

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

GEOSCOPE TECHNOLOGIES PTE. LTD.,
Patent Owner.

IPR2023-01209
Patent 7,561,104 B2

Before PATRICK R. SCANLON, SHEILA F. McSHANE, and
BRIAN D. RANGE, *Administrative Patent Judges*.

SCANLON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Google LLC (“Petitioner”) challenges claims 1–3 and 11 of U.S. Patent No. 7,561,104 B2 (Ex. 1001, “the ’104 patent”), which is assigned to Geoscope Technologies Pte. Ltd. (“Patent Owner”). We have jurisdiction under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claim 2 of the ’104 patent is unpatentable.

A. Procedural History

Petitioner filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of the challenged claims. Patent Owner filed a Preliminary Response (Paper 10).

We instituted a trial as to all challenged claims. Paper 14 (“Decision on Institution” or “Dec. Inst.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 27, “PO Resp.”). Patent Owner also filed a statutory disclaimer of claims 1, 3, and 11. PO Resp. 1; Ex. 2024. Accordingly, the only claim remaining for our consideration at trial is claim 2. *See* 35 U.S.C. § 253 (disclaimer of claims considered effective as if part of original patent); 37 C.F.R. § 42.107 (Board will not institute trial on disclaimed claims). Petitioner filed a Reply (Paper 34, “Reply”), and Patent Owner filed a Sur-reply (Paper 39, “Sur-reply”).

Petitioner relies on the Declaration of David Hilliard Williams (Ex. 1012) to support its challenges. Patent Owner relies on the Declaration of Mark Alan Sturza (Ex. 2020) to support its contentions.

An oral hearing was held on June 13, 2024. A transcript of the hearing is included in the record. Paper 46 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies itself as the real party in interest. Pet. 2. Patent Owner identifies itself as the real party in interest. Paper 11, 1.

C. Related Matters

The parties identify the following matters as related to this proceeding:

Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc., No. 1:22-cv-01331-MSN (E.D. Va.) (filed Nov. 22, 2022) (“the Google Action”);

Geoscope Technologies Pte. Ltd. v. Apple Inc., No. 1:22-cv-01373-MSN (E.D. Va.) (filed Dec. 1, 2022) (“the Apple Action”); and

Google LLC v. Geoscope Technologies Pte. Ltd.,
IPR2023-01210 and IPR2023-01211.

Pet. 2–3; Paper 11, 1.

Petitioner additionally identifies the following applications as related to this proceeding:

U.S. Patent Application No. 12/026,333 (filed Feb. 5, 2008), which claims priority to U.S. Provisional Application No. 60/899,379 (filed Feb. 5, 2007) (“the ’379 provisional application”);

Reexamination Control No. 90/012,694 (filed Sept. 24, 2012) (*ex parte* reexamination of the ’104 patent; Reexamination Certificate issued Aug. 18, 2014); and

U.S. Patent Application No. 13/771,542 (filed Feb. 20, 2013, now U.S. Patent No. 8,786,494), which is a continuation of U.S. Patent Application No. 12/424,320 (filed Apr. 15, 2009, now U.S. Patent No. 8,400,358), which is a continuation of U.S. Patent Application No. 12/026,333.

Pet. 2–3.

Patent Owner additionally identifies the following matters as related to this proceeding:

Google LLC. v. Geoscope Technologies Pte. Ltd., IPR2023-01212 and IPR2023-01213;

Geoscope Technologies Pte. Ltd. v. Google LLC, No. 24-1003 (Fed. Cir.) (docketed Oct. 2, 2023);

Geoscope Technologies Pte. Ltd. v. Apple, Inc., No. 24-1018 (Fed. Cir.) (docketed Oct. 5, 2023); and

Apple Inc. v. Geoscope Technologies Pte. Ltd., IPR2024-00031, IPR2024-00032, IPR2024-000255, and IPR2024-000259.

Paper 11 at 1–2.

D. The '104 Patent

The '104 patent, titled “Method to Modify Calibration Date Used to Locate a Mobile Unit,” issued July 14, 2009, with claims 1–21. Ex. 1001, codes (45), (54), 11:65–14:22.¹ The '104 patent explains that “[w]hen a wireless device is located indoors, the signal strengths of signals received from the serving and/or neighboring base stations tend to be lower than the strength of the signals received by a wireless device located outdoors,” which may result in “poor estimated location accuracy.” *Id.* at 1:32–40. The '104 patent aims to address this issue with its method of locating a mobile station in an indoor facility, in which calibration data samples

¹ A Reexamination Request of the '104 patent was filed September 24, 2012, and following an *ex parte* reexamination of the '104 patent an *Ex Parte* Reexamination Certificate for the '104 patent issued August 18, 2014. Ex. 1003; Ex. 1004, code (73).

obtained outdoors are used to simulate indoor calibration data. *Id.* at 3:38–42; *see also id.* at 1:46–54.

In one embodiment of the '104 patent, the method includes “providing a database of previously-gathered calibration data for a region in a wireless network including a first transmitter and a second transmitter,” “collecting observed network measurement data including a first and second signal characteristic from the first and second transmitters,” “determining which of the first and second signal characteristics has a greater magnitude,” modifying “[t]he observed network measurement data . . . using the greater magnitude signal characteristic,” and comparing “the modified network measurement data . . . with the database of calibration data to determine the location of the mobile station.” Ex. 1001, 2:9–22; *see also id.* at 1:65–2:34, 3:38–49, 9:54–64, Fig. 3. The '104 patent also describes that “a non-uniform grid point (NUG) may represent the signal characteristics and/or calibration data over a given region.” *Id.* at 3:50–52. In one example, “a set of NUGs . . . are . . . part of a larger geographical region . . . includ[ing] various wireless networking components,” where “[t]he NUGs represent an area of collected calibration data, which may be stored in a database for easy retrieval during a calibration data comparison operation between the NUG and a received network measurement report (NMR).” *Id.* at 3:52–60.

E. Challenged Claims

Of the challenged claims, claim 1 is independent and claims 2, 3, and 11 depend from claim 1. As noted above, Patent Owner has disclaimed claims 1, 3, and 11, such that claim 2 is the only claim remaining for our consideration at trial. *See* PO Resp. 1; Ex. 2024. Although independent claim 1 has been disclaimed, claim 2 includes all the limitations of claim 1 by virtue of depending from claim 1. Claims 1 and 2 are reproduced below:

1. A method for determining a location of a mobile station, comprising:
providing a database of previously-gathered calibration data for a predetermined region in a wireless network, wherein said network includes a first transmitter and a second transmitter;
collecting observed network measurement data including a first signal characteristic from said first transmitter and a second signal characteristic from said second transmitter;
determining which of said first and second signal characteristics has a greater magnitude;
modifying said observed network measurement data using the greater magnitude signal characteristic; and
comparing said modified network measurement data with said database of calibration data to thereby determine the location of the mobile station.
2. The method of claim 1 wherein said database comprises previously-gathered calibration data for one or more non-uniform grid points within said region.

Ex. 1001, 11:66–12:18.

F. Instituted Grounds of Unpatentability

We instituted *inter partes* review of the challenged claims based on the following grounds of unpatentability asserted by Petitioner:²

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 11	102(e)	Shkedi ³
2	103(a)	Shkedi, Spain ⁴

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102, 103, effective March 16, 2013. Because the challenged claims of the ’104 patent have an effective filing date before March 16, 2013, the pre-AIA versions of 35 U.S.C. §§ 102, 103 apply.

³ US 7,706,811 B2, issued Apr. 27, 2010 (Ex. 1006).

⁴ US 2003/0064735 A1, published Apr. 3, 2003 (Ex. 1009).

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 11	102(b)	Zhu ⁵
1–3, 11	103(a)	Zhu, Laitinen ⁶
2	103(a)	Zhu (or Zhu and Laitinen), Spain

Dec. Inst. 39; Pet. 6–7. As mentioned above, because Patent Owner disclaimed claims 1, 3, and 11, the only claim remaining for our consideration at trial is claim 2.

II. ANALYSIS

A. Legal Standard

“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring inter partes review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim may be invalid as anticipated by a prior art reference if “each and every limitation is found either expressly or inherently in a single prior art reference.” *Sanofi–Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1375 (Fed. Cir. 2006) (internal quotation marks omitted). Anticipation under § 102 may be established by showing, as a matter of fact, that all elements arranged as

⁵ Jian Zhu & G. D. Durgin, *Indoor/outdoor location of cellular handsets based on received signal strength*, in 2005 IEEE VEHICULAR TECH. CONF. PROC. VOL. 1, 92–96 (2005) (Ex. 1010).

⁶ Heikki Laitinen et al., *Database Correlation Method for GSM Location*, in 2001 IEEE VEHICULAR TECH. CONF. PROC. VOL. 4, 2504–2508 (2001) (Ex. 1011).

specified in a claim are disclosed within the four corners of a reference, either expressly or inherently, in a manner enabling one skilled in the art to practice an embodiment of the claimed invention without undue experimentation. *See ClearValue, Inc. v. Pearl River Polymers, Inc.*, 668 F.3d 1340, 1344 (Fed. Cir. 2012).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and “the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103 requires us to resolve the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but

⁷ The parties have not presented arguments regarding objective evidence of nonobviousness.

are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner contends that a person having ordinary skill in the art would have been someone knowledgeable in wireless networks, cellular radio systems, mobile communication devices and radio navigation systems, having at least a bachelor's degree in electrical engineering, with a background in radio frequency communications and/or navigation system technology as well as approximately two years of industry experience working on radio communication and/or navigation systems.

Pet. 13–14 (citing Ex. 1012 ¶ 31).

Patent Owner does not dispute Petitioner's definition of the level of ordinary skill in the art for purposes of this proceeding. PO Resp. 11–12 (citing Ex. 2020 ¶¶ 47–48).

For purposes of this Final Written Decision, we adopt Petitioner's proposal 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. Claim Construction

In *inter partes* reviews, the Board interprets claim language using the district-court-type standard, as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms their ordinary and customary meaning, which “is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application” and “after reading the entire patent.” *See Phillips*, 415 F.3d at 1313, 1321. Although extrinsic evidence, when available, may also be useful when construing claim terms under this

standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

Petitioner proposes the following five claim constructions:

CLAIM TERM	PETITIONER’S PROPOSED CONSTRUCTION
calibration data	“modified or unmodified network measurement data associated with a geographic location”
observed network measurement data	“measurement data from a network measurement report (i.e., a report used in cellular networks which provides the results of a measurement from a mobile device on one or more cells)”
grid point	“a point associated with representative calibration data for an area”
as said mobile station	“a[t] said mobile station”
order of “collecting,” “modifying,” and “comparing” steps	“collecting has to occur before modifying, and modifying has to occur before comparing”

Pet. 14–16 (citing Ex. 1001, 1:21–24, 1:39–40, 3:7–11, 3:46–47, 12:35–37, Ex. 1012 ¶¶ 37–46; Ex. 1016 ¶¶ 108–109; Ex. 1024, 1, Ex. 1028, 8, 10, 20). Petitioner argues that any other claim term should be interpreted consistent with the *Phillips* standard. *Id.* at 14.

The first four of Petitioner’s proposed constructions are consistent with the claim constructions issued by the district court in the Google Action (*see* Ex. 1028, 8, 10, 20) or a position taken by Patent Owner in the Google Action (*see* Ex. 1016 ¶¶ 108–109). As to the Petitioner’s fifth proposed construction regarding step order, Petitioner cites Exhibit 1024 as

establishing that the parties stipulated as to the order of the “collecting,” “modifying,” and “comparing” steps in claim 1. Pet. 16 (citing Ex. 1024, 1).

We adopted these five constructions in our Decision on Institution. Dec. Inst. 8–10. In particular, we were persuaded that “[t]hese constructions are consistent with the claim language and the specification of the ’104 patent and are further supported by the reasoning provided by the district court’s claim construction order.” *Id.* at 10 (citing Ex. 1028); *see also id.* at 26–27 (disagreeing with Patent Owner’s Preliminary Response argument that the construction of “grid point” requires additional requirements). We also determined, in the Decision on Institution, “that ‘non-uniform grid points’ are ‘grid points that are non-uniformly spaced throughout a geographic region.’” *Id.* at 24–25.

In its Response, Patent Owner argues that the district court’s construction of “grid point” requires that the representative calibration data be evaluated to determine the boundaries of the area represented by a “grid point.” PO Resp. 18–23. According to Patent Owner:

The district court adopted the phrase “representative calibration data for an area” in its construction of “grid point” to “reflect that ***the defining characteristic of a NUG region***—as explained in the specifications of the ’753 Patent, ’104 Patent, and [’784] Patent—is ***that the data points within an area are all ‘statistically very similar’*** such that each of the grid points within the NUG region can represent the overall NUG.”⁸

⁸ The ’753 Patent refers to U.S. Patent No. 8,406,753 (Ex. 1008), and the ’784 Patent refers to U.S. Patent No. 9,097,784 (Ex. 2013). Patent Owner notes that the ’753 patent and the ’784 patent both claim priority to the ’379 provisional application, which is incorporated by reference into the ’104 patent. PO Resp. 6–7 n.2.

Id. at 18–19 (quoting Ex. 1028, 20) (alteration in original). Thus, Patent Owner argues, “the district court explained that the phrase ‘representative calibration data for an area’ in its construction means that the calibration data associated with a grid point are ‘statistically very similar’ such that the calibration data are representative of the area encompassed by the grid point.” *Id.* at 19 (citing Ex. 2020 ¶ 77). Patent Owner also argues that the ’379 provisional application and the ’784 patent both describe the claimed grid points in the same way. *Id.* (citing Ex. 1005, 6; Ex. 1008, 10:55–11:6; Ex. 2020 ¶ 77).⁹ According to Patent Owner, because this statistical similarity “is a ‘defining characteristic,’ the claimed grid points cannot exist until after the calibration data is gathered and analyzed.” *Id.*

In addition, Patent Owner argues that the district court’s construction of “grid point” “requires that the boundaries of the area represented by a given grid point be determined by evaluating the calibration data so that the subset of data associated with that grid point is representative of that area.” *Id.* at 20 (citing Ex. 2020 ¶ 78); *see also id.* at 9 (“[A] fundamental characteristic of a claimed grid point is that the geographical boundaries of the area it represents must be determined by evaluating the calibration data collected in a region.” (citing Ex. 2020 ¶ 68)). Patent Owner contends that both the ’379 provisional application and the ’784 patent describe this determination “as involving the evaluation of statistical similarities across the set of calibration data gathered within a region, and teach examples of the statistical analyses used to generate the claimed grid points from this calibration data.” *Id.* at 20 (citing Ex. 1005, 6–7; Ex. 1008, 10:39–65, 12:4–

⁹ We cite the page numbers added by Petitioner to Exhibit 1005 rather than the internal pagination.

14; Ex. 2020 ¶ 79); *see also id.* at 10 (“This evaluation of calibration data involves determining which data are ‘statistically very similar’ using ‘increasingly stringent tests of statistical sufficiency’ such that they can be associated with (or ‘allocated to’) a particular grid point.” (citing Ex. 1005, 6–7; Ex. 1008, 10:44–59; Ex. 2020 ¶ 69)).

In view of these assertions, Patent Owner argues that “the district court’s construction requires evaluating the calibration data to determine the boundaries of the area represented by a grid point so that ‘representative calibration data for [the] area’ can be associated with it.” *Id.* at 21 (citing Ex. 2020 ¶ 80). According to Patent Owner, “[i]f the calibration data is not evaluated, the ‘representative calibration data for an area’ cannot be defined, and thus cannot be associated with a point.” *Id.* (citing Ex. 2020 ¶ 80).

Patent Owner also argues that:

The district court also stated that the ’753 Patent’s explanation that “calibration data for a number of locations” is “gathered and analyzed so that particular grid points within the geographic region can be determined and associated with a particular set or sets of calibration data” demonstrates “what *must be done* to arrive at a grid point or set of grid points.”

PO Resp. 21 (citing Ex. 1028, 19). Patent Owner contends that this “explanation” “further demonstrates the district court’s recognition that generating a grid point involves evaluating calibration data, as reflected in its use of the phrase ‘representative calibration data for an area’ in its adopted construction.” *Id.* (citing Ex. 2020 ¶ 81).

For the above reasons, Patent Owner concludes that “the district court’s construction of ‘grid point,’ . . . requires that a grid point—including the boundaries of the area represented by that grid point—be determined

from evaluation of calibration data,” and “the ‘non-uniform grid points’ claimed in the ’104 Patent have this same requirement.” *Id.* at 23.

In the event the Board is not persuaded by Patent Owner’s arguments regarding the district court’s construction of “grid point,” Patent Owner argues, in the alternative, that “the intrinsic record requires the term ‘non-uniform grid point’ to be construed as ‘a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data.’” *Id.* at 23–24. In support of this alternative argument, Patent Owner asserts that the claim language requires this construction because the term “non-uniform” means that the area covered by each grid point is not uniform. *Id.* at 24 (citing Ex. 1001, claim 2; Ex. 2020 ¶ 85).

Patent Owner also asserts that the Specification of the ’104 patent requires the proposed construction. *Id.* (citing Ex. 2020 ¶¶ 86–91). Specifically, Patent Owner argues that the Specification “explains that ‘a non-uniform grid point (NUG) may represent the signal characteristics and/or calibration data over a given region’ such that each NUG ‘represent[s] an area of collected calibration data.’” *Id.* (quoting Ex. 1001, 3:50–56; citing Ex. 2020 ¶ 86) (alteration in original). According to Patent Owner, “[t]he boundaries of the area represented by a non-uniform grid point—which define the shape of that area—are variable because they are based on evaluation of statistical similarities across the gathered calibration data.” *Id.* (citing Ex. 2020 ¶ 86). Furthermore, Patent Owner argues that both the ’379 provisional application and the ’753 patent also explain that the shape and boundaries of the area represented by a non-uniform grid point are variable because they are based on evaluation of statistical similarities across the gathered calibration data. *Id.* at 24–25 (citing Ex. 2020 ¶ 86;

Ex. 1001, 1:6–9; quoting Ex. 1005, 7; Ex. 1008, 12:7–14); *see also id.* at 8–9 (making the same argument and quoting Ex. 1005, 7; Ex. 1008, 12:7–14).

Next, referencing Figure 6 of the '784 patent, which shows a geographical region having three “NUGs” (NUG1, NUG2, NUG3), Patent Owner argues that “[c]alibration data is gathered at different locations in this broader region and then analyzed to define grid points that divide the region into different areas represented by each grid point.” *Id.* at 25–26 (citing Ex. 2013, 6:21–34, Fig. 6; Ex. 2020 ¶¶ 87–88; Ex. 1008, 2:31–35); *see also id.* at 7–9 (making similar arguments based on Figure 6 of the '784 patent). Patent Owner contends that the boundaries for each NUG area must be defined because the non-uniform grid points represent an area of collected calibration data and are associated with the representative data for the area. *Id.* at 27 (citing Ex. 1001, 3:56–60).

Patent Owner argues that the '104 patent and the '379 provisional application both disclose that evaluation of calibration data is “of great importance” because it is fundamental to generating the grid points. *Id.* (citing Ex. 1005, 6; Ex. 1001, 1:6–9; Ex. 2020 ¶ 89). Patent Owner further contends that the '379 provisional application describes using statistical similarity to evaluate calibration data and discloses multiple methods for evaluating statistical similarity. *Id.* at 27–28 (citing Ex. 1005, 6–7; Ex. 1001, 1:6–9; Ex. 2020 ¶ 89). Thus, according to Patent Owner, “the ‘geometrical shape’ (*i.e.*, boundaries) of the area represented by a particular non-uniform grid point is ‘determined by the statistical similarity of the data’ allocated to a grid point, which is based on evaluation of the calibration data.” *Id.* at 28–29 (citing Ex. 1005, 7; Ex. 1001, 1:6–9; Ex. 1008, 10:66–11:6; Ex. 2020 ¶ 90).

In view of the above assertions, Patent Owner concludes “that the term ‘non-uniform grid point’ as used in the ’104 Patent means ‘a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data.’” *Id.* at 29 (citing Ex. 2020 ¶ 91).

In reply, Petitioner first argues that Patent Owner’s prior attempts to introduce additional requirements into the district court’s construction of “grid point” have been rejected previously by the district court and the Board. Reply 3–4 (citing Ex. 1028, 19; Dec. Inst. 27).

Next, Petitioner argues that, contrary to Patent Owner’s position, “[t]he file history of the ’104 Patent does not limit the term[s] ‘grid point’ or ‘non-uniform grid point’ to require any specific ‘evaluation’ as this is an example of *what can be done* to arrive at a ‘grid point’ or NUG.” *Id.* at 4; *see also id.* at 7 (“The Board’s construction is properly focused on ‘what a grid point is’ and not *what can be done* to arrive at a grid point.” (citing Dec. Inst. 27; Ex. 2023, 37:10–22)). For instance, Petitioner argues that the district court’s construction of “grid point” does not mention any evaluation. *Id.* at 5–6. Petitioner also argues that Patent Owner’s assertion that the evaluation involves determining which data are statistically similar is not supported by the file history, asserting that the ’753 patent discloses many ways to generate a grid point associated with representative calibration data for an area. *Id.* at 6 (citing PO Resp. 10; Ex. 1001, 3:56–60, 4:40–52; Ex. 1008, 10:29–59, 10:64–65, 12:15–25, 12:58–67).

As such, Petitioner contends that terms such as “evaluation” and “statistically very similar” are exemplary methods of generating grid points and not requirements. *Id.* at 7. According to Petitioner, the ’379 provisional application expressly discloses techniques for generating grid points that are

not based on statistical similarity. *Id.* at 7–8 (citing Ex. 1005, 8). Petitioner also argues that, although Patent Owner relies on a passage in the ’753 patent as disclosing using statistical similarity for determining the data allocated to a NUG, “the very next paragraph of the ’753 Patent confirms that ‘statistical similarity’ of data is merely one embodiment, i.e., ‘[one] may also consider ***the method of generating NUGs based not on statistical consistency of calibration data, but on other conditions.***’” *Id.* at 8 (quoting Ex. 1008, 12:15–17; citing PO Resp. 25; Ex. 1005, 8) (alteration in original).

Furthermore, Petitioner argues that Patent Owner’s reliance on Figure 6 of the ’784 patent is misplaced. *Id.* Petitioner contends that the ’784 patent “expressly states that Figure 6 illustrates ‘an ***exemplary*** non-uniform grid (NUG) region’, and Patent Owner’s expert agrees.” *Id.* (quoting Ex. 2013, 3:12–13; citing Ex. 1031, 115:13–20).

Next, regarding Patent Owner’s assertion that “non-uniform grid point” be construed as “a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data,” Petitioner argues that this proposed construction should fail for the same reasons presented in connection with the proposed construction of “grid point.” *Id.* at 11. Petitioner asserts that “Patent Owner merely cites to portions of the specification of the ’104 Patent that comport with the current construction of ‘grid point’ and do not mention anything about ‘evaluation’ or ‘analysis.’” *Id.* (citing PO Resp. 24; Ex. 1001, 3:50–56).

Upon consideration of the parties’ arguments and for the reasons explained below, we agree with Petitioner that Patent Owner’s additional requirement of evaluating the calibration data to determine the boundaries of the area represented by a grid point should not be included in the

construction of either “grid point” or “non-uniform grid point.” Instead, based on the full record, we discern no reason to alter our prior construction of “grid point” as “a point associated with representative calibration data for an area” and maintain that construction for this Final Written Decision for the following reasons.

First, the construction of “grid point” we adopt here is supported by the Specification of the ’104 patent. Namely, the ’104 patent discloses that “[i]n general, a non-uniform grid point (NUG) may represent the signal characteristics and/or calibration data over a given region,” and “NUGs represent an area of collected calibration data.”¹⁰ Ex. 1001, 3:50–60. The district court identified the second quoted passage from the ’104 patent as “provid[ing] a *clear indication* of the meaning of ‘grid point.’” Ex. 1028, 19 (emphasis added). We agree with the district court’s analysis. Although the ’104 patent does not explain how a generic “grid point” might differ from the described “non-uniform grid point,” we do not find this distinction pertinent to construing “grid point” in this case because neither party raises this issue. Furthermore, the district court construed “grid point” only, not “non-uniform grid point.” *Id.* at 18–20.

In addition, the ’753 patent describes “non-uniform grid points” or “NUGs” as grid points that are not part of a uniform grid and usually are not uniformly distributed throughout the geographic region. Ex. 1008, 2:31–35, 2:43–50; *see also id.* at 9:40–43 (“The grid points may be non-uniformly spaced throughout the geographic region and hence may be referred to as non-uniform grid points (‘NUGs’).”). The ’379 provisional application

¹⁰ The ’104 patent also indicates that a set of three NUGs is illustrated in Figure 1 (Ex. 1001, 3:52–54), but neither Figure 1 nor any other figure of the ’104 patent depicts any such NUGs.

describes a method for generating non-uniform grid points but does not describe a non-uniform grid point or a grid point as something different than a point associated with representative calibration data for an area. Ex. 1005, 5–8. In fact, during the hearing, counsel for Patent Owner pointed to the ’379 provisional application as disclosing that a NUG is a point that represents a geographical area. Tr. 47:7–18.

Turning to Patent Owner’s arguments, we are not persuaded by the contention that, because the district court referred to the data points within an area being statistically similar as the defining characteristic of a NUG region, the claimed grid points cannot exist until after the calibration data is gathered and analyzed. *See* PO Resp. 18–19. This contention, even if correct, is not persuasive because it is generally improper to read limitations from specific embodiments into the claims. *See Cadence Pharms. Inc. v. Exela PharmSci Inc.*, 780 F.3d 1364, 1369 (Fed. Cir. 2015) (“[E]ven if all of the embodiments discussed in the patent included a specific limitation, it would not be proper to import from the patent’s written description limitations that are not found in the claims themselves.” (internal quotations omitted)); *see also SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004) (“Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim.”).

Patent Owner’s assertion that the ’379 provisional application and the ’784 patent both describe evaluating the statistical similarities of calibration data (PO Resp. 10, 20) also fails to provide a sufficient reason to import a requirement to evaluate the calibration data into the construction of “grid point” or “non-uniform grid point.” Similarly, Patent Owner’s assertion that

the '379 provisional application discloses that evaluation of calibration data is “of great importance” because it is fundamental to generating the grid points is unpersuasive. *See* PO Resp. 27. Even describing evaluation as being “of great importance” is an insufficient basis for importing a requirement for evaluation. *See Texas Instruments, Inc. v. U.S. Int’l Trade Comm’n*, 805 F.2d 1558, 1563 (Fed. Cir. 1986) (“[The Federal Circuit] has cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.”).

We also note that, when the '379 provisional application states “[t]he evaluation of the data vectors is of great importance since it is fundamental to *the method*” (emphasis added), this statement is made in the context of describing “Invention 1: A method for generating Non-Uniform Grid Points (NUGs) from calibration data.” Ex. 1005, 5–6. This is one of fifteen inventions described by the provisional application. The challenged claims of the '104 patent, in contrast, are directed to “[a] method of determining a location of a mobile station.” Ex. 1001, 11:66–67, 12:16–18. Although evaluation of data vectors may be “fundamental” to the first way of generating non-uniform grid points set forth by the provisional application, this does not mean that evaluation of data vectors is necessarily fundamental to *every* way of generating non-uniform grid points. Indeed, the provisional application suggests that other methods may be available by describing Invention 1 as “[a] method” as opposed to describing it as the only possible method. Ex. 1005, 5–6. Also, the '104 Specification indicates that NUGs “may be separately defined by a variety of parameters” including “geographical areas (e.g., mountains, buildings, roads).” Ex. 1001, 4:1–4.

Furthermore, we agree with Petitioner that evaluating the statistical similarities of calibration data is an *exemplary* method of generating grid

points and not a requirement and many ways of generating grid points are disclosed. *See* Reply 6–7. As Petitioner notes, the ’753 patent discloses that “[one] may also consider ***the method of generating NUGs based not on statistical consistency of calibration data, but on other conditions.***” *Id.* at 8 (quoting Ex. 1008, 12:15–17) (alteration in original). The ’753 patent also lists several such alternate methods that are not based on statistical similarity. Ex. 1008, 12:17–25. Also, the ’379 provisional, incorporated by reference into the ’753 patent (*see* Ex. 1001, 1:6–9), states that the invention “considers the method of generating NUGs based not on statistical consistency but on other conditions such as [providing five other examples].” Ex. 1005, 3–4. Indeed, Patent Owner agrees that the correct construction of grid point “does not require evaluating statistical similarity.” Sur-reply 3. As such, we are persuaded that evaluating calibration data for statistical similarities is not a *requirement* to generate a grid point.

In reply, Patent Owner argues that Petitioner’s argument regarding evaluating the statistical similarity of calibration data is not supported by the file history contradicts representations made in the district court. Sur-reply 3–5 (citing Reply 6). To the extent Petitioner is arguing that the file history does not support evaluating which data are statistically similar, as opposed to arguing that the file history does not require evaluating statistical similarity, we disagree. But we are persuaded on the full record that none of the ’104 patent, the ’379 provisional application, the ’784 patent, or the ’753 patent support that evaluating which data are statistically similar is *required* to generate a grid point. In particular, as noted above, the ’753 patent discloses that methods not based on statistical consistency of calibration data can be used. Ex. 1008, 12:15–17.

Regarding Petitioner's assertion that the '753 patent discloses many ways to generate a grid point associated with representative calibration data for an area (Reply 6), Patent Owner argues that "[c]onsistent with [Patent Owner's] construction, Petitioner cites passages where the grid point represents an area whose boundaries are determined from evaluation of the calibration data." Sur-reply 6 (citing Reply 6; Ex. 1008 10:47–50, 12:15–25). We do not find this argument persuasively undermines Petitioner's position. First, the passages of the '753 patent cited by Patent Owner do not mention determining the boundaries of the area. *See* Ex. 1008, 10:47–50, 12:15–25. Furthermore, the '753 patent discloses several different methods, or ways, for generating grid points, such as "a minimum number of unique neighbors observed in data accumulated from allocated calibration grid points." *Id.* at 12:15–25. Indeed, the '753 patent also teaches that "representative calibration data" can be a single calibration point and, in this instance, the single "calibration point may become the root of a separate NUG." Ex. 1008, 10:60–65.

We also credit Mr. Williams's testimony that determining which calibration data is representative of an area "would not require analysis" because "[i]t could be just the actual measurement," and "analysis could be part of it, but it doesn't have to be." Ex. 2023, 37:10–22. Patent Owner's argument that this testimony is not instructive because Mr. Williams limited his responses to the construction of calibration data and avoided responding to the question asked is not persuasive. *See* Sur-reply 8–9. Although Mr. Williams did refer to "the calibration data construction" in his response, we disagree that he avoided responding to the question asked. He was asked: "To determine which of that calibration data is representative of an area would require analyzing that set of collected calibration data, right?" and

directly responded: “It would not require analysis. It could be just the actual measurement.” Ex. 2023, 37:10–16. This testimony responded to the question asked. He then stated: “I believe that is an issue as part of the calibration data construction,” before concluding: “So analysis could be part of it, but it doesn’t have to be.” Ex. 2023, 37:17–22. Merely expressing a *belief* that the issue or question asked relates to the calibration data construction does not equate to his testimony being limited to the calibration data construction.

Next, Patent Owner’s argument that the *boundaries* of the area represented by a grid point must be determined by evaluating the calibration data does not persuasively undermine Petitioner’s position. *See* PO Resp. 9, 20. We are not directed to any disclosure in the ’104 patent that indicates the boundaries of the NUG area must be determined to generate the NUG or grid point.¹¹ As noted above, Patent Owner contends that the ’379 provisional application and the ’784 patent both describe determining these boundaries “as involving the evaluation of statistical similarities across the set of calibration data gathered within a region, and teach examples of the statistical analyses used to generate the claimed grid points from this calibration data.” *Id.* at 20 (citing Ex. 1005, 6–7; Ex. 1008, 10:39–65, 12:4–14; Ex. 2020 ¶ 79); *see also id.* at 10 (“This evaluation of calibration data involves determining which data are ‘statistically very similar’ using ‘increasingly stringent tests of statistical sufficiency’ such that they can be

¹¹ Although not cited by Patent Owner, the ’104 patent states that “geographical areas (e.g., mountains, buildings, roads) may be a factor in deciding the boundaries of a NUG.” Ex. 1001, 4:2–4. We are not persuaded, however, that this disclosure suggests that determining the boundaries is a prerequisite for generating a NUG.

associated with (or ‘allocated to’) a particular grid point.” (citing Ex. 1005, 6–7; Ex. 1008, 10:44–59; Ex. 2020 ¶ 69)). The cited passages of the ’379 provisional application and the ’784 patent, however, do not describe determining the boundaries of a NUG area. Ex. 1005, 6–7; Ex. 1008, 10:39–65, 12:4–14.

Furthermore, the ’379 provisional application discloses evaluating “data vectors” by searching for data vectors that exhibit clustering.

Ex. 1005, 6. The ’379 provisional application further discloses:

If the data exhibits tight clustering, the data for the next candidate calibration point is aggregated to the former and the clustering property is re-evaluated. If the second also has a cluster but this cluster is sufficiently different, we deem that the data for the two considered calibration points should be allocated to the roots of separate NUGs. If the aggregate cluster is statistically very similar to either of the first clusters, the data for the two calibration points are allocated to the same NUG.

Id. This disclosure indicates that statistically similar calibration points are allocated to a NUG independently of the boundaries of the NUG area. In other words, for this embodiment, the calibration points allocated to a NUG define the boundaries of the NUG area rather than the size and shape of the NUG area determining which calibration points are allocated to the NUG. Accordingly, it is not necessary to determine the boundaries of a NUG area first in order to generate the NUG.

In addition, we disagree with Patent Owner’s argument that the district court’s statement that the ’753 patent’s disclosure of gathering and analyzing calibration data demonstrates what must be done to arrive at a grid point or set of grid points shows “the district court’s recognition that generating a grid point involves evaluating calibration data, as reflected in its use of the phrase ‘representative calibration data for an area’ in its

adopted construction.” *See* PO Resp. 21. Instead, for the following reasons, we agree with Petitioner’s argument that neither “grid point” nor “non-uniform grid point” should be limited to require evaluation because evaluating calibration data is an example of *what can be done* to arrive at a grid point, instead of what a grid point is. *See* Reply 4, 7.

As we discussed in the Decision on Institution, Patent Owner mischaracterizes the district court’s claim construction order. *See* Dec. Inst. 27 (addressing a similar argument made in the Preliminary Response). Instead of concluding that a “grid point” must be generated based on an evaluation of calibration data, the district court was explaining why it declined to adopt Patent Owner’s¹² proposed construction in the Google Action. Ex. 1028, 19.

Patent Owner now argues that our Decision on Institution “overlooks both the plain language and reasoning of the district court as well as the teachings of the intrinsic evidence,” and “[h]ow the claimed grid points are generated is fundamental to what they are—they must be generated based on evaluation of the calibration data so that they are representative of a particular area.” PO Resp. 22 (citing Ex. 2020 ¶ 82). We disagree, however, that the plain language and reasoning of the district court supports Patent Owner’s position that generating a grid point requires evaluating the calibration data to determine the boundaries of the grid point’s area.

In the Google Action, Patent Owner argued “that the Abstract of the ’753 Patent provides a ‘near-definitional statement’ of [the “grid point”] claim term, and that its construction is derived from that text.” Ex. 1028, 19.

¹² Patent Owner is the plaintiff in the Google Action.

Addressing this argument, the district court noted that the Abstract of the '753 patent states, in relevant part:

The location of a wireless mobile device may be estimated using, at least in part, one or more pre-existing Network Measurement Reports ("NMRs") which include calibration data for a number of locations within a geographic region. *The calibration data for these locations is gathered and analyzed so that particular grid points within the geographic region can be determined and associated with a particular set or sets of calibration data from, for example, one or more NMRs.*

Id. The district court then stated "[b]ut the italicized language from which [Patent Owner's] construction is drawn is directed more toward *what must be done* to arrive at a grid point or set of grid points rather than what a grid point *is*. *Id.* Therefore, the district court was explaining that the language related to a possible origin of a grid point rather than the meaning of "grid point." The district court was not recognizing that generating a grid point requires evaluating calibration data or that the grid points necessarily have a characteristic that results from being generated via evaluating calibration data. *See also* Ex. 1005, 4 (provisional application explaining that a non-uniform grid point may optionally have a wide variety of characteristics).

Also, Patent Owner's contention that "[h]ow the claimed grid points are generated is fundamental to what they are" is not persuasive in this instance because, as discussed above, the '753 patent discloses several methods for generating grid points. Ex. 1008, 12:17–25. Accordingly, no one method for generating a grid point can be considered fundamental.

Next, we are not persuaded by Patent Owner's argument that the claim language requires its proposed construction because the term "non-uniform" means that the area covered by each grid point is not uniform. *See* PO Resp. 24. Claim 2 recites that "said database comprises

previously-gathered calibration data for one or more non-uniform grid points within said region.” Ex. 1001, 12:16–18. This claim language does not suggest that “non-uniform” means that the area covered by each grid point is not uniform. On the contrary, the ’753 patent discloses that “grid points do not necessarily have to be part of a uniform grid and usually will not be uniformly distributed throughout the geographic region,” and refers to such non-uniformly distributed grid points as “non-uniform grid points.” Ex. 1008, 2:43–50; *see also* PO Resp. 6 (indicating that term “non-uniform grid points” refers to the distribution of grid points). Thus, “non-uniform” describes the distribution of grid points, not the area of each grid point.

We also are not persuaded by Patent Owner’s arguments that the shape and boundaries of the area represented by a non-uniform grid point are variable. *See* PO Resp. 8–9, 24–25. The mere fact that the shape, and thus the boundaries, of the area represented by a non-uniform grid point can vary does not establish that the boundaries must be determined in order to generate the grid point. Rather, as discussed above, the ’379 provisional application’s disclosure of evaluating “data vectors” indicates that statistically similar calibration points are allocated to a NUG independently of the boundaries of the NUG area. *See* Ex. 1005, 6.

In addition, Patent Owner’s arguments based on Figure 6 of the ’784 patent are not persuasive. *See* PO Resp. 7–9, 25–26. As Petitioner notes (Reply 8), however, the ’784 patent states that Figure 6 “illustrates an *exemplary* non-uniform grid (NUG) region (R).” Ex. 2013, 3:12–13 (emphasis added). We are not persuaded that this exemplary depiction of three NUGs establishes that the boundaries of the NUGs must first be determined in order to generate the NUGs. In reply to Petitioner’s argument that Figure 6 of the ’784 patent illustrates only exemplary NUGs, Patent

Owner argues that “Figure 6 . . . illustrates NUGs hav[ing] different shapes, sizes and boundaries depending on the representative calibration data for different areas. NUGS are not uniformly assigned to a pre-defined grid.”

Sur-reply 10. While Patent Owner is correct in that the three NUG areas depicted in Figure 6 have different shapes, sizes and boundaries, Figure 6 is nonetheless exemplary and does not establish that the boundaries of the NUG areas must first be determined in order to generate the NUGs.

In view of the above and based on the full record, we maintain our prior construction of “grid point” as “a point associated with representative calibration data for an area.” Furthermore, in addition to finding Patent Owner’s proposed construction of “non-uniform grid point” unpersuasive, we note that Patent Owner does not propose any construction that would differentiate a “non-uniform grid point” from a generic “grid point.” Thus, we maintain our prior construction of “non-uniform grid points” as “grid points that are non-uniformly spaced throughout a geographic region” for the reasons discussed in our Decision on Institution. *See* Dec. Inst. 27.

On the full record, we do not discern a need to construe explicitly any other claim language at this juncture because doing so would have no effect on our analyses below of Petitioner’s asserted grounds and will not assist in resolving the present controversy between the parties. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

D. Ground 1: Asserted Anticipation based on Shkedi

Petitioner asserts that claims 1–3 and 11 are unpatentable under 35 U.S.C. § 102 based on Shkedi. Pet. 16–35. Patent Owner provides

arguments addressing this asserted ground of unpatentability with respect to claim 2. PO Resp. 30–39; Sur-reply 18–23.

As discussed above, Patent Owner has disclaimed claims 1, 3, and 11. We, thus, analyze the challenge to the claim remaining at issue, claim 2.

1. Shkedi (Ex. 1006)

Shkedi generally relates to a signal-comparison based method for determining the location of a mobile communications device. Ex. 1006, 1:6–8, 5:27–30. The method can operate using one or more portable RF communications devices in conjunction with two or more fixed-location, service-area antenna stations that are “substantially continuously operating.” *Id.* at 5:37–42. In one embodiment, the method comprises:

(1) registering a selected location by first-causing a portable RF communications device at the selected location to (i) receive an RF communications signal from a plurality of “local fixed-location service-area” antenna stations and (b) measure reception signal strength respectively associated with the received signal from at least two of the antenna stations;

(2) recording the selected location by electronically storing at least two of the respective reception signal strength measurements;

(3) monitoring by second-causing a portable RF communications device to (i) receive communications signals from, respectively, a plurality of “local fixed-location service-area” antenna stations, and (ii) measure reception signal strength associated with the signals; and

(4) determining if the portable RF communications device of the “monitoring” step is at the selected location of the “registering” step by electronically comparing measurements in the “monitoring” step with the stored measurements of the “recording” step.

Id. at 5:42–63. The “registering” step “is a data collection step where the portable device comes to measure the antenna signal space reception characteristics at the selected location.” *Id.* at 11:18–28.

Although the majority of Shkedi relates to direct measurements of signal strengths and direct comparisons of those measurements, Shkedi also describes other techniques, such as using the strongest signal as a unit to help normalize other simultaneous measurements. Ex. 1006, 6:12–34. Shkedi additionally describes an example in which a cell phone determines whether it has returned to a desired location or to an area that is “close enough” to the desired location, using (1) signal strength measurements of the four surrounding cells with the strongest signals and (2) relations calculated by dividing each of the four surrounding cells’ “less strong” signals by its strongest signal. *See id.* at 20:66–21:24.

2. *Independent Claim 1*

Because claim 2 includes the limitations of claim 1, we first address the Petitioner’s contentions regarding claim 1 despite it having been disclaimed.

Petitioner contends that Shkedi discloses the limitations of claim 1. Pet. 17–31. To support its arguments, Petitioner identifies certain passages in the cited reference and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* For instance, regarding the limitation “providing a database of previously-gathered calibration data for a predetermined region in a wireless network,” Petitioner argues that Shkedi discloses registering and recording at least two signal strength measurements for a selected location and these recorded signal strength measurements correspond to the claimed “a database of previously-gathered calibration data.” Pet. 18–19 (quoting Ex. 1006, 5:4–5, 5:44–50, 5:59–63,

6:35–7:5, 8:41–56, 11:26–28, 11:39–42, 13:64–14:7, 18:31–33; Ex. 1012 ¶¶ 63–69).¹³

Patent Owner does not address Petitioner’s contentions regarding the limitations of claim 1 in the Response. *See generally* PO Resp. We need not set forth formal findings as to the undisputed assertions by Petitioner that Shkedi discloses the limitations of claim 1. *See LG Elecs., Inc. v. Conversant Wireless Licensing S.A.R.L.*, 759 F. App’x 917, 925 (Fed. Cir. 2019) (“The Board is ‘not required to address undisputed matters’ or arguments about limitations with which it was never presented.” (quoting *In re Nuvasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016))). Also, we cautioned Patent Owner “that any arguments not raised in the response may be deemed waived.” Paper 15, 9; *cf.* 37 C.F.R. § 42.23(a) (“Any material fact not specifically denied may be considered admitted.”). Nevertheless, we have reviewed Petitioner’s contentions with respect to the limitations of claim 1 and find that Shkedi discloses these limitations as set forth by Petitioner. *See* Pet. 17–31.

3. *Dependent Claim 2*

Claim 2 depends from claim 1 and further recites that the database of claim 1 “comprises previously-gathered calibration data for one or more non-uniform grid points within said region.” Ex. 1001, 12:16–18. As discussed above, we construe “grid point” as “a point associated with representative calibration data for an area” and “non-uniform grid points” as “grid points that are non-uniformly spaced throughout a geographic region.” *See supra* § II.C.

¹³ Although Petitioner cites lines 44–50 in column 5 of Shkedi as disclosing “electronically storing at least two of the respective signal strength measurements,” the quoted language appears in lines 51–53 of column 5.

Petitioner argues that Shkedi discloses registering and recording non-uniform locations of a mobile telephone as signal strength measurements in a database and updating the database with measurements made during monitoring of the mobile telephone's location. Pet. 32 (citing Ex. 1006, 5:44–50, 11:51–12:5, 14:1–7; Ex. 1012 ¶¶ 124–125). Petitioner also notes that Shkedi discloses “there is no limit on the number of desired locations that could be recorded.” *Id.* (quoting Ex. 1006, 18:31–33); *see also id.* at 18 (quoting same passage from Shkedi).

Next, Petitioner argues that Shkedi discloses that the mobile telephone measures and stores a plurality of service antenna signals (i.e., signal strengths) such that the mobile telephone can be located “within a predetermined proximity of the original user selected location.” *Id.* at 32–33 (citing Ex. 1006, 8:41–48). According to Petitioner, locations stored “within a predetermined proximity of the original user selected location” are points associated with representative calibration data for an area and non-uniformly spaced throughout a geographic region. *Id.* at 33 (citing Ex. 1012 ¶ 126).

Petitioner also argues that “Shkedi builds the database as a ‘transformational data bank’ of non-uniform grid points ‘by collecting correspondences between GPS (latitude longitude) coordinates’ and the signal strengths for the user selected locations,” and “[a] ‘never registered location’ is found by ‘extrapolating’ to find locations failing ‘to report GPS.’” *Id.* (quoting Ex. 1006, 13:15–23). In Petitioner's view, such extrapolated locations constitute non-uniform grid points. *Id.* (citing Ex. 1006, 17:44, 13:9-25; Ex. 1012 ¶ 127).

In addition, Petitioner argues that “Shkedi discloses obtaining non-uniform locations within buildings where ‘GPS signals’ are unavailable,” and “[s]uch locations are recorded in Shkedi's database; these

non-uniform grid points represent non-uniform locations of the buildings.”
Id. at 34 (citing Ex. 1006, 17:43–45, 10:37–63, 14:1–7; Ex. 1012 ¶ 129).

Applying its proposed construction for “grid point” (or “non-uniform grid point”), Patent Owner argues that Shkedi does not disclose a database of “grid points [that] have specific requirements, including that the boundaries of the area represented by the grid point are determined from evaluation of the calibration data.” PO Resp. 31 (citing Ex. 2020 ¶ 96). For the reasons discussed above in the claim construction section, however, we do not agree with Patent Owner’s proposed construction. *See supra* § II.C. As such, the “non-uniform grid points” recited in claim 2 are not required to have boundaries that are determined from evaluation of the calibration data. Accordingly, this argument is not persuasive.

Patent Owner also disputes Petitioner’s argument that Shkedi’s disclosure of storing a plurality of signal strengths that allow a mobile telephone to be located “within a predetermined proximity of the original user selected location” teaches that the locations are points “associated with representative calibration data for an area.” PO Resp. 31–34. Specifically, Patent Owner contends that Shkedi’s user selected locations are not “non-uniform grid points” because (1) they do not represent an area and (2) they are not generated based on evaluation of calibration data. *Id.* at 32 (citing Ex. 2020 ¶¶ 96–97; Ex. 1006, 5:44–58, 8:41–56, 11:18–37, 11:51–12:5).

The second part of this argument is not persuasive because our construction of “non-uniform grid points” does not require evaluation of the calibration data. *See supra* § II.C. Regarding the first part of the argument, Patent Owner asserts that Shkedi merely discloses determining whether an observed signal is within a predetermined proximity of a prior stored location based on the similarity of the signal strength measurements. PO

Resp. 32–33 (citing Ex. 1008, 41–48; Ex. 2020 ¶ 98). According to Patent Owner, this disclosure “only means that Shkedi assumes the user is within some ‘predetermined’ distance of that location depending on the measurements observed at that time,” not that the stored user selected location is associated with an area based on the predetermined proximity. *Id.* at 32 (citing Ex. 1008, 41–48; Ex. 2020 ¶ 98).

In reply, Petitioner argues that the signal strengths in Shkedi “are calibration data ‘representative’ of the area formed by the ‘predetermined proximity,’ making up non-uniform grid points in Shkedi’s database,” and locations “‘within a predetermined proximity of the original user selected location’ are points associated with representative calibration data for an area.” Reply 15–16 (citing Pet. 33; Ex. 1012 ¶ 126). Petitioner also argues that, in Shkedi, “[a] ‘predetermined proximity’ around user selected locations denotes calibration data representative of that proximal area.” *Id.* at 17 (citing Pet. 32–33; Ex. 1006, 8:41–48).

We agree with Petitioner. The pertinent disclosure from Shkedi reads:

Simply stated, if a mobile telephone (at a user selected location) measures a plurality of service antenna signals and stores these with their respective service antenna identifications, then that mobile telephone (or an equivalent unit) upon observing an identical list of service antennas with substantially identical respective signal strengths—can reasonably conclude that it is within a predetermined proximity of the original user selected location.

Ex. 1006, 8:41–48. Here, we find that the language “within a predetermined proximity of the original user selected location” refers to an area around the original user selected location. In other words, “within a predetermined proximity of the original user selected location” discloses that, instead of being exactly at the original user selected location, the mobile telephone

only need be in the area or vicinity of the original user selected location. Indeed, in acknowledging “that Shkedi assumes the user is within some ‘predetermined’ distance of [the original user selected] location” (PO Resp. 33), Patent Owner effectively confirms this interpretation of Shkedi’s disclosure. That is, being within some predetermined distance of the original user selected location is equivalent to being within a circle centered on the original user selected location and having a radius equal to the predetermined distance. That Shkedi allegedly only “assumes” that the user is within the predetermined distance of the original user selected location does not detract from the fact that Shkedi’s disclosure of “within a predetermined proximity of the original user selected location” describes an area around the original user selected location.

In its Sur-reply, Patent Owner argues that Shkedi’s “[s]tored signal strength is calibration data [that] is not a NUG because it does not represent the calibration data for an area,” and Shkedi’s “stored signal strengths don’t represent an area—they represent a coordinate.” Sur-reply 19–20 (citing Ex. 1006, 8:41–48, 13:11–12).

We disagree with these arguments. As noted above, Shkedi discloses using a mobile telephone to measure and store a plurality of service antenna signals (i.e., signal strengths) at a user selected location. Ex. 1006, 8:41–44. This measured signal strength data (which Patent Owner concedes is “calibration data”)¹⁴ pertains to, and thus is representative of, the user selected location. This data, however, does not represent *only* the user selected location. Rather, Shkedi further discloses that the mobile telephone

¹⁴ Indeed, the measured signal strength data satisfies the undisputed construction of “calibration data” as “modified or unmodified network measurement data associated with a geographic location.” *See supra* § II.C.

observing substantially identical respective signal strengths leads to the conclusion that the mobile telephone is within a predetermined proximity of the original user selected location. *Id.* at 8:44–48. As such, by associating the measured signal strength data with, not only the original user selected location, but also the area defined as being within the predetermined proximity of the location, Shkedi discloses that the measured signal strength data is representative of the area. *Id.* at 8:41–44. For the reasons above, we determine that Shkedi’s original user selected location (i.e., “a point”) is associated with signal strength data (i.e., “calibration data”) that is representative of the predetermined proximity of the location (“an area”).

Accordingly, based on the full record, we find that Shkedi’s user selected locations are “grid points” as we construe that term. Claim 2, however, recites “non-uniform grid points,” which we construe as “grid points that are non-uniformly spaced throughout a geographic region.” *See supra* § II.C. Regarding the “non-uniform” aspect of the term, Petitioner asserts that Shkedi’s user selected locations are non-uniformly spaced throughout a geographic region. Pet. 33 (citing Ex. 1212 ¶ 126). More specifically, Petitioner argues that Shkedi discloses building a transformational data bank by finding never registered locations through extrapolation, and these extrapolated locations constitute non-uniform grid points. Pet. 33 (citing Ex. 1006, 17:44, 13:9-25; Ex. 1012 ¶ 127). In addition, Petitioner contends that Shkedi’s “[u]ser selected locations are *random locations* in which a user travels (i.e., not ‘predefined’).” Reply 17 (quoting Ex. 1006, 17:29–30 (“[A]s a cell phone user moves around”) (emphasis added)).

In sur-reply, Patent Owner argues that “Shkedi does not address whether selected locations are uniform or not and the proximities *are*

predefined because they are ‘predetermined proximities.’” Sur-reply 20 (citing Ex. 1006, 8:41–46). This argument is not persuasive because our construction of “non-uniform grid points” pertains to grid points that are *non-uniformly spaced* throughout a geographic region. Thus, even if the same “predetermined proximity” was applied to each location in Shkedi, such that the corresponding areas defined by the predetermined proximity had the same, uniform size, this would not have suggested that the locations are uniformly spaced throughout the region. Instead, we are persuaded that Shkedi’s user selected locations are randomly selected, and, as such, are not uniformly distributed. For instance, as Petitioner points out (Reply 17), Shkedi discloses that signal strength data is collected “as a cell phone user moves around [getting] closer to some cells and . . . further away from other cells.” Ex. 1006, 17:29–30. This disclosure describes a random, non-uniform data collection process as opposed to collecting data at uniformly distributed locations.

For the above reasons, we are persuaded that Shkedi discloses a database of previously-gathered calibration data for one or more non-uniform grid points, consistent with our construction of the term.

Next, Patent Owner argues that even if we reject its proposed claim construction, “Petitioner’s argument still fails because it conflates ‘calibration points’ and ‘grid points’ in the ’104 Patent claims.” PO Resp. 35 (citing Ex. 2020 ¶ 102). Patent Owner asserts that

Shkedi’s locations where measurements are made for registration in a database are akin to what the ’104 Patent calls “calibration points,” not “grid points.” Ex. 2020 ¶ 102. Calibration points are discrete measurement points (*i.e.*, a mobile transmitter transmits a signal strength from a known location). Ex. 1005 at 5; Ex. 2020 ¶ 103. “Grid points,” on the other hand, are generated by aggregating calibration vectors at each calibration

point into defined geographic areas consisting of a number of similar vectors. Ex. 1005 at 6; Ex. 2020 ¶ 103.

Id. Patent Owner also argues that “calibration points” and “grid points” are two different claim terms with different meanings. *Id.* at 35–36 (citing *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1382 (Fed. Cir. 2008); *SIPCO, LLC v. Emerson Elec. Co.*, 794 F. App’x 946, 949 (Fed. Cir. 2019)).

According to Patent Owner, “[a]t best, Petitioner shows that Shkedi teaches non-uniform ***calibration points***—*i.e.*, non-uniform locations where calibration data is collected,” instead of the non-uniform *grid points* required by claim 2. *Id.* at 37. Patent Owner concludes that Petitioner’s argument should be rejected because it improperly erases the distinction between “calibration points” and “grid points.” *Id.*

We disagree. Although neither party proposes a formal construction for “calibration point,” the parties appear to agree that a “calibration point” corresponds to the point or location where calibration data is collected. *See e.g.*, Tr. 20:16–19 (counsel for Petitioner arguing: “So, generally, when you’re building a database for locating a mobile phone, you obtain signal strengths at various locations. And each location that corresponds to the signal strengths is a calibration point. The signal strength component of that calibration point, that’s the calibration data.”), 42:22–43:1 (counsel for Patent Owner arguing: “Calibration data is assigned to a calibration point. The calibration point is a coordinate, right, a coordinate in a geographical region. That geographical region calibration point represents the coordinate and calibration data.”). This interpretation of “calibration point” is supported by claim 4 of the ’104 patent, which recites: “The method of claim 1 wherein said previously-gathered calibration data includes

calibration data gathered at a predetermined calibration point within said region wherein said predetermined calibration point is not located within a structure.”¹⁵ Ex. 1001, 12:22–26 (emphasis added). Furthermore, the ’379 provisional application describes a “calibration point” as a discrete point at which calibration data is obtained. Ex. 1005, 5.

In this case, Shkedi’s user selected locations, which we find are “grid points” for the reasons discussed above, could also correspond to “calibration points” in that they are locations where calibration data is collected. Contrary to Patent Owner’s assertion, however, this overlap between “grid points” and “calibration points” in Shkedi does not undermine Petitioner’s argument for the following reasons.

First, as discussed above, the ’104 patent discloses that “[i]n general, a non-uniform grid point (NUG) may represent the signal characteristics and/or calibration data over a given region,” and “NUGs represent an area of collected calibration data.” Ex. 1001, 3:50–60. Although not stating expressly that the calibration data is collected at a “calibration point,” the ’104 patent indicates that “[c]alibration data may be obtained from data collection devices during field test operations, and/or from [mobile stations] or other communication devices within the general area of the NUG.” *Id.* at 3:61–63. As such, the ’104 patent suggests a connection between a grid point and calibration data that is collected at a calibration point.

Furthermore, the ’379 provisional application discloses that, as part of a NUG generation operation, data from a calibration point is assigned to a fixed grid point. Ex.1005, 6. More specifically, the ’379 provisional

¹⁵ We are not directed to any other description of “calibration points” in the ’104 patent; the written description of the ’104 patent does not appear to describe or define “calibration points.”

application discloses allocating data from one or more calibration points to a NUG (or the root of a NUG) depending on the statistical similarity of the data. *Id.* Moreover, during the hearing, counsel for Patent Owner argued that:

So what this does in aggregating the calibration points together, you can aggregate hundreds of thousands of calibration points into one area, one NUG. And I don't mean to imply a NUG is an area. It's a point in our construction, but it's a point associated with this one large area.

Tr. 43:15–18. In other words, NUGs, or grid points, are an aggregation of one or more calibration points, or at least the data from one or more calibration points, thereby suggesting a correspondence between the calibration points and the grid point.

In addition, a grid point can be based on a single calibration point, as disclosed by the '379 provisional application and the '753 patent. *See* Ex.1005, 6 (“[T]he adjacent calibration points either wind up having all their data accumulated into a single NUG or at the other extreme, *each such calibration point becomes the root of a separate NUG.*”) (emphasis added); Ex. 1008, 10:61–65 (“[O]ne or more of the adjacent calibration points may either wind up having all their data accumulated into a single NUG or, at the other extreme, *each such calibration point may become the root of a separate NUG.*”) (emphasis added); *see also* Tr. 64:10–12 (counsel for Patent Owner arguing that “[i]t’s possible that you can have a calibration point that has received a signal strength that is totally different than anything around it. In that case, that would be the root of an individual NUG and by itself”); Ex. 1031, 101:1–4 (Patent Owner’s expert testifying that “[e]ach calibration point may become the root of a separate NUG”).

A grid point consisting of a single calibration point strongly suggests a correspondence in the location of the calibration point and the grid point. Indeed, the '753 patent states that “[i]f the NUG contains only a single calibration point, *the location of the NUG may be set as the location of the calibration point.*” Ex. 1008, 12:59–61 (emphasis added).

Thus, “grid points” and “calibration points” in the '104 patent are distinct elements that can still overlap. Specifically, a “grid point” is a point associated with representative calibration data for an area, and a “calibration point” is a point at which calibration data is collected. These points can occupy the same physical location (i.e., the same longitude/latitude coordinates) but still be a “grid point” and a “calibration point.”

For these reasons, we are not persuaded that the overlap between “grid points” and “calibration points” in Shkedi undermines Petitioner’s argument.

In view of the above, we determine that Petitioner has shown by a preponderance of the evidence that claim 2 is anticipated by Shkedi.

E. Ground 2: Asserted Obviousness Based on Shkedi and Spain

Petitioner challenges claim 2 as unpatentable under 35 U.S.C. § 103 based on the combination of Shkedi and Spain. Pet. 36–38. Patent Owner provides arguments addressing this asserted ground of unpatentability. PO Resp. 39–44; Sur-reply 23–26.

1. Spain (Ex. 1009)

Spain generally relates to a “method for determining the location estimate of a . . . mobile unit[] in a wireless communication network” using RF fingerprinting. Ex. 1009, code (54), ¶¶ 30, 35, 47. The method may “utiliz[e] a fingerprint database that contains a number of fingerprints along with their corresponding location identities.” *Id.* ¶ 47. The fingerprint database may be “built by taking fingerprint measurements at predetermined

locations and using intelligent algorithms that interpolate the fingerprints at all locations in between the sampled locations.” *Id.* ¶ 101. For example, “[t]o improve the accuracy of the fingerprint database,” Spain describes using a learning/training technique in which a “[r]egression can be used to learn each mapping of position versus fingerprint,” a “complete grid of locations for the cellular service area will be used as training data,” and “a new grid is generated for the database” by “interpolat[ing] between grid points and reconstruct[ing] the grid.” *Id.* ¶¶ 54–55. Spain also describes that, “[i]n one instance, [a] fingerprint [in the fingerprint database] corresponds not to one exact spot on the surface of the earth, but instead to a small area,” where “[t]he Lat and Long fields [associated with the fingerprint] . . . indicate a position inside the area, preferably the center point.” *Id.* ¶ 99; Fig. 10.

2. *Dependent Claim 2*

Petitioner argues that, “[t]o the extent Shkedi’s disclosure is deemed not to expressly reference ‘non-uniform grid points,’” “Spain discloses enhancing the accuracy of a fingerprint database . . . by adding interpolated non-uniform grid points . . . for location determination,” and “it would have been obvious to include such points in Shkedi’s database to achieve the accuracy and reduction in computation Shkedi contemplates.” Pet. 36.

Because of our determination that Petitioner establishes by a preponderance of the evidence that Shkedi anticipates claim 2, we do not reach this alternate challenge to claim 2. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *see also Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (nonprecedential) (stating that the “Board need not address issues that are

not necessary to the resolution of the proceeding,” such as “alternative arguments with respect to claims [the Board] found unpatentable on other grounds”).

F. Ground 3: Asserted Anticipation by Zhu

Petitioner challenges claims 1–3 and 11 under 35 U.S.C. § 102 as unpatentable based on Zhu. Pet. 38–50. Patent Owner provides arguments regarding claim 2 under this asserted ground of unpatentability. PO Resp. 44–46; Sur-reply 28–32.

As discussed above, Patent Owner has disclaimed claims 1, 3, and 11. We, thus, analyze the challenge to the claim remaining at issue, claim 2.

1. Zhu (Ex. 1010)

Zhu is a “paper demonstrat[ing] the feasibility of received signal strength (RSS) methods for locating wireless handset calls in a real cellular environment.” Ex. 1010, Abstract. Zhu’s method “estimates a cellular phone’s location by matching signal strengths measured at the handset with signal strengths recorded in a database of radio frequency (RF) maps.” *Id.* at 92. In Zhu, “[a] database of RF coverage maps for all nearby serving sectors was created from a combination of propagation modeling and varying levels of indoor and outdoor measurement calibration.” *Id.* Zhu describes the RF Map Database (RFMD) as collection of raster-based RF maps: a complete raster array, with each raster point in the grid corresponding to a location within the network and containing a vector of received signal strength indicator (RSSI) values for all audible base stations. *Id.* at 93. Zhu’s method sets forth several calibration levels for its RFMD, and Figure 2, reproduced below, illustrates the difference between measured, interpolated, and modeled raster regions of an RF Map. *Id.* at 93–94, 96 (Table 1).

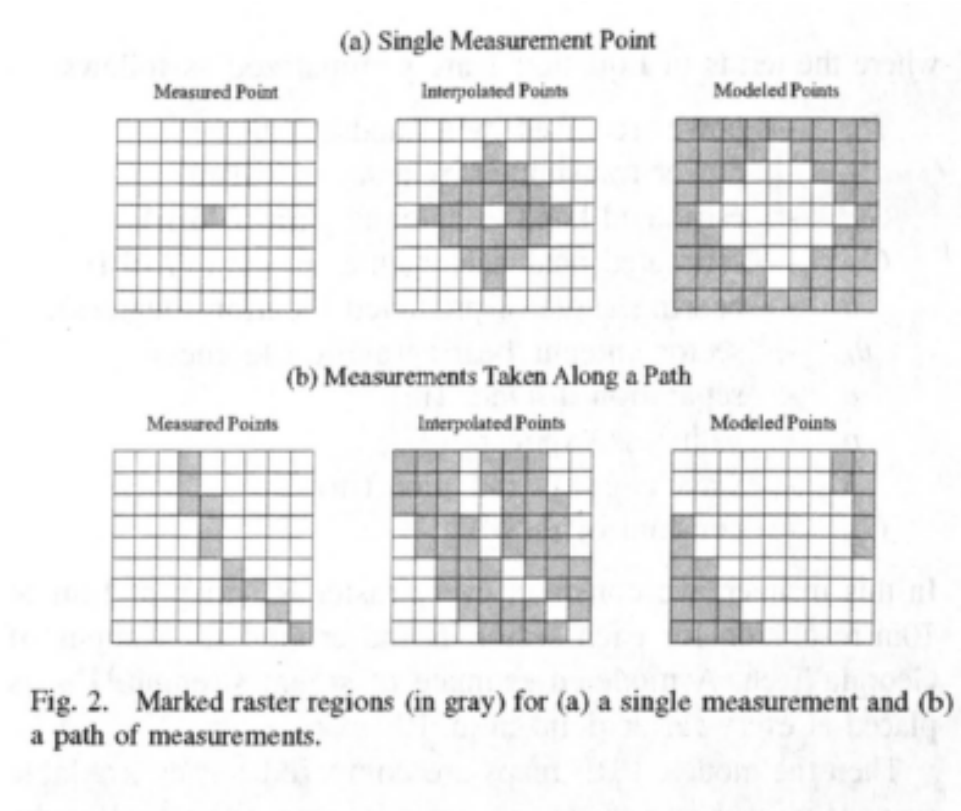


Figure 2 of Zhu depicts measured, interpolated, and modeled raster points for a single measurement and path of RSS measurements. *Id.* at 94. “Once an RFMD has been constructed for a network area, the RSSI-based location engine must compare received signal strength measurements made by the handset to the RFMD vectors,” where “[t]he best match determines the xy-coordinates of the most likely handset location.” *Id.* at 93.

In Zhu, “[a]ccurate distributions of RSS from indoor and outdoor callers can be used to calculate from where a call originates.” *Id.* at 94. A calibrated RFMD and a sequence of network measurement reports (NMRs) of RSS measurements for a handset are input into a location algorithm. *Id.* More specifically, “[e]ach physical xy location modeled in the . . . RFMDs contain[s] up to 26 received signal strength values . . . [,] [f]rom [which] a location algorithm selects a subset of N values that corresponds to the same control channels present in the NMR.” *Id.* at 95. Zhu describes this subset

of N values as corresponding to the N strongest control channels. *Id.* at 94. The location algorithm linearly averages a sequence of 10 NMRs, and normalizes the averaged-NMR vector to generate the relative received signal strength of the handset. *Id.* at 95. In a later step, the location algorithm calculates the average RSS over the N strongest control channels, yielding the received signal strength aggregate (RSSA _{N}). *Id.* at 94, 95. Zhu explains that “the strongest 6 received signals contribute the bulk of accuracy to the overall system performance.” *Id.* at 96.

2. Independent Claim 1

Because claim 2 includes the limitations of claim 1, we first address the Petitioner’s contentions regarding claim 1 despite it having been disclaimed.

Petitioner contends that Zhu discloses the limitations of claim 1. Pet. 38–47. To support its arguments, Petitioner identifies certain passages in the cited reference and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* For instance, regarding the limitation “providing a database of previously-gathered calibration data for a predetermined region in a wireless network,” Petitioner argues that “Zhu discloses providing ‘[a] database of RF coverage maps for all nearby serving sectors [that] was created from a combination of propagation modeling and varying levels of indoor and outdoor measurement calibration,’” wherein the RF map database includes a grid in which each raster point “corresponds to a location within the network and contains a vector of received signal strength indicator (RSSI) values in dBm for all audible base stations’ and ‘[a] complete raster array of RSSI is called an RF Map Database (RFMD).” *Id.* at 39 (citing Ex. 1010, 92–93, Fig. 3; Ex. 1012 ¶¶ 161–163) (alterations in original). Petitioner also argues that

Zhu's RF map database includes previously-gathered signal strength measurements that constitute "calibration data." *Id.* (citing Ex. 1010, 93).

Patent Owner does not address Petitioner's contentions regarding the limitations of claim 1 in the Response. *See generally* PO Resp. As explained above, we need not set forth formal findings as to the undisputed assertions by Petitioner that Zhu discloses the limitations of claim 1. *See supra* § II.D.2. Nevertheless, we have reviewed Petitioner's contentions with respect to the limitations of claim 1 and find that Zhu discloses these limitations as set forth by Petitioner. *See* Pet. 38–47.

3. *Dependent Claim 2*

As noted above, claim 2 depends from claim 1 and further recites that the database of claim 1 "comprises previously-gathered calibration data for one or more non-uniform grid points within said region." Ex. 1001, 12:16–18.

Petitioner argues that, as shown in Figure 2, Zhu's RF map database includes measured points that "tend to cluster along paths due to the walking or driving methods of collection" and these clustered points constitute the claimed "one or more non-uniform grid points." Pet. 47–48 (citing Ex. 1010, 93–94, Fig. 2; Ex. 1012 ¶ 203). Petitioner also argues that "Zhu's database of non-uniform grid points constitutes 'point[s] associated with representative calibration data for an area'" because "[e]ach 'grid spacing' of Zhu's RF map database is a 10-meter square area." *Id.* at 49 (citing Ex. 1010, 93). According to Petitioner, "[a] non-uniform grid point within each 10-meter area is associated with representative calibration data (e.g., measured points)." *Id.* (citing Ex. 1010, 94; Ex. 1012 ¶¶ 206–208).

Patent Owner argues that Zhu's measured points are locations where calibration data is collected and such locations are referred to in the '104

patent as “calibration points.” PO Resp. 44 (citing Ex. 2020 ¶ 114). Patent Owner further argues that, because the ’104 patent explicitly differentiate “calibration points” and “non-uniform grid points,” Petitioner argument improperly conflates these two distinct claim terms and, thus, should be rejected. *Id.* at 44–45 (citing *Helmsderfer*, 527 F.3d at 1382; *SIPCO*, 794 F. App’x at 949; Ex. 2020 ¶ 114).

This argument is nearly identical to the argument Patent Owner made in connection with Ground 1. Thus, we find this argument unpersuasive for the reasons discussed above. *See supra* § II.D.3. Namely, as discussed above, we determine that “grid points” and “calibration points” in the ’104 patent are distinct elements that can still overlap. For instance, the ’753 patent states that “[i]f the NUG contains only a single calibration point, *the location of the NUG may be set as the location of the calibration point.*” Ex. 1008, 12:59–61 (emphasis added).

Patent Owner also argues that Zhu’s measured points fail to satisfy its proposed construction of “non-uniform grid point,” which requires that the claimed grid points represent areas whose boundaries are determined from evaluation of calibration data. PO Resp. 45–46.

For the reasons discussed above in the claim construction section, however, we do not agree with Patent Owner’s proposed construction. *See supra* § II.C. As such, the “non-uniform grid points” recited in claim 2 are not required to have boundaries that are determined from evaluation of the calibration data. Accordingly, this argument is not persuasive.

Although Petitioner asserts that Zhu’s extrapolated points and modeled points also constitute non-uniform grid points (Pet. 48), we do not address these arguments because we determine that Petitioner’s arguments regarding Zhu’s measured points are sufficient to establish that Zhu

discloses non-uniform grid points. Claim 2 does not specify that the claimed database comprises previously-gathered calibration data for *only* one or more non-uniform grid points. In other words, as long as a prior art database includes calibration data for at least one non-uniform grid point, it satisfies claim 2 even if it also includes calibration data for uniform grid points. For the reasons discussed above, we are persuaded that Petitioner shows that Zhu’s database includes calibration data for one or more non-uniform grid points.

In view of the above, we determine that Petitioner has shown by a preponderance of the evidence that claim 2 is anticipated by Zhu.

G. Ground 4: Asserted Obviousness based on Zhu and Laitinen

Petitioner challenges claims 1–3 and 11 under 35 U.S.C. § 103 as unpatentable based on Zhu and Laitinen. Pet. 51–55. As discussed above, Patent Owner has disclaimed claims 1, 3, and 11. We, thus, analyze the challenge to the claim remaining at issue, claim 2.

1. Laitinen (Ex. 1011)

Laitinen generally relates to using the database correlation method (DCM) for GSM location.¹⁶ Ex. 1011 at 2506–07, Abstract, Title. Laitinen describes DCM as a generic location method in which a location server calculates the mobile station (MS) location by comparing a fingerprint transmitted by the MS with signal information samples, i.e., fingerprints, of a database. *Id.* at 2505. Laitinen then describes applying DCM to GSM, explaining that “[t]he MS . . . continuously makes signal strength measurements and also knows the cell ID of the strongest cell.” *Id.*

¹⁶ Although not specified in Laitinen, we understand “GSM” to refer to the Global System for Mobile communications. *See e.g.*, Ex. 1008, 10:11–12.

2. Discussion

Petitioner contends that claims 1–3 and 11 would have been obvious over the combination of Zhu and Laitinen. Pet. 51–52. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitations. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Zhu and Laitinen with a reasonable expectation of success. *Id.*

As acknowledged by Patent Owner, Petitioner relies on Laitinen only for “its purported disclosure of ‘determining which of first and second signal characteristics (i.e., the multiple “signal strength measurements”) has a greater magnitude in order to identify the cell ID having the strongest signal (i.e., “the cell ID of the strongest cell”).” See Pet. 51; PO Resp. 47. Petitioner does not rely on Laitinen as disclosing the “non-uniform grid points” of claim 2. See Pet. 51–52; PO Resp. 47.

Patent Owner then argues that, because Zhu fails to disclose non-uniform grid points for the same reasons it asserts in connection with Ground 3, Ground 4 also fails. PO. Resp. 47. For the reasons discussed above, however, we are not persuaded by Patent Owner’s arguments that Zhu fails to disclose non-uniform grid points. See *supra* § II.F.3.

In view of the above, we determine that Petitioner has shown by a preponderance of the evidence that claim 2 is unpatentable over the combination of Zhu and Laitinen.

H. Ground 5: Asserted Obviousness based on Zhu (or Zhu and Laitinen) and Spain

Petitioner further contends that claim 2 would have been obvious over Zhu (or Zhu and Laitinen) and Spain. Pet. 53–55. Patent Owner provides

arguments addressing this asserted ground of unpatentability. PO Resp. 47–48; Sur-reply 32.

Because of our determination that Petitioner establishes by a preponderance of the evidence that claim 2 is anticipated by Zhu, and unpatentable over the combination of Zhu and Laitinen, we do not reach this alternate challenge to claim 2. *See SAS*, 138 S. Ct. at 1359; *Boston Sci. Scimed*, 809 F. App’x at 990.

III. CONCLUSION¹⁷

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–3, 11 ¹⁸	102(e)	Shkedi	2	
2 ¹⁹	103(a)	Shkedi, Spain		
1–3, 11 ²⁰	102(b)	Zhu	2	
1–3, 11 ²¹	103(a)	Zhu, Laitinen	2	
2 ²²	103(a)	Zhu (or Zhu and Laitinen), Spain		
Overall Outcome			2	

¹⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁸ As explained above, we do not address disclaimed claims 1, 3, and 11.

¹⁹ As explained above, we do not reach this alternative ground.

²⁰ As explained above, we do not address disclaimed claims 1, 3, and 11.

²¹ As explained above, we do not address disclaimed claims 1, 3, and 11.

²² As explained above, we do not reach this alternative ground.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claim 2 of U.S. Patent No. 7,561,104 B2 is determined to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2023-01209
Patent 7,561,104 B2

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