation" because Petitioner raises an invalidity ground "that they state solely and exclusively relies upon Patent Owner's alleged claim construction positions" and "make[s] clear ***in the Petition, that they believe the sole construction[] they rely on [is] dead wrong***." Prelim. Resp. 2 (emphasis in original). Patent Owner argues that "the Board's caselaw, and the Office's policy make clear" that "a petitioner cannot demonstrate a reasonable likelihood of prevailing based on constructions it expressly disagrees with in its petition." *Id.* at 2–3. Patent Owner further argues that, "at least as to limitation 1.3, Petitioner[] rel[ies] on a claim interpretation that ***no one*** agrees with" and that "Patent Owner's actual claim construction positions are different from the strawman construction that Petitioner[] ha[s] relied upon." *Id.* at 3. Patent Owner distinguishes the Petition from situations where a petitioner "explain[s] why a claim is invalid under alternative claim constructions, *e.g.*, its proposed construction and a construction proffered by the patent owner." *Id.* at 2.

Patent Owner also cites Board decisions for the proposition that "a petitioner cannot satisfy its burden of proof under constructions it insists are wrong." Prelim. Resp. 6. For example, Patent Owner cites *Hologic, Inc. v. Enzo Life Sciences, Inc.*, IPR2018-00019, Paper 21 (PTAB Nov. 28, 2018) for the proposition that a petitioner "does not satisfy Rule 42.104(b)(3)

when, in a proceeding applying the *Philips* claim-construction standard, it 'expressly disagree[s] with its proffered constructions.'" *Id.* at 7 (citing *Hologic* at 2, 5–7) (alteration in original). Patent Owner also cites additional cases in support of this proposition. *Id.* at 9–10 (citing *Orthopediatrics Corp. v. K2M, Inc.*, IPR2018-01548, Paper 9 at 9–10 (PTAB Mar. 1, 2019) (denying institution where "Petitioner's contentions are limited to how the claims at issue should not be construed" (emphasis omitted)), *Samsung Elecs. of Am., Inc. v. Uniloc 2017 LLC*, IPR2020-00046, Paper 6 at 10 (PTAB Apr. 1, 2020) ("We exercise our discretion and decline Petitioner's invitation to adopt allegedly incorrect claim constructions and institute an *inter partes* review on the basis of those constructions."), and *Netflix, Inc. v. GoTV Streaming, LLC*, IPR2023-00757, Paper 18 at 9 ("In *Hologic*, the Board decided that a party in an Office proceeding may not 'expressly disagree' with a claim-construction position in the proceeding and still advance the disagreed-with position in the proceeding.")).

Based on the present record, Petitioner has not demonstrated a reasonable likelihood that the challenged claims are unpatentable. Petitioner bases its showing as to limitation [1.3] upon a claim construction of "path parameter information" that it ascribes to Patent Owner, and then expressly criticizes as being inconsistent with the '347 patent Specification. Pet. 14–15. Additionally, Petitioner does not assert that the applied construction is the plain and ordinary meaning of the claim term, or provide reasoning or evidence showing why the applied construction is correct. *Id.* Moreover, Patent Owner does not agree with the applied construction in its submissions in this proceeding.

Additionally, Dr. Almeroth testifies that the applied construction differs from and is broader than the ordinary meaning of "path parameter information," and is not consistent with the '347 patent Specification, but that he used this construction in his analysis nonetheless. Ex. 1005 ¶¶ 61–63. Specifically, Dr. Almeroth testifies as follows:

> 61. . . . ***[F]or all but two claim terms considered in this Declaration, I have applied the plain and ordinary meaning of those terms*** as . . . would have been interpreted by a [person of ordinary skill in the art] at the time the invention was made . . . .
>
> 62. ***The two exceptions are for the terms: "path parameter information"*** and "predistorting a second signal at the transmitter in a time domain, frequency domain, and a spatial domain." While I understand that the Patent Owner has not formally provided proposed constructions, ***Patent Owner's infringement contentions indicate to me that the Patent Owner has taken a broad interpretation of the claims that is not consistent with the plain and ordinary meaning*** that should be considered when assessing the validity of the Challenged Claims. As such, ***while I do not necessarily agree with these interpretations, I will consider them in rendering my below opinions***.
>
> 63. In Patent Owner's infringement contentions, ***Patent Owner is construing "path parameter information" broader than, and contrary to its plain and ordinary meaning.*** Specifically, it is seeking to construe the term to include any channel state information feedback, regardless of whether that channel state information is explicitly or implicit channel estimation. An implicit estimation is not path parameter information as a [person of ordinary skill in the art] would understand the term in the '347 [p]atent.

Ex. 1005 ¶¶ 61–63 (emphasis added, citations omitted); *see id.* ¶¶ 64–66 (providing further explanation as to why the applied construction is not consistent with the plain and ordinary meaning of the term or the '348 patent Specification). Both Petitioner and Dr. Almeroth also confirm that they used

the construction ascribed to Patent Owner (and both believe to be incorrect) in their analysis. Pet. 35 (explaining that the "path parameter information" limitation is met "under Patent Owner's apparent interpretation of the claims"); Ex. 1005 ¶ 135 (same).

Under these facts, Petitioner has failed to set forth a sufficient basis to support the claim construction it relies on and, consequently has failed to establish a reasonable likelihood that its unpatentability arguments, which are based on that construction, have merit.

Our conclusion in this regard is consistent with the Board's prior decisions in *Hologic*, *Orthopediatrics*, and *Samsung*, upon which Patent Owner relies. *See* Prelim. Resp. 10–14. However, we note that our determination does not rely on discretionary denial or exclusively on Rule 42.104(b)(3), but rather it is based on Petitioner's failure to demonstrate a reasonable likelihood that limitation [1.3] is obvious based on Sesia. Where a petitioner specifically relies on a particular construction of a claim term in order to demonstrate unpatentability, particularly a construction different from the ordinary meaning, that claim construction is part of the unpatentability analysis, and the petitioner must provide a sufficient basis to support that construction. *See, e.g.*, *Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1003 (Fed. Cir. 2023) ("In determining whether a claim is invalid as obvious, we compare the prior art to the claim language, and if necessary, after the claim language has been properly construed when the meaning or scope is in dispute."). Here, Petitioner has not done so because:
(1) Petitioner does not rely on the plain and ordinary meaning of the term, and its own expert testifies that its construction is contrary to the plain and ordinary meaning; (2) Petitioner offers no intrinsic or extrinsic evidence that

the construction it relies on is correct; and (3) Petitioner and its expert assert that the proffered construction is inconsistent with the '347 patent Specification.

In reaching our decision here, we distinguish this case from situations where a petitioner relies on the ordinary meaning of a claim term, offers alternative constructions of a claim term, or relies on a construction agreed upon by the parties in the proceeding at issue. None of those situations is present in this case.

Additionally, we find insufficient Petitioner's conclusory statement that Sesia discloses limitation [1.3] "under either Patent Owner's apparent interpretation ***or the plain and ordinary meaning of the term***." Pet. 36 (emphasis added). Neither Petitioner nor Dr. Almeroth explain what they believe the plain and ordinary meaning of "path parameter information" is, what the support would be for any such meaning, or how Sesia teaches or suggests limitation [1.3] under that plain and ordinary meaning. *See id.* at 11–12, 32–36; Ex. 1005 ¶¶ 63–66; *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12 at 5 (PTAB Feb. 10, 2023) (Director Review) (determining that "the Board was correct in giving little weight to Petitioner's expert because the expert declaration merely offered conclusory assertion without underlying factual support and repeated, *verbatim*, Petitioner's conclusory arguments").

We also find that several of the cases upon which Petitioner relies are inapposite here because they involved situations where alternative constructions were advanced by the petitioner. For example, in *10X Genomics*, the Board explained that:

> [E]ven if our rules and guidance were correctly interpreted as prohibiting a petitioner from relying solely on a claim

> construction it believes is incorrect, that is not what Petitioner has done here. ***Petitioner proposes alternative claim constructions*** and presents at least one ground of unpatentability for each construction.

10X Genomics, Paper 8 at 22 (emphasis added). Similarly, in *Donnelly*, also cited by Petitioner, the petition offered alternative constructions—the construction proposed by the patent owner in district court and the "proper construction" that the petitioner believed was the correct one. *Donnelly*, Paper 2 (Petition) at 29–33 (identifying alternative constructions of "grip portion"). *See also General Electric*, IPR2018-00928, Paper 9 at 12–17 ("Petitioner provides its own interpretation of what the [claim] phrases mean, but also indicates what it believes to be 'Patent Owner's expected interpretation[s]' of those phrases." (second alteration in original)).

Additionally, we are not persuaded by Petitioner's argument based on *Philip Morris* that the rules do "not require a petitioner to express a subjective belief in the correctness of its proffered claim constructions" and that a petitioner can "rely[] on claim constructions that it believes are incorrect." *See* Prelim. Reply 1–2 (emphasis added). The issue here is not Petitioner's "subjective belief" in the correctness of its proffered claim construction, but rather whether Petitioner has demonstrated a reasonable likelihood that the claims at issue are unpatentable, which here would include a sufficient basis to support the claim construction being relied upon. If a petitioner sets forth a sufficient basis to support the construction it relies upon, its subjective belief as to the correctness of that construction is not controlling.

Finally, we note that several of the cases relied on by Petitioner in its Preliminary Reply were decided under the "broadest reasonable interpretation" (BRI) standard previously applied by the Board. *See Apple*,

IPR2018-00821, Paper 9 at 8–11 (explaining that it was permissible for Petitioner to offer different constructions before the Board and in district court due to the different claim construction standards applicable in each forum); *Google*, IPR2018-01085, Paper 10 at 10–11 (same). When the Board and district courts applied different claim construction standards, a petitioner could argue for a construction under BRI that was different from, and broader than, the one it asserted in district court, without undermining its case in either forum. That situation, however, vanished when the claim construction standards applied by the Board and by district courts were harmonized.[5]

For the foregoing reasons, and based on the present record, we determine that Petitioner has not made a sufficient showing that its proffered construction of "path parameter information" is correct. Because Petitioner's obviousness showing is based on this construction, Petitioner has not demonstrated a reasonable likelihood that limitation [1.3] is disclosed by or would have been obvious over Sesia.

b) [1.5] predistorting a second signal at the transmitter in a time domain, a frequency domain, and a spatial domain, according to the channel estimation based on the first signal;

Petitioner's argument concerning limitation [1.5] raises similar issues as its argument concerning the "path parameter information" in limitation

[5] Indeed, in adopting the *Philips* standard for IPR proceedings, the Office noted its agreement with "[s]everal comments" that "acknowledged that harmonizing the claim construction standards would prevent parties from taking inconsistent positions" before the PTAB and in district court. *Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51-340, 51350 (Oct. 11, 2018).

[1.3] above. Specifically, Petitioner argues that "predistorting" should be interpreted to include "beamforming" because "[i]n the co-pending district court litigation, Patent Owner alleges that beamforming 'predistorts' a signal in a time domain, frequency domain, and a spatial domain." Pet. 12 (citing Ex. 1006, 9; Ex. 1009, 9; Ex. 1010, 9; Ex. 1015, 8). Petitioner, however, criticizes this construction by asserting that "[b]eamforming and the selection of time and frequency resources jointly or individually ***are not predistortion***." *Id.* (emphasis added) (citing Ex. 1005 ¶ 68). Petitioner also submits testimony from Dr. Almeroth stating that "I do not necessarily agree that the selection of time and frequency resources and that beamforming are jointly or individually predistortion." Ex. 1005 ¶ 68. And, Dr. Almeroth testifies that he did not apply the plain and ordinary meaning of the "predistorting . . ." claim limitation in his analysis. *Id.* ¶¶ 61–62 (explaining that he applied the plain and ordinary meaning for all claim terms with "two exceptions," one of which is the phrase "predistorting a second signal at the transmitter in a time domain, frequency, domain, and a spatial domain"). As with "path parameter information" above, Petitioner does not offer alternative constructions of the "predistorting . . ." limitation, but instead exclusively relies on the construction ascribed to Patent Owner. Pet. 12–13; Ex. 1005 ¶¶ 67–68.

Petitioner and Dr. Almeroth also confirm that they are applying the construction ascribed to Patent Owner (and with which they both disagree) when applying Sesia to limitation [1.5]. For example, the Petition states that Sesia discloses the "predistorting . . ." language "in light of Patent Owner's apparent interpretation of this limitation based on its infringement contentions in the related District Court proceedings" and "under Patent

Owner's apparent interpretation of the claims which is broad enough to capture beamforming a wireless signal." Pet. 39, 43. Petitioner also argues that Sesia meets the "predistorting . . ." limitation by disclosing "multiple methods of beamforming" including "(i) closed-loop rank-1 precoding and (ii) beamforming with UE-specific reference signals." *Id.* at 39 (citing Ex. 1003, 270; Ex. 1005 ¶ 147). Dr. Almeroth makes similar assertions. Ex. 1005 ¶¶ 146 (applying Sesia to the "predistorting . . ." language "in light of Patent Owner's apparent interpretation of this limitation based on its infringement contentions in the related district court proceedings"), 159 (stating that Sesia meets the "predistorting . . ." limitation "under Patent Owner's apparent interpretation of the claims which is broad enough to capture beamforming a wireless signal").

For similar reasons discussed above with respect to "path parameter information," Petitioner has not offered sufficient support for its claim construction of the "predistorting . . ." limitation applied in the Petition based on the present record. Petitioner expressly criticizes the construction it offers, and indicates that this construction differs from the plain and ordinary meaning of the claim language. Pet. 10, 12. Additionally, Petitioner does not explain why the applied construction is correct or offer evidence in support of the construction, and Patent Owner also does not expressly agree with the construction or provide reasons why it is correct. *Id.* at 15–16; Prelim. Resp. 5–17.

Consequently, we determine that Petitioner has not sufficiently shown that "predistorting a second signal at the transmitter in a time domain, frequency domain, and a spatial domain," as required by the challenged claims, is disclosed by or would have been obvious over Sesia. Because

Petitioner's obviousness showing is based on a construction that lacks sufficient support, Petitioner has not demonstrated a reasonable likelihood that limitation [1.5] is disclosed by or would have been obvious over Sesia.

3. Independent Claims 8, 15, and 19

Independent claims 8, 15, and 19 also include "path parameter information" and "predistorting . . ." limitations similar to those in limitations [1.3] and [1.5] discussed above. *See* Ex. 1001, 17:40–43, 17:46–48, 18:39–41, 18:42–43, 19:12–14, 19:18–19. For the reasons discussed with respect to claim 1, we determine, based on the present record, that Petitioner has not established a reasonable likelihood of unpatentability for claims 8, 15, and 19.

4. Dependent Claims 2–4, 6, 7, 9–12, 14, 16, 17, and 20–23

Claims 2–4, 6, 7, 9–12, 14, 16, 17, and 20–23 depend from one of independent claims 1, 8, 15, and 19. For the reasons discussed above with respect to claims 1, 8, 15, and 19, we determine, based on the present record, that Petitioner has not established a reasonable likelihood of unpatentability for dependent claims 2–4, 6, 7, 9–12, 14, 16, 17, and 20–23.

D. Ground 2: Asserted Obviousness of Claims 1–4, 6–12, 14–17, and 19–23 Based on Forenza

Petitioner contends that claims 1–4, 6–12, 14–17, and 19–23 would have been obvious over Forenza. Pet. 3, 57–70. Patent Owner disagrees. Prelim. Resp. 21–36.

1. Overview of Forenza (Ex. 1014)

Forenza is directed to a system and method for distributed antenna wireless communications including a plurality of wireless client devices and a plurality of distributed antennas. Ex. 1014, code (57). The system

computes channel state information (CSI) for wireless communication channels between a plurality of base distributed antennas and the wireless client devices, and computes precoding weights from the CSI. *Id.* The system precodes data using the precoding weights prior to wireless transmission from the distributed antennas, and wirelessly transmits the precoded data from the antennas to the wireless client devices. *Id.* The '319 patent explains that precoding causes radio frequency interference between the plurality of base stations but simultaneously generates a plurality of non-interfering radio frequency user channels between the distributed antennas and wireless client devices. *Id.*

2. Analysis of Independent Claim 1

In Ground 2, Petitioner relies on the same constructions of "path parameter information" in limitation [1.3] and "predistorting a second signal at the transmitter in a time domain, frequency domain, and a spatial domain" in limitation [1.5] as it did for those limitations in Ground 1, and Petitioner similarly bases its unpatentability showing on those constructions. Pet. 10–13, 60–63, 64–66.

With respect to limitation [1.3], which includes the "path parameter information" claim term, Petitioner makes clear that it is relying on the claim construction ascribed to Patent Owner and discussed previously. Specifically, Petitioner relies on a channel characterization generated by Forenza's client device which "'may include many factors including, for example, phase and amplitude relative to a reference internal to the receiver, an absolute reference, a relative reference, characteristic noise, or other factors,' all of which are examples of obtaining path parameter information (***as construed by Patent Owner***)." Pet. 60 (emphasis added) (citing

Ex. 1014, 26:50–54). Petitioner goes on to explain that Forenza describes such characterizations as channel state information (CSI), which it states "is path parameter information ***as construed by Patent Owner***." *Id.* at 61 (emphasis added) (citing Ex. 1014, 15:4–18; Ex. 1005 ¶ 288). Petitioner also relies on channel estimates by the user device which it asserts "contain path parameter information (***as construed by Patent Owner***) used to cancel 'interference due to I/Q gain and phase imbalance.'" *Id.* (emphasis added) (citing Ex. 1014, 44:3–4, 41:64–42:25; Ex. 1005 ¶ 289). Dr. Almeroth makes similar statements indicating that he is relying on the same construction of "path parameter information" ascribed to Patent Owner in applying Forenza to limitation [1.3]. Ex. 1005 ¶¶ 287–289.

With respect to limitation [1.5], which includes the "predistorting . . ." claim language, Petitioner asserts that Forenza discloses precoding, which is a form of beamforming, and that "the term 'predistorting' includes precoding of signals ***based on Patent Owner's apparent construction of the term***." Pet. 20 (explaining that "methods for performing beamforming" include "closed-loop rank-1 precoding"), 39–40 (same), 64 (asserting that "predistorting" includes "precoding" based on "Patent Owner's apparent construction of the term") (emphasis added). Dr. Almeroth also testifies that Forenza discloses precoding, and that "the term 'predistorting' includes precoding of signals ***based on Patent Owner's apparent construction of the term***." Ex. 1005 ¶¶ 294–295 (emphasis added).

For these reasons, and those discussed above with respect to Ground 1, Petitioner has not provided a sufficient basis to support its constructions of "path parameter information" and "predistorting a second signal at the transmitter in a time domain, frequency domain, and a spatial domain" upon

which it relies. Because Petitioner's obviousness showing for limitations [1.3] and [1.5] is based on these constructions, Petitioner has not demonstrated a reasonable likelihood that these limitations are disclosed by or would have been obvious over Forenza.

3. Independent Claims 8, 15, and 19

Independent claims 8, 15, and 19 also include "path parameter information" and "predistorting . . ." limitations similar to those in limitations [1.3] and [1.5] discussed above. *See* Ex. 1001, 17:40–43, 17:46–48, 18:39–41, 18:42–43, 19:12–14, 19:18–19. For the reasons discussed with respect to claim 1, we determine, based on the present record, that Petitioner has not established a reasonable likelihood of unpatentability for claims 8, 15, and 19.

4. Dependent Claims 2–4, 6, 7, 9–12, 14, 16, 17, and 20–23

Claims 2–4, 6, 7, 9–12, 14, 16, 17, and 20–23 depend from one of independent claims 1, 8, 15, and 19. For the reasons discussed above with respect to claims 1, 8, 15, and 19, we determine, based on the present record, that Petitioner has not established a reasonable likelihood of unpatentability for dependent claims 2–4, 6, 7, 9–12, 14, 16, 17, and 20–23.

E. Discretionary Denial

Patent Owner argues we should exercise our discretion under 35 U.S.C. § 314(a) and *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) to deny institution of *inter partes* review in view of the parallel district court proceeding. Prelim. Resp. 36–53. Petitioner responds by submitting a stipulation pursuant to *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A) representing that it will not pursue in the

parallel litigation the same grounds in the Petition or any grounds that could have reasonably been raised by the Board. Paper 12.

Because we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing as to any of the challenged claims, we need not reach Patent Owner's arguments for discretionary denial in this Decision.

III. CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has failed to demonstrate a reasonable likelihood of success in proving that at least one of the challenged claims of the '347 patent is unpatentable. We therefore do not institute trial on any challenged claim raised in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), no *inter partes* review of any of challenged claims 1–4, 6–12, 14–17, and 19–23 of the '347 patent is instituted with respect to any grounds set forth in the Petition.

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