

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

BROADPHONE LLC,
Patent Owner.

IPR2024-00155
Patent 10,341,811 B2

Before KARL D. EASTHOM, SCOTT A. DANIELS, and
LISA L. TSANG, *Administrative Patent Judges*.

TSANG, *Administrative Patent Judge*.

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

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1, 4, 5, 8, 14, 15, 18, 19, 22, 24, 25, and 28 (collectively, “the challenged claims”) of U.S. Patent No. 10,341,811 B2 (Ex. 1001 (“the ’811 patent”)). We have jurisdiction under 35 U.S.C. § 6. We issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner demonstrates by a preponderance of the evidence that claims 1, 4, 5, 8, 14, 15, 18, 19, 22, 24, 25, and 28 are unpatentable.

A. Procedural History

Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition (Paper 1 (“Pet.”)), seeking *inter partes* review under 35 U.S.C. § 311. *See* Pet. 1. Broadphone LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). On May 7, 2024, we instituted an *inter partes* review of the challenged claims. Paper 12 (“Institution Dec” or “Dec.”).

Following institution, Patent Owner filed a Response (Paper 15 (“PO Resp.”)), and Petitioner filed a Reply (Paper 18 (“Reply”)).

We heard oral argument on January 21, 2025, and the record includes a transcript of the argument. Paper 25 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. as the real parties in interest. Pet. 1. Patent Owner identifies Broadphone LLC as the real party in interest. Paper 4, 1.

C. Related Matters

The parties identify that the '811 patent is involved in *Broadphone LLC v. Samsung Elecs. Co., Ltd.*, No. 2:23-cv-00001 (E.D. Tex. 2023).

Pet. 1; Paper 4, 1.

Petitioner also identifies U.S. Patent Nos. 8,594,698 and 8,170,583 as patents related to the '811 patent and as subject to proceedings before the Board. Pet. 1. The following proceedings before the Board involve the same parties as the instant proceeding: IPR2024-00153 (U.S. Patent No. 8,170,583 B2), IPR2024-00154 (U.S. Patent No. 8,594,698 B2), and IPR2024-00821 (U.S. Patent No. 8,594,698 B2).

D. The '811 Patent (Ex. 1001)

The '811 patent is titled “Signal Comparison-Based Location Determining Method” and discloses a technique for monitoring a location of a portable device using signal strength measurements. Ex. 1001, codes (54), (57). According to the '811 patent, there were problems with providing highly accurate and simply calculated location data for mobile devices, especially in locations having poor signal reception or multiple floor levels, and maintaining user privacy with respect to location data. *Id.* at 1:39–49, 5:19–30.

To solve these problems, the '811 patent discloses causing the portable device to measure and record signal strengths from surrounding cells at two locations: a desired location and a current location. Ex. 1001, 7:19–36. The portable device compares the measured signal strengths from the current location with the measured signal strengths from the desired location to determine whether the portable device's current location is also the desired location. *Id.*

Figure 2, below, shows “a schematic view of an antenna space reception map.” Ex. 1001, 10:58–59.

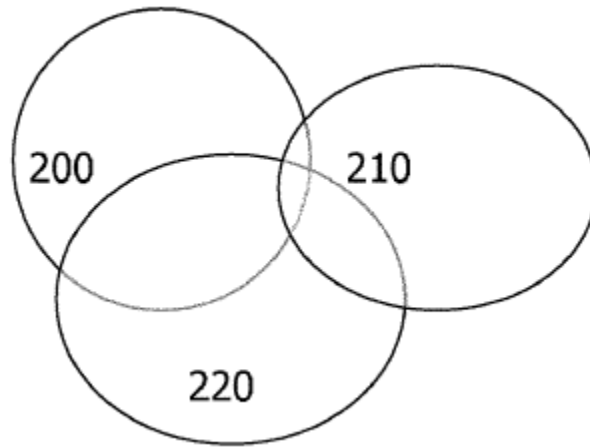


Figure 2 illustrates overlapping coverage areas for three service antennas 200, 210, 220, with the overlapping coverage areas resembling a Venn diagram. *Id.* at Fig. 2, 8:37–45. The '811 patent explains that, for a given building or cell phone within the coverage areas shown in Figure 2,

there is a 40% probability of a building [or cell phone] being in the coverage area of a single service antenna, a 40% probability of a building [or cell phone] being in the overlapping coverage area of two service antennas, and a 20% probability of a building [or cell phone] being in the overlapping coverage area of three service antennas.

Id. at 8:37–56. To determine its location, the cell phone obtains “distance equivalent measurement(s) between itself . . . and each of the area service antenna(s).” *Id.* According to the '811 patent, “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” and observes those same service antennas with substantially the same respective signal strengths, then the mobile telephone “can reasonably conclude that is within a predetermined proximity of the original user selected location”

because each user-selected location coordinate—a “fingerprint”—has “a substantially unique combination of service antenna identifications with respective distance equivalent measurements.” *Id.* at 9:7–22.

The ’811 patent describes four primary steps: “(A) Registering a selected location” by measuring and collecting antenna signal data from the selected location; “(B) Recording the selected location” by storing, either on the portable device or at a remote storage facility, the collected signal data; “(C) Monitoring” by measuring and collecting antenna signal data from a current location; and “(D) Determining” whether the portable device is at the selected location. Ex. 1001, 11:56–12:52. Where privacy is a concern, then these four steps are performed on a single device. *Id.* at 12:52–53. In contrast, where privacy is not a concern, “one might even reach the case where Registering is done on a first device, Monitoring is done on a second device, Storing is done in an offsite facility, and Determining is done in a different offsite facility.” *Id.* at 12:53–58.

In a further embodiment, the ’811 patent discloses that a user may select an action to occur each time he or she is at the desired location. Ex. 1001, 18:31–54. For example, a user might desire “to receive discount coupons from mall stores every time the user enters the shopping mall next to his home (the shopping mall is a desired location).” *Id.* at 18:42–45. Or when the user is at the user’s home, the user may “hav[e] calls to his cell phone ring simultaneously both on his cell phone and the landline.” *Id.* at 18:35–42.

E. *Challenged Claims*

Petitioner challenges claims 1, 4, 5, 8, 14, 15, 18, 19, 22, 24, 25, and 28 of the ’811 patent. Pet. 6–89. Of these, claims 1 and 15 are independent.

Independent claim 1 is illustrative of the challenged claims and is reproduced with bracketing as follows:

1. [1[pre]]¹ A method of determining whether a portable RF communications device is present at a device-specific target location, the method comprising:

with the portable RF communications device automatically:

[1(a)] receiving a first plurality of communications signals, each received from one of a first plurality of antenna stations within range of the portable RF communications device, wherein the antenna stations are fixed-location service-area antenna stations and are substantially continuously operating;

[1(b)] causing a determination of whether the portable RF communications device is within proximity of the device-specific target location by electronically comparing at least one number based on signal strengths of each of the first plurality of communications signals with at least one number based on corresponding signal strengths of each of a second plurality of communication signals from a second plurality of antenna stations that have been identified as being within range of the same location as the device-specific target location, which signal strengths have been determined for the same location as the device-specific target location; and

[1(c)] as a result of the determination that the portable RF communications device is within proximity of the device-specific target location, initiating, on the portable RF communications device, a location-based action associated with the device-specific target location.

¹ For consistency, we rely on Petitioner's annotations 1[pre]–1(c) referencing particular claim 1 limitations. *See* Pet. 6–53. These annotations, however, have no impact on our analysis.

Ex. 1001, 26:49–27:11. Because Patent Owner focuses its Response mainly on claims 14 and 28, which recite similar limitations and depend from claims 1 and 15, respectively, we reproduce, below, dependent claim 14.

14. The method of claim 1 wherein the determination of whether the portable RF communications device is within proximity of the device-specific target location is performed at a location remote from the portable RF communications device.

Id. at 28:1–5.

F. *The Asserted Challenges to Unpatentability and Evidence of Record*

We instituted an *inter partes* review of the challenged claims under the following challenges to unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 8, 14, 15, 22, 28	103(a) ²	Spain-I, ³ Hunzinger, ⁴ Nanda ⁵
4, 18	103(a)	Spain-I, Hunzinger, Nanda, Blomqvist ⁶
5, 19	103(a)	Spain-I, Hunzinger, Nanda, Tiwari ⁷
24	103(a)	Spain-I, Hunzinger, Nanda, Othmer ⁸
25	103(a)	Spain-I, Hunzinger, Nanda, Bates ⁹

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284, 287–288 (2011), amended 35 U.S.C. §§ 102, 103, and 112. Because the ’811 patent claims priority to an application filed before March 16, 2013 (the effective date of the relevant amendments), the pre-AIA versions apply. *See* Ex. 1001, code (63).

³ U.S. Patent No. 6,944,465 B2, issued September 13, 2005 (Ex. 1011).

⁴ U.S. Patent No. 6,957,076 B2, issued October 18, 2005 (Ex. 1054).

⁵ U.S. Patent No. 8,477,731 B2, issued July 2, 2013 (Ex. 1006).

⁶ U.S. Patent No. 7,305,244 B2, issued December 4, 2007 (Ex. 1033).

⁷ U.S. Patent No. 7,359,713 B1, issued April 15, 2008 (Ex. 1203).

⁸ U.S. Patent No. 7,343,564 B2, issued March 11, 2008 (Ex. 1208).

⁹ U.S. Patent Application No. 2001/0055974 A1, published December 27, 2001 (Ex. 1212).

In support of its patentability challenge, Petitioner relies on, *inter alia*, the Declaration of Kevin C. Almeroth, Ph.D. (“Dr. Almeroth”) (Ex. 1002). Patent Owner relies on, *inter alia*, the Declaration of Todor V. Cooklev, Ph.D. (“Dr. Cooklev”) (Ex. 2003).

II. ANALYSIS

A. *Legal Standards*

“In an [*inter partes* review], 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”)).

The legal 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.¹⁰ *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). One seeking to establish obviousness based on more than one reference must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

B. *Level of Ordinary Skill in the Art*

Relying on the Declaration of Dr. Almeroth for support, Petitioner

¹⁰ The record does not include allegations or evidence of objective indicia of nonobviousness.

contends that a person of ordinary skill in the art (“POSITA”)

would have had at least a BS degree in computer science, electrical engineering, or similar discipline, and two or more years of experience with location determining-based systems and/or processes, such as for example systems/processes for determining mobile device location(s). . . . More education can supplement practical experience and vice versa.

Pet. 3 (citing Ex. 1002 ¶¶ 31–32). Patent Owner does not dispute the level of ordinary skill in the art. PO Resp. 4.

Accordingly, we adopt Petitioner’s articulation of the level of ordinary skill in the art, which is consistent with our review and understanding of the technology and descriptions in the ’811 patent and prior art of record, and we apply it in our obviousness evaluations below. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We apply the claim construction standard used to construe the claims in a civil action under 35 U.S.C. § 282(b), as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2019). Under the *Phillips* standard, claim terms must be given “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips*, 415 F.3d at 1313.

1. Parties’ Arguments

In the Petition, Petitioner submits that “no special constructions are necessary” beyond the plain meaning of the claims. Pet. 5. For the limitations “proximity,” “number based on signal strengths,” and “device-specific target location,” Petitioner asserts the Petition shows how these features “are met in context of their plain language and also in context of the

specification, and where applicable, the file history.” *Id.* at 5–6. In addressing the claimed “device-specific target location” in the context of whether the asserted references teach the limitation, Petitioner further argues that “the ‘device-specific target location’ encompasses locations specifically targeted/selected by a MU user.” *Id.* at 15–16.

In its Preliminary Response, Patent Owner avers that it “agrees that no formal claim construction is necessary.” Prelim. Resp. 2. Moreover, before institution, Patent Owner did not specifically challenge Petitioner’s understanding of the claim terms in a manner that required resolution in order for us to determine whether to institute a trial. *See generally id.* Accordingly, in our Institution Decision, we agreed with the parties that, at that preliminary stage of the proceeding, it was not necessary to construe any claim terms. Dec. 8–9 (citing *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017)).

Patent Owner maintains in its Patent Owner Response that it “agrees [with Petitioner’s stated position] that no formal claim construction is necessary.” PO Resp. 5. Patent Owner contends, however, that the plain meaning of “device-specific target location” “requires a target location that is specific to a particular device, not a location that is generally applicable to numerous devices.” *Id.* (citing Ex. 2003 ¶ 34).

In its Reply, Petitioner urges us to reject Patent Owner’s position “because it is vague and[. . .] inconsistent with the intrinsic record.” *See* Reply 1–4. Rather, Petitioner argues that the prosecution history and the Specification of the ’811 patent support that “a device-specific target location appears to simply refer to a user-selected location.” *Id.* at 4–5 (citing Ex. 1001, 7:2–6, 9:7–14, 12:53–58; Ex. 1004 (prosecution history of

the '811 patent), 128, 136).

During oral argument, Petitioner confirmed its claim construction position:

[THE BOARD]: So, from what I understand, Petitioner's position is that device-specific target location is just a location specified by a user, is that correct? Is that accurate?

[COUNSEL]: Correct, Your Honor, it's a user-selected location.

Tr. 22:7–11. In contrast, Patent Owner reiterated that “a device-specific target location is just a target location that is specific to a particular device, for example, a particular cellphone.” *Id.* at 49:4–6. Patent Owner also argued, “the argument for Claim 14 [of the '811 patent] rises and falls with the claim construction of what is a device-specific target identifier [*sic*].” *Id.* at 52:6–7; *see also id.* at 55:5–7 (asserting, “in conclusion, there is no allegation or invalidity theory that reads on the proper construction of Claims 14 and 28 using the proper construction of device-specific target location”).

Clearly, there is a dispute concerning the construction of the term “device-specific target location.” Accordingly, we determine that we need to construe specifically the term “device-specific target location” in this proceeding. *See Nidec*, 868 F.3d at 1017 (noting that “we need only construe 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)).

2. Claim Construction Principles

In construing the claims, we begin with the language of the claims themselves. *Phillips*, 415 F.3d at 1314. However, “[c]laim construction

requires determining how a skilled artisan would understand a claim term ‘in the context of the entire patent, including the specification.’” *Grace Instrument Indus., LLC v. Chandler Instruments Co., LLC*, 57 F.4th 1001, 1008 (Fed. Cir. 2023) (citing *Phillips*, 415 F.3d at 1313). In this regard, the specification “is the single best guide to the meaning of a disputed term.” *Id.* (citing *Vitrionics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Our analysis “should also consider the patent’s prosecution history, if it is in evidence,” because it aids in demonstrating how the Office and the patentee understood the patent. *Phillips*, 415 F.3d at 1317.

“Extrinsic evidence consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995). Extrinsic evidence may be useful in claim construction, but is “secondary to the intrinsic evidence” and is generally of less significance than the intrinsic evidence. *Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788, 799 (Fed. Cir. 2019); *see also Phillips*, 415 F.3d at 1317 (citing *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)). Where the intrinsic evidence provides clear claim construction guidance, extrinsic evidence “may not be used to vary or contradict the claim language.” *Vitrionics*, 90 F.3d at 1584 (citing *Markman*, 52 F.3d at 981). Moreover, “[i]f the meaning of a claim term is clear from the intrinsic evidence, there is no reason to resort to extrinsic evidence.” *Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1287 (Fed. Cir. 2021).

3. *Construction of “Device-Specific Target Location”*

a) *Intrinsic evidence*

The preamble of claim 1 recites, “[a] method of determining whether a portable RF communications device is present at *a device-specific target location*.” Ex. 1001, 26:49–51 (emphasis added). Thus, the objective of the claimed invention is to determine whether a portable device is at a device-specific target location. The claim further recites steps including, *inter alia*, “(b) causing a determining of whether the portable RF communications device is within proximity of the device-specific target location” by comparing data from antenna stations “that have been identified as being within range of the same location as the device-specific target location, which signal strengths have been determined for the same location as the device-specific target location;” and step (c), which includes initiating, as a result of the determining step, “a location-based action associated with the device-specific target location.” *Id.* at 26:60–27:12. Accordingly, based on the claims, the device-specific target location: (1) is a location whose proximity to (i.e., whether it is within proximity of) a portable device is determined; and (2) is associated with a location-based action.

Turning to the Specification of the ’811 patent, we note, initially that the term “device-specific target location” does not appear in the Specification outside of the claims; nor do the terms “device-specific” or “target” appear. *See generally* Ex. 1001. The Specification discloses, however, that the inventive method comprises steps of registering and recording “a selected location” by measuring and storing reception signal strengths; a step of “[m]onitoring by second-causing a portable RF communications device” to receive antenna communications signals and

measure signal strengths associated with those signals; and “[d]etermining if the portable RF communications device of the [m]onitoring step is at the selected location of the registering step” by comparing measurements in the monitoring step with those stored from the recording step. *Id.* at 5:63–6:23. Comparing the steps recited in claim 1 to this disclosure in the Specification, we determine that the disclosed “selected location” is similar, if not the same as, the “device-specific target location” recited in the claim.

Furthermore, in describing the principles underlying how it is determined whether a portable device is at a location, the ’811 patent discloses,

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. 1001, 9:7–14 (emphases added). As for the claimed “location-based action” associated with the “device-specific target location,” the ’811 patent introduces an exemplary embodiment in which “[t]he user reaches *a location where he would like a certain location based service to take place every time he reaches that location.*” *Id.* at 18:31–33 (emphasis added). For example, a user may “hav[e] calls to his cell phone ring simultaneously both on his cell phone and the landline” when the user is at home, or a user may “receive discount coupons from mall stores every time the user enters the shopping mall next to his home.” *Id.* at 18:35–45. In these examples, the ’811 patent refers to each of the user’s home and the shopping mall, respectively, as “a desired location.” *Id.* Reference to “a user selected

location” and “a desired location” in these portions of the Specification further indicate that the selected location is a location that is selected by a user.

Petitioner additionally directs us to the prosecution history of the ’811 patent. *See* Reply 4 (citing Ex. 1004, 128, 136). Specifically, Petitioner directs us to an Appeal Brief and related Response to Notification of Non-Compliant Appeal Brief that applicant filed during examination of the ’811 patent, challenging in our tribunal the Examiner’s rejection of the claims. *See* Ex. 1004, 126–154.¹¹ In the Appeal Brief’s summary of the claimed subject matter, the applicant indicated that “[t]he method operates to determine whether the portable device is located at a ‘device-specific target location,’” and correspondingly referred to the Specification’s disclosure of “[d]etermining 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 at least two measurements of the Recording step.” *Id.* at 135–136 (emphasis omitted). Further according to the applicant, “[a]s indicated in part (c) [of the claim], the portable device initiates an action as a result of the determination in part (b) [of the claim].” *Id.* at 137. Here, the applicant referred to the Specification’s disclosure that “[t]he user reaches a location where he would like a certain location based service to take place every time he reaches that location.” *Id.* The applicant’s arguments, which refer to disclosures in the

¹¹ The relevant portions of the Appeal Brief and the Response to Notification of Non-Compliant Appeal Brief refer to the same disclosures in the Specification of the ’811 patent. *Compare* Ex. 1004, 126–128, *with id.* at 135–137. Accordingly, we henceforth refer only to the Appeal Brief as exemplary of the applicant’s statements made in both documents.

Specification similar to those we discuss above, confirm our understanding that “device-specific target location” refers to a location that is selected by a user.

b) Extrinsic evidence

As noted above, although we are permitted to consider extrinsic evidence (e.g., expert testimony, dictionaries, treatises), such evidence is secondary to, and generally of less significance than, the intrinsic record. *Continental Circuits*, 915 F.3d at 799; *Phillips*, 415 F.3d at 1317. And “[i]f the meaning of a claim term is clear from the intrinsic evidence, there is no reason to resort to extrinsic evidence.” *Seabed*, 8 F.4th at 1287. Here, based on the insight gleaned above from the claims and Specification of the ‘811 patent, we determine that the meaning of the term “device-specific target location” is clear from the intrinsic evidence. Nevertheless, for completeness, we address Patent Owner’s claim construction arguments.

Patent Owner relies solely on the testimony of Dr. Cooklev to support its proffered claim construction. PO Resp. 5 (citing Ex. 2003 ¶ 34). Dr. Cooklev testifies, “[b]ased on my review of the patent and intrinsic record, [“device-specific target location”] has a plain and ordinary meaning and is used by the claims with that meaning, which requires a target location that is specific to a particular device.” Ex. 2003 ¶ 34. Other than further opining that “I see no lexicography or disclaimer in the intrinsic record indicating that ‘device-specific target [location]’ refers to a location that is generally applicable to numerous devices, or that the term otherwise has a meaning broader than its plain and ordinary meaning,” Dr. Cooklev provides no support for why the claimed “device-specific target location” “requires a target location that is specific to a particular device.” *See id.*

We agree that the language in the Specification of the '811 patent does not indicate that the patentee intended to either act as its own lexicographer, or disavow the full scope of the claim term. *See Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (“To act as its own lexicographer, a patentee must ‘clearly set forth a definition of the disputed claim term’ other than its plain and ordinary meaning” (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002))); *Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007) (guiding that disavowal or disclaimer of claim scope “must ‘be both clear and unmistakable’ to one of ordinary skill in the art” (citing *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 (Fed. Cir. 2003))).

However, Dr. Cooklev’s opinion that “device-specific target location” means “a target location that is specific to a particular device” is not supported adequately. In particular, “[t]he words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art *when read in the context of the specification and prosecution history.*” *Thorner*, 669 F.3d at 1365 (citing *Phillips*, 415 F.3d at 1313) (emphasis added). Importantly, Dr. Cooklev does not cite to any portions of the intrinsic evidence to support his claim construction. *See* Ex. 2003 ¶ 34; *see also Phillips*, 415 F.3d at 1318 (“conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court”). Given the conclusory nature of Dr. Cooklev’s testimony, and because the intrinsic evidence is sufficiently clear, we decline to adopt Patent Owner’s proffered construction of “device-specific target location.”

c) *Claim construction conclusion for “device-specific target location”*

Based on the evidence and analysis above, we determine that the term “device-specific target location” means a location that is selected by a user.

4. *Remaining Claim Terms*

Construction is needed only for those terms “that are in controversy, and only to the extent necessary to resolve the controversy.” *See Nidec*, 868 F.3d at 1017 (quoting *Vivid Techs.*, 200 F.3d at 803). After reviewing the parties’ arguments and evidence, we determine that no further claim terms require express construction for this decision.

D. *Summary of Asserted Art*

1. *Spain-I (Ex. 1011)*

Spain-I is titled “Estimating the Location of a Mobile Unit Based on the Elimination of Improbable Location.” Ex. 1011, code (54). Figure 1, below, shows a wireless communication network. *Id.* at 3:8–9.

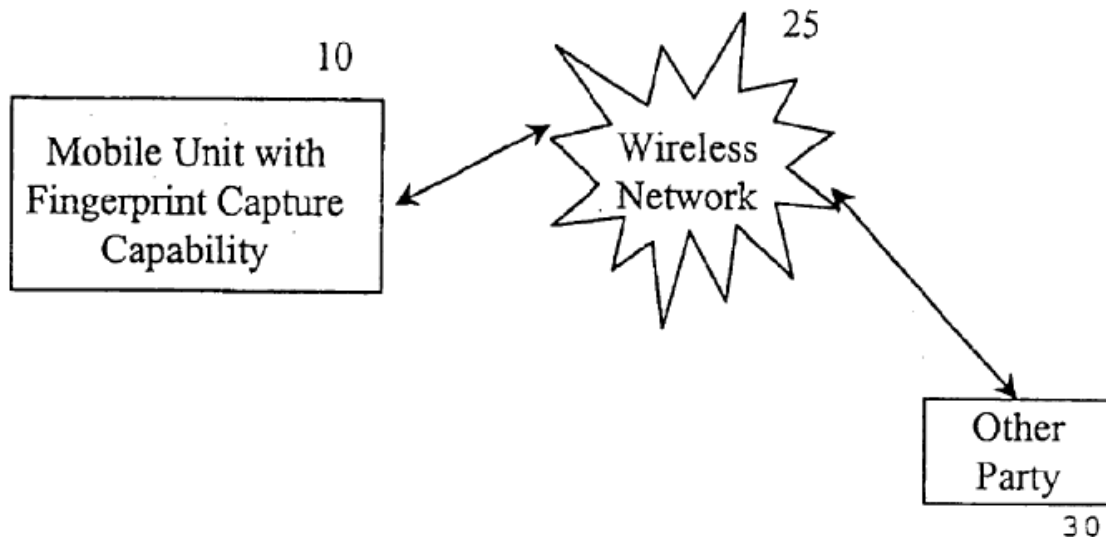


Figure 1’s exemplary wireless communication network, above, depicts

mobile unit 10 in communication with wireless network 25, which is in communication with other party or location server 30. *Id.* at Fig. 1, 3:9–11.

Spain-I is “based on the principle that any location has a unique Radio Frequency (RF) spectral fingerprint” that may be generated using parameters including signal strength. Ex. 1011, 3:42–47, 4:55–57. Spain-I explains that the mobile unit is activated to capture information from portions of the RF spectrum when a location estimate of the mobile unit is desired, and a fingerprint is generated by extracting parameters from captured signals. *Id.* at 4:43–47, 5:55–62. The generated fingerprint is compared with fingerprints in a database, and a corresponding location of a closest fingerprint match in the database is selected as the location of the mobile unit. *Id.* at 5:61–6:4.

2. Hunzinger (Ex. 1054)

Hunzinger is titled “Location Specific Reminders for Wireless Mobiles” and seeks to “allow[] users of wireless mobile terminals to set reminders, alerts, or other actions to be triggered based on location or dynamics.” Ex. 1054, codes (54), (57). To do so, Hunzinger has a mobile terminal that “stor[es] location related information (‘remembered’ locations) and trigger or action information” and compares “‘remembered’ locations with current location information.” *Id.* at 3:56–60. The mobile terminal monitors current location information and “may detect that it is [*sic*] has transitioned out of the area described by the stored location information or that the current location matches the stored location information.” *Id.* at 4:28–31. For example, the mobile terminal may detect a base station hand-off or detect that it has exceeded a predetermined distance from the stored location. *Id.* at 4:24–28.

When the mobile terminal “detects that it has reentered the vicinity of

the stored-location,” it triggers an action such as a text reminder message or sound activation. Ex. 1054, 3:61–67, 4:43–57.

3. *Nanda (Ex. 1006)*

Nanda is titled “Method and Apparatus for Locating a Wireless Local Area Network [(‘WLAN’)] in a Wide Area Network” and relates to comparing “fingerprints” to determine a mobile device’s proximity to a communications network. Ex. 1006, codes (54), (57). In particular, Nanda’s mobile device monitors beacon and pilot signals from base stations in order to perform base station hand-offs. *Id.* at 5:50–57. Nanda explains that a fingerprint represents a location of the mobile device, such that the device may determine its current fingerprint and compare it with a known fingerprint of a given area, in order to determine whether the device is located within the area. *Id.* at 6:52–58.

In an exemplary embodiment, the fingerprint “has a vector for signal strengths and one for phases.” Ex. 1006, 10:55–57. Nanda uses algorithms to compare vectors of a current fingerprint with vectors of a stored fingerprint and determine whether there is a match. *Id.* at 10:64–11:19. If so, then the mobile device searches for beacon signals of a given access point. *Id.* at 11:20–23.

4. *Blomqvist (Ex. 1033)*

Blomqvist is titled “Method for Activating a Location-Based Function, a System and a Device.” Ex. 1033, code (54). Blomqvist teaches selectively determining position data of a device, and the position data may be used as a condition for activating a location-based function such as a reminder, one or more messages, or starting a program or service on the device. *Id.* at code (57), 2:23–27, 3:44–50.

5. *Tiwari (Ex. 1203)*

Tiwari is titled “Battery Consumption Optimization for Mobile Users” and “provide[s] power management for a mobile communication device having a location determination function.” Ex. 1203, codes (54), (57). To this end, Tiwari modifies “[t]he frequency of the location determination function . . . based on whether the mobile communication device is moving.” *Id.* at code (57).

6. *Othmer (Ex. 1208)*

Othmer is titled “Systems and Methods for Displaying Location-Based Maps on Communication Devices.” Ex. 1208, code (54). Othmer describes an exemplary embodiment in which a location-based service may transmit a vendor’s promotional coupon to user communication devices, and the coupon is displayed on a user’s device if the user’s location is within a given distance of a retail store of the vendor. *Id.* at 3:50–59.

7. *Bates (Ex. 1212)*

Bates is titled “Telephone System and Method for Selectively Ringing One or More Land Phones or Portable Phones Based on the Self-Detected Geographical Position of a Portable Phone.” Ex. 1212, code (54). Bates teaches a portable phone having a position detector, wherein “a telephone system may ring one or more land-based phones or portable phones according to the geographical position of the portable phone.” *Id.* at code (57).

E. *Alleged Obviousness over Spain-I, Hunzinger, and Nanda: Claims 1, 8, 14, 15, 22, and 28*

Petitioner contends that claims 1, 8, 14, 15, 22, and 28 of the ’811 patent would have been unpatentable under 35 U.S.C. § 103(a) as

obvious over Spain-I, Hunzinger, and Nanda. Pet. 6–67. Having considered the arguments and evidence before us, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 8, 14, 15, 22, and 28 would have been obvious over the combined teachings of Spain-I, Hunzinger, and Nanda.

1. Independent Claims 1 and 15

a) Independent claim 1

With respect to claim 1 of the '811 patent, Petitioner maps the limitations of claim 1 to the combined teachings of Spain-I, Hunzinger, and Nanda, as described below, and provides a comprehensive, clause-by-clause analysis of claim 1, including where each limitation is taught by Spain-I, Hunzinger, and/or Nanda. Pet. 6–53. Petitioner also explains why claim 1 would have been obvious over the combined teachings of those references. *Id.*

1[pre]: “A method determining whether a portable RF communications device is present at a device-specific target location, the method comprising”

For the preamble of claim 1, Petitioner argues that Spain-I teaches a mobile unit (“MU”) that receives signals “from stations within RF communication range of the MU.” Pet. 6–7 (citing Ex. 1011, Figs. 9–10, 1:25–28, 3:42–4:63, 5:20–6:8, 7:58–8:8, 10:35–65, 13:16–14:37; Ex. 1005, Figs. 4–5, 3:29–5:9, 5:40–6:51; Ex. 1009, Fig. 9, 2:61–5:21, 7:4–57, 9:15–10:37; Ex. 1010, Fig. 9, 3:4–5:57, 7:1–36, 9:10–49, 10:4–32; Ex. 1002 ¶¶ 103–104). Petitioner further argues that Spain-I’s MU compares “fingerprint” location information “to determine whether it is ‘at a particular location or not.’” *Id.* at 8 (citing Ex. 1011, 4:23–47; Ex. 1005, 3:10–18).

Additionally, Petitioner asserts that Spain-I modified by Hunzinger and Nanda as described further below “would have automatically performed processes for determining whether the MU is present at a ‘device-specific target location.’” *Id.* at 9 (citing Pet. 9–53; Ex. 1002 ¶ 106).

1(a): “receiving a first plurality of communications signals, each received from one of a first plurality of antenna stations within range of the portable RF communications device, wherein the antenna stations are fixed-location service-area antenna stations and are substantially continuously operating”

As to limitation 1(a), Petitioner contends Spain-I’s MU monitors its location by receiving communication signals from antenna stations that are within range of the MU to create a fingerprint for the MU’s current location. Pet. 9–10 (citing Pet. 6–9, 12–51; Ex. 1002 ¶¶ 107–113; Ex. 1201 ¶ 94; Ex. 1045, 3:17–22; Ex. 1202 ¶ 25; Ex. 1011, Fig. 9, 3:5–16, 3:55–58, 4:42–63, 5:20–6:30, 7:64–8:44, 9:25–10:27, 13:16–33; Ex. 1005, Figs. 1–4, 1:40–54, 2:5–16, 2:32–3:9, 3:29–4:24, 4:38–5:9, 5:20–6:12; Ex. 1009, Fig. 9, 3:60–4:44, 5:7–21; Ex. 1010, Fig. 9, 3:4–4:44, 5:4–19).

Relying on Dr. Almeroth’s testimony, Petitioner asserts that the ordinarily skilled artisan would have understood Spain-I’s “station(s)” to meet the claimed “fixed-location service area stations and are substantially continuously operating” because “they communicate RF communication signals within respective service areas with the MU having an antenna, consistent with known wireless network infrastructures,” and they have coverage areas. Pet. 11–12 (citing Ex. 1002 ¶¶ 114–116; Ex. 1011, Figs. 2, 9, 14, 1:18–48, 3:42–4:61, 5:33–54, 6:31–29, 7:58–8:8, 9:64–67, 10:29–13:15, 13:27–55, 14:1–3; Ex. 1005, Figs. 2, 4, 1:10–34, 2:40–3:9, 3:50–61, 4:59–63, 5:51–56; Ex. 1009, 3:25–39, 4:9–10, 5:44–51, 7:4–21, 9:26–54;

Ex. 1010, 1:31–41, 3:22–36, 4:1–7, 5:46–49, 7:1–18, 9:21–49; Ex. 1007, Figs. 3–4, ¶¶ 9–20, 183–185, 193, 236–237; Ex. 1001, 1:50–5:18). Petitioner alternatively contends the antenna stations “substantially continuously operating” feature would have been obvious as using known technology, contemplated by Spain-I, that the ordinarily skilled artisan would have implemented with a reasonable expectation of success. *Id.* at 12 (citing Ex. 1002 ¶¶ 117, 191; Ex. 1011, 1:16–50, 3:8–4:22, 5:31–51, 10:34–11:26; Ex. 1005, 1:8–37, 2:53–3:3, 3:62–4:12, 5:28–33; Ex. 1007; Ex. 1027, Figs. 1–2, 16, ¶¶ 2–21, 42–45, 102–103).

Petitioner also argues that, to the extent Spain-I alone does not teach or render obvious the claimed “fixed-location service area stations and are substantially continuously operating,” Hunzinger and Nanda in combination with Spain-I remedy any deficiency. Pet. 45–48. In this regard, Dr. Almeroth testifies that the ordinarily skilled artisan would have understood Nanda’s “fixed base transceiver station[s] (BTS)” and access points to correspond to the claimed feature. Ex. 1002 ¶¶ 193–194 (citing Ex. 1006, Fig. 1B, 1:29–53, 5:15–49) (emphasis omitted), *cited in* Pet. 45–46. Dr. Almeroth additionally testifies that Hunzinger uses known base stations. *Id.* ¶ 195 (citing Ex. 1054, Fig. 1A, 1:21–54, 5:6–12, 7:9–14), *cited in* Pet. 46–47. According to Dr. Almeroth, the ordinarily skilled artisan would have implemented Hunzinger and Nanda’s substantially continuously operating fixed-location service area stations in Spain-I to “enhance[] the use of Spain-I’s MU in such wireless network infrastructures” and “facilitate location determination processes,” and would have done so using known technology and known techniques with a reasonable expectation of success. *Id.* ¶¶ 196–197, *cited in* Pet. 47–48.

1(b): “causing a determination of whether the portable RF communications device is within proximity of the device-specific target location by electronically comparing at least one number based on signal strengths of each of the first plurality of communications signals with at least one number based on corresponding signal strengths of each of a second plurality of communication signals from a second plurality of antenna stations that have been identified as being within range of the same location as the device-specific target location, which signal strengths have been determined for the same location as the device-specific target location”

Petitioner asserts that limitation 1(b) is rendered obvious by the combined teachings of Spain-I, Hunzinger, and Nanda. Pet. 12–45.

(i): “causing a determination of whether the portable RF communications device is within proximity of the device-specific target location . . .”

Pointing to the prosecution history, specification, and claim language of the ’811 patent, Petitioner asserts that the claimed “device-specific target location” “encompasses locations specifically targeted/selected by a MU user.” Pet. 15–16. Petitioner notes that Spain-I’s MU “determin[es] whether it is currently ‘at a particular location or not,’” and that Spain-I further teaches a user initiating a request for the MU to capture its current location’s fingerprint. *Id.* at 13, 16 (citing Ex. 1011, Figs. 3, 9, 3:42–4:25, 4:43–47, 5:20–6:31, 6:9–30, 6:43–47, 7:58–8:26, 13:16–14:37; Ex. 1005, 2:40–6:56; Pet. 6–51; Ex. 1002 ¶¶ 127–129). Based on these teachings, Petitioner asserts that Spain-I “suggests the concept of user initiated target location fingerprint data collection.” *Id.* at 16.

In view of its interpretation of the claimed “device-specific target location,” noted above, Petitioner further relies on Hunzinger as teaching a

user selecting a location for their mobile device, and the mobile device performs an action when it determines it is at that location. Pet. 17 (citing Ex. 1054, Abstr., Figs. 1A–4, 1:38–2:6, 2:10–44, 3:4–67; Ex. 1002 ¶ 132). Additionally, Petitioner contends that Nanda teaches “determin[ing] whether a mobile device is ‘in the vicinity of’ a location by comparing fingerprint information.” *Id.* at 21 (citing Ex. 1006, Figs. 1A–1B, 2:16–59, 3:48–4:14, 5:50–7:28; Ex. 1002 ¶¶ 69–75, 139–146). Petitioner also argues, “Nanda describes features that allow a mobile device user to select when to create a device-specific fingerprint.” *Id.* at 23–24 (emphasis omitted) (citing Ex. 1006, Fig. 2, 8:29–36; Ex. 1002 ¶¶ 144–146).

Petitioner avers that the ordinarily skilled artisan would have found it obvious to modify Spain-I’s MU to include “mechanisms/features consistent with the user chosen location and location-based action features like that taught/suggested by Hunzinger (and Nanda) to cause a determination to detect proximity of device-specific target locations,” such that Spain-I’s MU or server 30, for example, could have provided personalized services upon determining that the MU is in proximity of a user-selected location. Pet. 26–29 (emphases omitted). For example, Petitioner contends that Hunzinger and Nanda include “user-friendly interface mechanisms . . . that [would have] enabled a user to easily choose device-specific target locations.” *Id.* at 26 (citing Ex. 1002 ¶¶ 147–158).

Dr. Almeroth testifies that the modification would have led to advantages recognized by the ordinarily skilled artisan, such as expanded capabilities and functionalities of Spain-I, as well as improved marketability, desirability, and user-friendliness. Ex. 1002 ¶¶ 148–152, 154. Moreover, Dr. Almeroth testifies the ordinarily skilled artisan would have used known

techniques and technologies to have modified Spain-I with a reasonable expectation of success. *Id.* ¶¶ 155–156. Petitioner further argues that “evidence of multiple references teaching known features (e.g., device-specific target locations, signal strength comparisons¹² . . .) bolsters obviousness, rather than detracts from it.” Pet. 21 n.9 (citing *Bayer Pharma AG v. Watson Laboratories, Inc.*, 874 F.3d 1316, 1321–24 (Fed. Cir. 2017); *Chanel, Inc. v. Molo Design, Ltd.*, IPR2022-00544, Paper 44 at 28, 33 (PTAB Aug. 9, 2023)).

(ii): “by electronically comparing at least one number based on signal strengths of each of the first plurality of communications signals with at least one number based on corresponding signal strengths of each of a second plurality of communication signals from a second plurality of antenna stations that have been identified as being within range of the same location as the device-specific target location”

Petitioner discusses the above limitation through the lenses of two different interpretations for the limitation “at least one number based on signal strengths.” Pet. 29–45. We address each in turn.

First, according to Petitioner, the claimed “at least one number based on signal strengths” should be construed to encompass a numerical signal strength measurement. Pet. 29. Petitioner contends that Spain-I teaches that each generated fingerprint—stored or current—includes such a numerical signal strength measurement, which is based on signals received from

¹² We address separately below Petitioner’s arguments regarding “signal strength comparisons” as they relate to a subsequent clause in limitation 1(b).

antenna stations. *Id.* at 29–30 (citing Pet. 6–29; Ex. 1011, Figs. 9–10, 4:55–57, 5:60–6:14, 12:11–14, 14:10–31; Ex. 1002 ¶¶ 162, 164). In particular, Petitioner maps the recited “at least one number based on signal strengths of each of the first plurality of communications signals” to Spain-I’s current signal strength measurements of signals from first antennas; and maps the recited “at least one number based on corresponding signal strengths of each of a second plurality of communications signals from a second plurality of antenna stations” to Spain-I’s previously stored signal strength measurements of signals from second antennas. *Id.* at 13–14, 30 (citing Pet. 9–12, 29–42; Ex. 1011, Figs. 9–10, 4:55–57, 5:60–6:14, 12:11–14, 14:10–31; Ex. 1002 ¶¶ 162–164).

Petitioner further explains that Spain-I’s MU electronically compares the current fingerprint information with stored fingerprint information; upon determination of a match or close match in fingerprints, the location corresponding to the matching stored fingerprint information is selected as the current MU location. Pet. 13, 31 (citing Pet. 9–12, 29–42; Ex. 1011, 4:55–63, 5:61–6:14, 8:1–26; Ex. 1005, 4:22–36, 5:10–33; Ex. 1002 ¶¶ 120, 166–167).

Based on these teachings in Spain-I, Petitioner asserts that the second antennas “would have been identified as being within range of the same location as the target monitored location like that claimed.” Pet. 13–14 (citing Ex. 1001, 6:4–23; Ex. 1004, 126–139; Pet. 15–45). Relatedly, Petitioner also argues that Spain-I eliminates very weak signals when generating its stored fingerprint and, therefore, identifies whether the second antenna stations are “within range of the location where the fingerprint is taken.” *Id.* at 30–31 (citing Ex. 1011, Figs. 9–10, 5:54–60, 4:55–57, 5:60–

6:14, 14:10–37; Ex. 1002 ¶ 165; Pet. 15–29).

Petitioner acknowledges that “[w]hile Spain-I discloses such fingerprint comparison features, Spain-I lacks details as to how such comparisons are performed/used, including in context of underlying parameters (comparing received and device-specific target location signal strength number(s)),” but argues that Hunzinger and Nanda supply these details. Pet. 31–36 (emphases omitted). As to Hunzinger, Petitioner contends that its mobile device “‘compares’ remembered location information with current location information to determine whether the device has left or entered a remembered location,” and that the location information may include “‘signal strength’ values.” *Id.* at 32–33 (emphasis omitted) (citing Ex. 1054, Fig. 3, 3:49–60, 4:1–12, 4:21–57, 4:60–5:22, 6:37–49, 7:9–22, 7:29–42, 8:25–38, claims 1, 3; Pet. 15–29; Ex. 1002 ¶¶ 169–170). Petitioner argues that Nanda also stores fingerprint location information, including signal strengths, and compares the stored signal strengths with those of current fingerprint location signal strengths to determine whether the difference in signal strengths is below a predetermined threshold, which would signify a match. *Id.* at 34–36 (citing Ex. 1006, Fig. 3B, 3:18–19, 8:29–9:13, 9:17–20, 9:31–10:25, 10:36–56, 10:58–11:10; Ex. 1002 ¶¶ 172–176). In this regard, Dr. Almeroth testifies that Nanda’s comparison is “to determine whether the mobile device is located within the proximity of a device-specific target location associated with a matching fingerprint.” Ex. 1002 ¶ 172 (citing *id.* ¶¶ 69–75; Ex. 1006, Figs. 3A–3B, 2:43–51, 6:12–66, 7:6–13).

Relying on Dr. Almeroth’s additional testimony for support, Petitioner asserts that, in view of Hunzinger and Nanda’s teachings, the ordinarily

skilled artisan would have modified Spain-I to meet the limitations above with a reasonable expectation of success and using known techniques, thereby resulting in enhancement of Spain-I's MU, improved accuracy, and resource conservation. Pet. 36–40 (citing Ex. 1002 ¶¶ 177–182).

Second, citing the prosecution history of the '811 patent, Petitioner argues that the claimed “at least one number based on signal strengths” may be alternatively construed as requiring a number derived from a mathematical formula, algorithm, or function. Pet. 42–43. In this event, Petitioner points to Spain-I's teaching of sampling signal strengths at different frequencies “to smooth out any variations,” and argues that Spain-I, therefore, “suggest[s] some calculation/mathematical normalization to process and/or generate fingerprint signal strength value(s).” *Id.* at 43 (citing Ex. 1011, 13:51–55; Pet. 9–51; Ex. 1002 ¶ 186). Petitioner further contends that Nanda teaches averaging strength values and that Hunzinger, likewise, teaches averaging measurements. *Id.* (citing Ex. 1006, Fig. 3B, 6:19–25, 7:19–28, 8:29–36, 11:11–18; Ex. 1002 ¶ 186; Ex. 1054, 6:17–19).

Relying on Dr. Almeroth's testimony, Petitioner argues that the ordinarily skilled artisan would have known of mathematical techniques to apply to measured signal strength data, and would have done so predictably and with a reasonable expectation of success “to refine/adjust collected signal characteristic data (e.g., signal strengths) that compensates for, e.g., outlier data (e.g., extreme high/low readings/measurements) or adjusts for ‘environment variability’ . . . to increase the accuracy or confidence in the location proximity determinations.” Pet. 43–44 (citing Ex. 1002 ¶¶ 187–188; Ex. 1029, 2:18–29; Ex. 1030 ¶ 87).

1(c): “as a result of the determination that the portable RF communications device is within proximity of the device-specific target location, initiating, on the portable RF communications device, a location-based action associated with the device-specific target location.”

Petitioner argues that limitation 1(c) is rendered obvious by the combined teachings of Spain-I, Hunzinger, and Nanda. Pet. 51–53. Specifically, Petitioner argues “Hunzinger describes initiating location-based actions based on a determined/selected MU target location.” *Id.* at 51–52 (emphasis omitted) (citing Ex. 1002 ¶ 203; Ex. 1054, Abstr., Figs. 1A–4, 1:38–2:6, 2:10–44, 3:4–5:40). Petitioner further contends “Nanda suggests configuring an MU to automatically look for a wireless LAN access point when the device-specific target location is detected.” *Id.* at 52 (citing Pet. 12–51; Ex. 1006, 2:16–59, 5:15–49, 11:20–32; Ex. 1002 ¶ 203) (emphasis omitted).

Given these teachings of Hunzinger and Nanda, Dr. Almeroth testifies that the skilled artisan would have found it obvious to have the modified MU perform limitation 1(c) for similar reasons as limitation 1(b). Ex. 1002 ¶ 204, *cited in* Pet. 52–53.

*“with the portable RF communications device automatically:
performing limitations 1(a), 1(b), and 1(c)”*

Immediately following the preamble, claim 1 also requires that “the portable RF communications device automatically” perform limitations 1(a), 1(b), and 1(c). Petitioner argues that Spain-I’s MU includes components and software to automatically perform the functions Spain-I describes. Pet. 8–9 (citing Ex. 1011, Fig. 2, 3:55–4:22, 5:20–32, 15:19–25; Ex. 1002 ¶ 106). Petitioner further argues that Spain-I’s MU as modified by the teachings of Hunzinger and Nanda, would have automatically performed limitations 1(a)

to 1(c). *Id.* at 9, 48–53.

In particular, Dr. Almeroth testifies that the ordinarily skilled artisan would have understood Hunzinger and Nanda to teach periodic and automatic monitoring and recording of location information or fingerprints. Ex. 1002 ¶ 200 (citing Ex. 1054, 4:39–40; Ex. 1006, Fig. 3B, 5:41–49, 8:30–42, 10:49–11:11; Ex. 1002 ¶¶ 119–202; Ex. 1029, 3:24–41; Ex. 1019 ¶ 214; Ex. 1047, Fig. 7, 13:63–14:1), *cited in* Pet. 49. Petitioner also argues that Nanda suggests performing an action automatically when it detects a device-specific target location. Pet. 52 (citing Pet. 12–51; Ex. 1006, 2:16–59, 5:15–49, 11:20–32; Ex. 1002 ¶ 203).

Relying on Dr. Almeroth’s testimony, Petitioner contends that the skilled artisan would have found it obvious to configure the MU with a reasonable expectation of success and using known techniques to automatically perform limitations 1(a) to 1(c) to ensure appropriate monitoring and checking of MU locations and execution of actions upon determining the MU was at a given location, and also to conserve resources. Pet. 49–51 (citing Ex. 1002 ¶¶ 201–202; Ex. 1006, 5:41–49, 8:30–42, 10:49–11:11; Ex. 1029, 3:24–41; Ex. 1019 ¶ 214; Ex. 1047, Fig. 7, 13:63–14:1).

b) Independent claim 15

Claim 15 recites limitations similar to limitations 1(a), 1(b), and 1(c). *Compare* Ex. 1001, 26:54–27:12, *with id.* at 28:12–35. Accordingly, Petitioner asserts that the corresponding limitations in claim 15 would have been obvious over the combined teachings of Spain-I, Hunzinger, and Nanda for the same reasons as for claim 1. Pet. 65–66. Claim 15, however, includes additional limitations that Petitioner separately addresses.

Specifically, claim 15's preamble recites, "[a] portable RF communications device comprising an antenna, a user interface, and a storage device, wherein the storage device contains computer program code that, when executed by the portable device, controls the portable device to cause the portable device to perform a location-determining method, the method comprising automatically." Ex. 1001, 28:6–11. For these claimed components, Petitioner contends that Spain-I's MU includes antenna 102 and a storage device storing software for carrying out Spain-I's invention. Pet. 61–62 (citing Ex. 1002 ¶¶ 217–224; Ex. 1011, Figs. 1–3, 3:55–60, 4:7–22, 5:20–22, 5:55–6:7, 6:9–30, 8:1–26, 14:23–37, 15:19–25; Pet. 6–53). Petitioner additionally argues, for example, that Hunzinger and Nanda teach mobile device components such as a processor, memory, software or code. *Id.* at 63–64.

Dr. Almeroth testifies that, in view of the teachings of Spain-I, Hunzinger, and Nanda, the ordinarily skilled artisan would have found it obvious to include known and conventional components including a user interface, a storage device containing computer program code, and a processor that executes the stored code to perform the location-determining steps of claim 15. Ex. 1002 ¶¶ 220–224, *cited in* Pet. 62–65. Dr. Almeroth further testifies that these modifications would have been within the skill, knowledge, and capabilities of the skilled artisan, who would have had a reasonable expectation of success in making the modifications. *Id.* ¶ 224.

c) Analysis

Patent Owner's Response does not advance arguments directed to claims 1 and 15. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner's contentions for these claims.

See In re Nuvasive, Inc., 842 F.3d 1376, 1381 (Fed. Cir. 2016) (explaining that a patent owner forfeits an issue presented in its preliminary response if it fails to renew the issue in its response after trial is instituted). We have reviewed Petitioner's arguments regarding claims 1 and 15, which Patent Owner does not contest, and find them persuasive. Accordingly, we adopt Petitioner's contentions as our own. Based on Petitioner's arguments and accompanying evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 15 would have been unpatentable over Spain-I, Hunzinger, and Nanda.

2. Dependent Claims 8 and 22

Petitioner argues that dependent claims 8 and 22 would have been rendered obvious by the combined teachings of Spain-I, Hunzinger, and Nanda. Pet. 53–57, 66. Specifically, Petitioner contends that both Spain-I and Nanda teach comparing multiple numbers based on signal strengths of received signals. *Id.* at 53–55 (citing Ex. 1011, Fig. 9, 4:42–63, 5:61–6:4; Ex. 1006, Fig. 3B, 6:12–25, 8:29–9:15, 10:49–11:19; Ex. 1002 ¶¶ 205, 207). According to Petitioner, it would have also been obvious to modify the combination of Spain-I, Hunzinger, and Nanda to meet the limitations of claims 8 and 22, for reasons similar to limitation 1(b). *Id.* at 55–57.

Patent Owner's Response does not advance arguments directed to claims 8 and 22. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner's contentions for these claims. *See In re Nuvasive, Inc.*, 842 F.3d at 1381. We have reviewed Petitioner's arguments regarding claims 8 and 22, which Patent Owner does not contest, and find them persuasive. Accordingly, we adopt Petitioner's contentions as our own. Based on Petitioner's arguments and accompanying evidence, we

determine that Petitioner has shown by a preponderance of the evidence that claims 8 and 22 would have been unpatentable over Spain-I, Hunzinger, and Nanda.

3. *Dependent Claims 14 and 28*

a) *Petitioner's Contentions*

Petitioner argues that dependent claims 14 and 28 would have been rendered obvious by the combined teachings of Spain-I, Hunzinger, and Nanda. Pet. 57–60, 66–67. In particular, Petitioner argues: (1) Spain-I teaches that the fingerprint database may be stored at a remote location server, and the location server searches for the closest matching fingerprint to determine the location of the mobile unit; and (2) Nanda teaches that fingerprints may be stored in a remote database. *Id.* at 58 (citing Ex. 1011, Fig. 3, 6:9–30; Ex. 1006, 12:14–31; Ex. 1002 ¶ 212). According to Petitioner, it would have been obvious to use “a remote database/server for storage and for subsequent location determining analysis, consistent with features contemplated by *Spain-I* and *Nanda*,” in order “to reduce processing/storing requirements of the MU” and “allow[] for a ‘much larger database of available access points than would be found in a single mobile device’” by aggregating fingerprints from multiple mobile devices. *Id.* at 59–60 (citing Ex. 1006, 12:14–31). Petitioner further argues that a skilled artisan would have implemented the modification in a predictable manner and with an expectation of success. *Id.*

b) *Patent Owner's Contentions*

Patent Owner contends that modifying the fingerprint database to be located at a database or server remote from the MU, as Petitioner proposes, fails to meet the claimed “device-specific target location” under Patent

Owner's construction of the term. PO Resp. 5–7 (citing Ex. 2003 ¶¶ 35–36). Specifically, Patent Owner argues that Petitioner's modification results in fingerprints “usable by *all* mobile devices using the system” and has “stored locations applicable to *every* device using the system,” rather than “a target location that is specific to a particular device.” *Id.* at 5, 7.

c) Analysis

Patent Owner's arguments are largely premised on its claim construction position, which we reject above. In particular, as indicated above, we construe “device-specific target location” as a location that is selected by a user. As additionally indicated above, Petitioner has shown persuasively that the combined teachings of Spain-I, Hunzinger, and Nanda would have rendered obvious claims 1 and 15. The record does not support Patent Owner's arguments that modifying the fingerprint database of Spain-I, Hunzinger, and Nanda to be stored in a shared database usable by multiple mobile devices, results in each fingerprint not being a location that is selected by a user, as we construe “device-specific target location.” As Petitioner explains, “if two MUs created fingerprints at the same target location and those fingerprints were then stored in the same remote database, that location would be a device-specific target location for each of those MUs, as *each of those MUs would have selected that location.*” Reply 11 (emphasis added); *see also* Pet. 15–29 (proffering reasons as to why it would have been obvious to modify Spain-I to have a location selected by a user, in view of the teachings of Hunzinger and Nanda). Merely because a remote database performs the determination of whether the MU is within proximity of a location selected by a user, as in the combination of Spain-I, Hunzinger, and Nanda, does not mean that the location is not selected by a user.

Based on the foregoing, we conclude Petitioner has demonstrated by a preponderance of the evidence that dependent claims 14 and 28 would have been unpatentable over the combined teachings of Spain-I, Hunzinger, and Nanda.

4. Conclusion on Obviousness

For the reasons discussed above, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 8, 14, 15, 22, and 28 would have been unpatentable over the combined teachings of Spain-I, Hunzinger, and Nanda.

F. Alleged Obviousness Over Spain-I, Hunginzer, Nanda, and Blomqvist: Claims 4 and 18

Petitioner contends that dependent claims 4 and 18 would have been obvious over the combined teachings of Spain-I, Hunzinger, Nanda, and Blomqvist. Pet. 67–71. Specifically, Petitioner contends that Blomqvist teaches starting an application or program when it is determined that a mobile device is at or within vicinity of a specified location. *Id.* at 68–69 (citing Ex. 1033, code (57), Figs. 1–2, 1:14–39, 1:43–2:16, 2:20–3:12, 3:44–64, 5:10–6:36, 8:52–62; Ex. 1002 ¶¶ 84–88, 230–235). Petitioner further argues that an ordinarily skilled artisan, upon considering Hunzinger and Blomqvist’s teachings, would have implemented known features with a reasonable expectation of success to meet the limitations of claims 4 and 18, “in order to enhance user convenience and provide assistance with certain tasks,” as well as “provid[e] user-friendly service-based operations that complemented the service-based features contemplated by Spain-I.” *Id.* at 70–71 (emphasis omitted).

Patent Owner’s Response does not advance arguments directed to

claims 4 and 18. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for these claims. *See In re Nuvasive, Inc.*, 842 F.3d at 1381. We have reviewed Petitioner’s arguments regarding claims 4 and 18, which Patent Owner does not contest, and find them persuasive. Accordingly, we adopt Petitioner’s contentions as our own. Based on Petitioner’s arguments and accompanying evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 4 and 18 would have been unpatentable over Spain-I, Hunzinger, Nanda, and Blomqvist.

*G. Alleged Obviousness Over Spain-I, Hunzinger, Nanda, and Tiwari:
Claims 5 and 19*

Petitioner contends that dependent claims 5 and 19 would have been obvious over the combined teachings of Spain-I, Hunzinger, Nanda, and Tiwari. Pet. 72–76. To this end, Petitioner contends that the combination of Spain-I, Hunzinger, and Nanda teaches or suggests “location features that depend on an MU’s movement.” *Id.* at 72 (citing Ex. 1011, 8:27–10:27; Ex. 1006, Fig. 1A, 3:58–4:4, 4:60–5:8; Ex. 1054, 3:29–34, 4:39–42; Ex. 1002 ¶ 240). Petitioner further argues that an ordinarily skilled artisan would have considered Tiwari’s teachings regarding “dynamically adjust[ing] how often a location determination is performed based on the rate of change of a user’s location to save [battery] power,” which Petitioner alleges is similar to “power-saving benefits” evidenced in the intrinsic record of the ’811 patent. *Id.* at 73–75 (citing Ex. 1203, code (57), Figs. 1–2, 1:13–36, 2:39–67, 3:30–5:14, 6:48–61; Ex. 1002 ¶¶ 76–79, 242–244; Ex. 1001, 19:20–34; Ex. 1004, 151–152). Petitioner avers that benefits to modifying Spain-I, Hunzinger, and Nanda with the teachings of Tiwari would have

included “improving power efficiencies of the MU, reducing battery drain, and improving location determination accuracy.” *Id.* at 75 (citing Ex. 1203, 2:56–67, 4:25–50, 6:48–61; Ex. 1204 ¶¶ 26–27; Ex. 1002 ¶ 246). Petitioner explains that an ordinarily skilled artisan would have predictably implemented the modification using known techniques and with a reasonable expectation of success. *Id.* at 75–76 (citing Ex. 1002 ¶¶ 246–247).

Patent Owner’s Response does not advance arguments directed to claims 5 and 19. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for these claims. *See In re Nuvasive, Inc.*, 842 F.3d at 1381. We have reviewed Petitioner’s arguments regarding claims 5 and 19, which Patent Owner does not contest, and find them persuasive. Accordingly, we adopt Petitioner’s contentions as our own. Based on Petitioner’s arguments and accompanying evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 5 and 19 would have been unpatentable over Spain-I, Hunzinger, Nanda, and Tiwari.

*H. Alleged Obviousness Over Spain-I, Hunzinger, Nanda, and Othmer:
Claim 24*

Petitioner contends that dependent claim 24 would have been obvious over the combined teachings of Spain-I, Hunzinger, Nanda, and Othmer. Pet. 76–82. In particular, Petitioner argues that Hunzinger teaches that the device-specific target location at which an action may be triggered includes a grocery store or shop, and that Othmer additionally describes displaying on a user’s device a promotional coupon when a user arrives within location within a certain distance from a retail store. *Id.* at 77–81 (citing Ex. 1054,

Fig. 2, 2:11–19; Ex. 1208, code (57), Figs. 1–2, 1:16–22, 1:24–65, 2:36–65, 3:8–63, 4:21–35, 7:54–8:15, 8:19–9:21, 10:15–34, 14:50–15:26; Ex. 1002 ¶¶ 80–83, 251–254). Petitioner avers that modifying Spain-I, Hunzinger, and Nanda with the teachings of Othmer would have “increased MU user convenience . . . [and] improved advertisement/business reach,” and that an ordinarily skilled artisan would have predictably implemented known features with a reasonable expectation of success. *Id.* at 81–82 (citing Ex. 1002 ¶¶ 255–257).

Patent Owner’s Response does not advance arguments directed to claim 24. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for this claim. *See In re Nuvasive, Inc.*, 842 F.3d at 1381. We have reviewed Petitioner’s arguments regarding claim 24, which Patent Owner does not contest, and find them persuasive. Accordingly, we adopt Petitioner’s contentions as our own. Based on Petitioner’s arguments and accompanying evidence, we determine that Petitioner has shown by a preponderance of the evidence that claim 24 would have been unpatentable over Spain-I, Hunzinger, Nanda, and Othmer.

I. *Alleged Obviousness Over Spain-I, Hunginzer, Nanda, and Bates:
Claim 25*

Petitioner contends that dependent claim 25 would have been obvious over the combined teachings of Spain-I, Hunzinger, Nanda, and Bates. Pet. 83–89. According to Petitioner, Bates teaches a portable phone that determines its location, and a call tower determines to forward phone calls to a “land-based phone” if, for example, the portable phone is close to the land-based phone and call forwarding if activated. *Id.* at 85–87 (citing Ex. 1212, code (57), Figs. 1–2, 4–7, 9, 11, 13, ¶¶ 3–7, 22, 34, 36–44, 48–49).

Petitioner argues that an ordinarily skilled artisan would have understood that modifying Spain-I, Hunzinger, and Nanda with Bates' teachings would, among other things, "increase user convenience, better realize the power of using portable phones, make the telephone system much more user-friendly, save wireless call costs, [and] conserve mobile device power." *Id.* at 88 (citing Ex. 1212 ¶¶ 6–7, 57; Ex. 1002 ¶¶ 267–268; Ex. 1209 ¶¶ 9–13; Ex. 1210, 1:55–64; Ex. 1211, 2:23–34). Petitioner further contends that the modifications would have predictably implemented with a reasonable expectation of success. *Id.* at 88–89 (citing Ex. 1002 ¶¶ 266, 268).

Patent Owner's Response does not advance arguments directed to claim 25. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner's contentions for this claim. *See In re Nuvasive, Inc.*, 842 F.3d at 1381. We have reviewed Petitioner's arguments regarding claim 25, which Patent Owner does not contest, and find them persuasive. Accordingly, we adopt Petitioner's contentions as our own. Based on Petitioner's arguments and accompanying evidence, we determine that Petitioner has shown by a preponderance of the evidence that claim 25 would have been unpatentable over Spain-I, Hunzinger, Nanda, and Bates.

J. Petitioner's Objections to Patent Owner's Demonstratives

Petitioner filed an objection to Patent Owner's demonstrative slides 11, 13, and 15. Paper 24. According to Petitioner, these slides include new arguments and evidence not previously presented in Patent Owner's Response. *Id.*

In response to Petitioner's objections, we informed the parties during the oral argument that demonstratives are not evidence in our proceedings, and we would consider arguments made in the briefs. *See* Tr. 4:18–20,

45:21–24. To the extent Patent Owner relied on any arguments or evidence presented on any of slides 11, 13, and 15 during the oral argument, we have not considered those arguments or evidence in formulating our decision.

Rather, we have considered only arguments made in Patent Owner’s Response. Accordingly, Petitioner’s objections are moot.

III. CONCLUSION¹³

After reviewing the complete record developed during the course of the trial, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 4, 5, 8, 14, 15, 18, 19, 22, 24, 25, and 28 of the ’811 patent are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not shown Unpatentable
1, 8, 14, 15, 22, 28	103(a)	Spain-I, Hunzinger, Nanda	1, 8, 14, 15, 22, 28	
4, 18	103(a)	Spain-I, Hunzinger, Nanda, Blomqvist	4, 18	
5, 19	103(a)	Spain-I,	5, 19	

¹³ 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).

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not shown Unpatentable
		Hunzinger, Nanda, Tiwari		
24	103(a)	Spain-I, Hunzinger, Nanda, Othmer	24	
25	103(a)	Spain-I, Hunzinger, Nanda, Bates	25	
Overall Outcome			1, 4, 5, 8, 14, 15, 18, 19, 22, 24, 25, 28	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 4, 5, 8, 14, 15, 18, 19, 22, 24, 25, and 28 of the '811 patent are unpatentable;

FURTHER ORDERED that Petitioner's objections to Patent Owner's demonstratives are moot; and

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

IPR2024-00155
Patent 10,341,811 B2

For PETITIONER:

Joseph Palys
Naveen Modi
Kevin Stewart
PAUL HASTINGS LLP
josephpalys@paulhastings.com
naveenmodi@paulhastings.com
kevinstewart@paulhastings.com

For PATENT OWNER:

Reza Mirzaie
Qi Tong
RUSS AUGUST & KABAT
rmirzaie@raklaw.com
ptong@raklaw.com