

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

BROADPHONE LLC,
Patent Owner.

IPR2024-00154
Patent 8,594,698 B2

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

DANIELS, *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 1–7, 9–13, 15, 16, and 21 (collectively, “the challenged claims”) of U.S. Patent No. 8,594,698 B2 (Ex. 1001 (“the ’698 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 1–7, 9–13, 15, 16, and 21 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 '698 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. 8,170,583 and 10,341,811, (the '583 and '811 patents respectively), as patents related to the '698 patent and as subject to proceedings before the Board. Pet. 1.¹ The following proceedings before the Board involve the same parties as the instant proceeding: IPR2024-00153 (U.S. Patent No. 8,170,583 B2), IPR2024-00155 (U.S. Patent No. 10,341,811 B2), and IPR2024-00821 (U.S. Patent No. 8,594,698 B2).

D. The '698 Patent (Ex. 1001)

The '698 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 '698 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, 5:14–24.

To solve these problems, the '698 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,

¹ The '698 patent results from a continuation of the application which became the '583 patent, which in turn is a continuation of the application that became the '811 patent. Ex. 1001, code (63).

7:10–26. 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, 10:43–44.

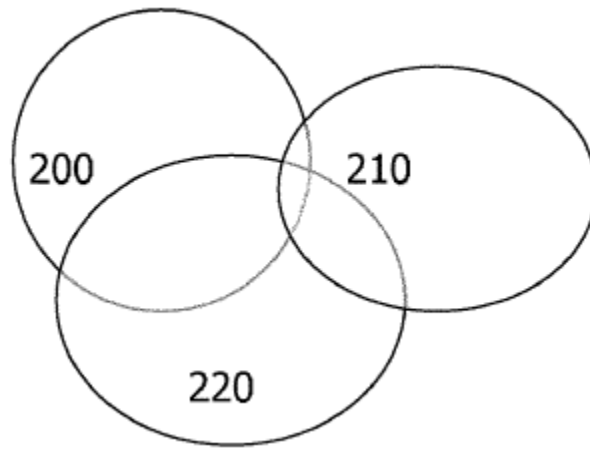


Figure 2 illustrates overlapping coverage areas for three service antennas 200, 210, 220, with the overlapping coverage areas resembling a Venn diagram. *Id.* at Fig. 2, 8:25–34. The ’698 patent explains that, for a given building or cell phone within the coverage areas shown in Figure 2,

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. To determine its location, the cell phone obtains “distance equivalent measurement(s) between itself . . . and each of the area service antenna(s).” *Id.* at 34–36. According to the ’698 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 8:62–9:6.

The ’698 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, 11:40–12:32. Where privacy is a concern, then these four steps are performed on a single device. *Id.* at 12:33–34. 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 12:34–39.

In a further embodiment, the ’698 patent discloses that a user may select an action to occur each time he or she is at the desired location. Ex. 1001, 18:4–24. 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 18:13–16. 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 18:7–10.

E. Challenged Claims

Claim 1 is independent. Each of dependent claims 2–7, 9–13, 15, 16, and 21 ultimately depend from independent claim 1. Ex. 1001, 26:5–18:12. Independent claim 1 is illustrative of the challenged claims and is reproduced as follows:

1. A location-determining method, operable by a first portable RF communications device, the method comprising:

(a) the first portable RF communications device monitoring its location by

(i) receiving communications signals from a first plurality of fixed-location service-area antenna stations capable of RF communication with the first portable RF communications device wherein the antenna stations are substantially continuously operating,

(ii) identifying at least one ID within at least one of the received communications signals, and

(iii) measuring a varying signal characteristic other than ID, which signal characteristic is associated with a received communications signal from each of the first plurality of antenna stations; and

(b) the first portable RF communications device determining if a first monitored location, monitored in accordance with part (a), is within proximity of a location chosen by a user of the first portable RF communications device, as a result of electronically comparing

(i) the at least one ID at the first monitored location with at least one ID at the location chosen by the user and

(ii) at least one number based on the varying signal characteristic of the communications signals from each of the first plurality of antenna stations at the first monitored location

with at least one number based on corresponding varying signal characteristics of the communications signals from each of the first plurality of antenna stations at the location chosen by the user.

Ex. 1001, 26:5–32. Because Patent Owner focuses its Response mainly on claims 4 and 6, we reproduce, below, dependent claims 2 and 4–6. PO Resp. 5–13.

2. The method of claim 1 wherein the characteristic is the communications signal's strength, which varies over a range of an antenna station.

4. The method of claim 2 wherein the chosen location signal strengths were measured by a second portable RF communication device.

5. The method of claim 2 wherein the chosen location signal strengths and the at least one ID originated from a database of geographic locations and corresponding signal strengths and IDs.

6. The method of claim 5 wherein the database is stored remotely from the first portable RF communications device.

Id. at 26:33–47.

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:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–7, 9–13, 15, 16, 21	103(a) ²	Spain-I, ³ Hunzinger, ⁴ Nanda ⁵
2	4, 6–7	103(a)	Spain-I, Hunzinger, Nanda, Damarla ⁶
3	11	103(a)	Spain-I, Hunzinger, Nanda, Budampati ⁷
4	15–16	103(a)	Spain-I, Hunzinger, Nanda, Blomqvist ⁸

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.

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 ’698 patent claims priority to an application filed before March 16, 2013 (the effective date of the relevant amendments), the pre-AIA version of § 103 applies. *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. 7,346,359 B2, issued March 18, 2008 (Ex. 1028).

⁷ U.S. Patent Appl’n No. 11/252,434, pub. April 19, 2007 (Ex. 1109).

⁸ U.S. Patent No. 7,305,244 B2, issued December 4, 2007 (Ex. 1033).

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.⁹ *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 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. 4 (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

⁹ The record does not include allegations or evidence of objective indicia of nonobviousness.

technology and descriptions in the '698 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.

Petitioner submits that “no special constructions are necessary” beyond the plain meaning of the claims. Pet. 5. Similarly, Patent Owner states that “no formal claim construction is necessary.” PO Resp. 4.

As in our Institution Decision, we note that Petitioner relies on the prosecution history of the '698 patent for understanding the phrase “at least one number based on,” recited in claim 1. Pet. 6 (citing Ex. 1004, 166). Petitioner proposes that the plain meaning of this phrase was expressly described during prosecution of the application that became the '698 patent, where the Applicant argued that

[a]s the specification explains, the “number based on []” is intended to refer to the output of any “formula,” including but not limited to a difference formula, that serves as a comparison “metric” (including “logical comparisons, arithmetically threshold (rounded) logical comparisons, arithmetic, probabilistic, fuzzy logic, neural network enabled, [or] heuristic” [¶00561], or “determinations that are based on derivatives, mathematical normalizations, correlation functions, functions” [¶0139]).

Ex. 1004, 166. Patent Owner does not dispute this interpretation. *See generally*, PO Resp. 2. For purposes of this Decision, and to the extent necessary for institution, we apply Petitioner’s proposed plain meaning for this phrase as it is reasonably based on the prosecution history of the ’698 patent.

Apart from this, where neither party proposes any particular construction or indicates disagreement as to the meaning of any claim language, we need not explicitly construe any claim terms at this stage of the proceeding.

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, apart from the “at least one number based on” phrase, we determine that no 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.

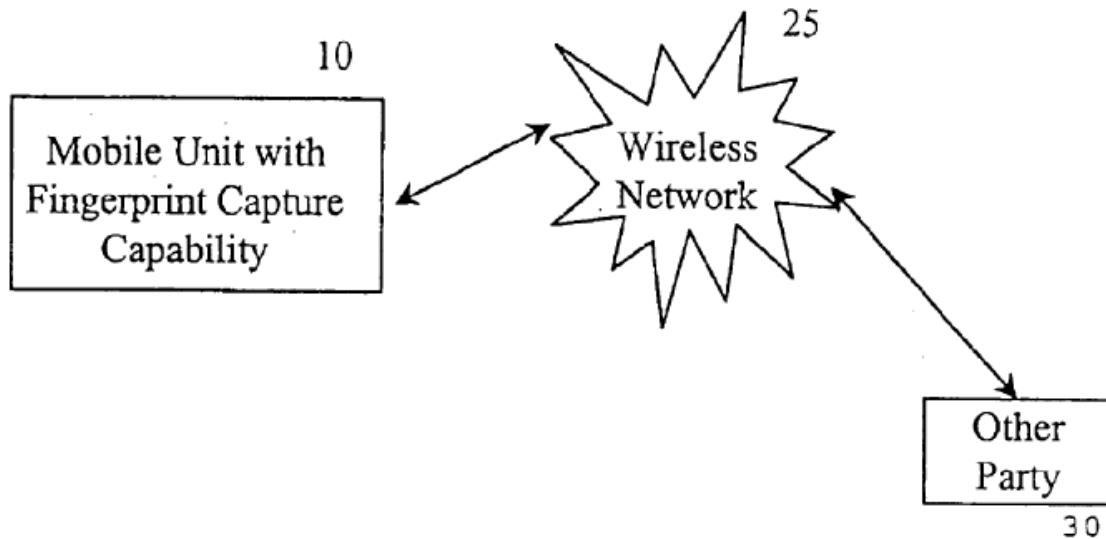


Figure 1's exemplary wireless communication network, above, depicts mobile unit 10 in communication with wireless network 25, which is in communication with other party or location server 30. *Id.* at Fig. 1, 3:9–11.

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's mobile

terminal “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.

E. Ground 1: Alleged Obviousness over Spain-I, Hunzinger, and Nanda Claims 1–7, 9–13, 15, 16, and 21

Petitioner contends that claims 1–10, and 26 of the ’698 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 1–10 and 26 would have been obvious over the combined teachings of Spain-I, Hunzinger, and Nanda.

1. Independent Claim 1

a) Petitioner’s Arguments

We consider initially the elements of claim 1.

Petitioner’s Arguments

Preamble – A location-determining method, operable by a first portable RF communications device, the method comprising:

Petitioner argues Spain-I teaches a mobile unit (“MU”) that “works in conjunction with antenna stations capable of RF communication with the MU.” Pet. 7 (citing Ex. 1011, 3:35–41, Figs. 9–10). Relying on Spain-I, Petitioner asserts that “[w]hen a location estimate of the MU is desired’ at a current location, the MU captures information from signals received from surrounding antenna stations and creates a fingerprint.” *Id.* at 8 (citing Ex. 1011, 4:42–46, 5:20–6:8, 7:64–8:44, 9:25–10:27). Petitioner further argues that Spain-I’s MU compares current fingerprint location information “and stored fingerprint information for selected locations in a database to

determine whether it is ‘at a particular location or not.’” *Id.* (citing Ex. 1011, 4:23–47).

Limitations 1(a)(i)-(iii) – the first portable RF communications device monitoring its location by

(i) receiving communications signals from a first plurality of fixed-location service-area antenna stations capable of RF communication with the first portable RF communications device wherein the antenna stations are substantially continuously operating,

(ii) identifying at least one ID within at least one of the received communications signals, and

(iii) measuring a varying signal characteristic other than ID, which signal characteristic is associated with a received communications signal from each of the first plurality of antenna stations; and

Considering limitations 1(a)(i)–(iii) and the steps of “receiving,” “identifying,” and “measuring,” Petitioner argues that Spain-I’s “MU monitors its location by receiving signals from antenna stations, identifying at least one ID within at least one received signal (e.g., station ID), and measuring signal strengths (varying signal characteristics) associated with a received signal from a first plurality of stations.” *Id.* at 9 (citing Ex. 1011, 3:5–16, 4:42–54, 3:55–58, 5:20–32). Petitioner points to Spain-I’s Figure 9, a table entitled, “Fingerprint Structure,” showing a series of antenna station IDs across the top row of the table. We reproduce Petitioner’s annotated Figure 9 below.

400	Fingerprint Structure					
401	Time of Capture:					
403	Station ID:	I1	I2	I3	...	In
405	Frequency:	F1	F2	F3	...	Fn
407	Tuning Parameters:	P1	P2	P3	...	Pn
409	Transmitter Location:	L1	L2	L3	...	Ln
411	Signal Strength 1:	S11	S12	S13	...	S1n
413	Signal Strength 2:	S21	S22	S23	...	S2n
415	...	...	...	...	...	...
417	Signal Strength m:	Sm1	Sm2	Sm3	...	Smn

Fig. 9

Figure 9 from Spain-I “is an illustration of the organization of the fingerprint data” with “Station ID,” I1–In, and “Signal Strength,” 1–m highlighted in blue and yellow respectively. Ex. 1011, 2:40–41. Based at least in part on Figure 9, Petitioner argues that “[t]he MU creates a fingerprint [for its current location] using that information (station IDs and signal strengths).” Pet. 10 (citing Ex. 1011, 3:42–54, 4:33–36, 7:58–8:8, 13:51–44, Figs. 9–10).

Additionally, relying on testimony from Dr. Almeroth, Petitioner contends that a person of ordinary skill in the art knew Spain-I’s antenna stations “are substantially continuously operating fixed-location service-area antenna stations, given they communicate RF communication signals within respective service areas with the MU having an antenna, consistent with known wireless network infrastructures.” *Id.* (citing Ex. 1002 ¶ 104). Dr. Almeroth testifies further that to the extent Spain-I lacks such continuously operating antenna stations, “[a] person of ordinary skill in the art was thus well aware of such antenna stations and would have been motivated to

configure *Spain-I*'s MU to operate in conjunction with similar continuously operating antenna stations (like those claimed).” Ex. 1002 ¶ 107.

Limitation 1(b)(i)-(ii) – the first portable RF communications device determining if a first monitored location, monitored in accordance with part (a), is within proximity of a location chosen by a user of the first portable RF communications device, as a result of electronically comparing

(i) the at least one ID at the first monitored location with at least one ID at the location chosen by the user and

(ii) at least one number based on the varying signal characteristic of the communications signals from each of the first plurality of antenna stations at the first monitored location with at least one number based on corresponding varying signal characteristics of the communications signals from each of the first plurality of antenna stations at the location chosen by the user.

Petitioner argues that *Spain-I* in view of *Hunzinger* and *Nanda* disclose limitations 1(b)(i)–(ii). Pet. 12. Petitioner argues that *Spain-I* compares a current location with a stored location in a database, and “[u]pon a ‘match’ the ‘corresponding location in the database is then chosen as the location of the mobile unit.’” *Id.* (citing Ex. 1011, 5:61–6:4, 8:1–26).

To the extent that *Spain-I* does not teach “determining if a first monitored location . . . is within proximity of a location chosen by a user of the first portable RF communication device,” as called for in claim limitation 1(b), Petitioner asserts that “*Hunzinger* discloses a location determining system/process where a mobile device (with ‘position location

technology’) is configured to allow a user to choose locations and related actions that are performed when the device is determined to be at such chosen locations.” *Id.* at 15 (citing Ex. 1054, Abstract, Figs. 1A–4, 1:38–2:6, 2:10–44, 3:4–67). Hunzinger’s Figure 2 is reproduced below.

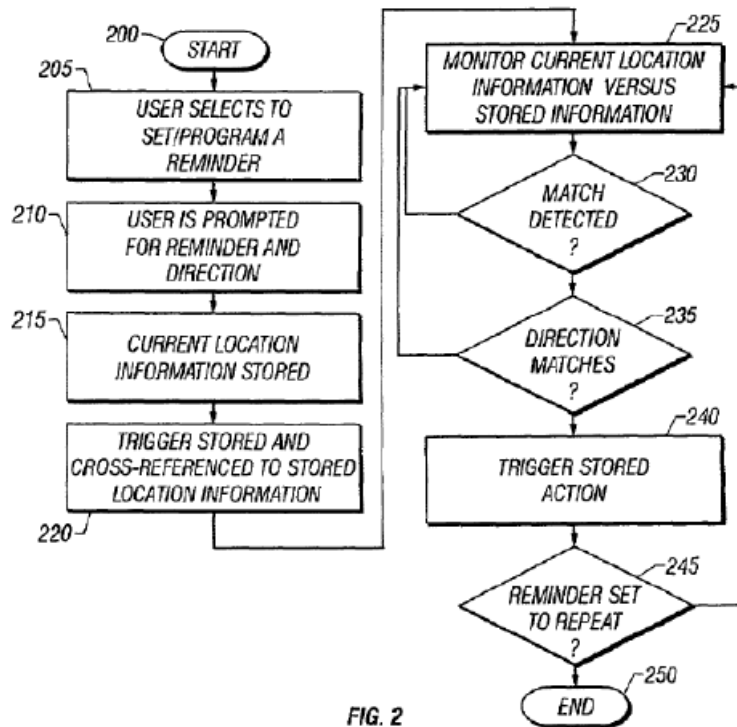


FIG. 2

Hunzinger’s Figure 2 is “a flow chart illustrating location reminder programming, monitoring and triggering procedures” which compares current location at 215, to a user selected stored location 220, and if a match is detected at 230 then action 240 is triggered. *See* Ex. 1054, 4:46–48 (Hunzinger explains that “[t]he action is triggered 240 when [] the location matches 230 the stored location.”).

In addition, Petitioner argues that “*Nanda* describes features that allow a mobile device user to select when to create a fingerprint (resulting in strength/ID data collection/measurement).” Pet. 21 (citing Ex. 1006, 8:29–36, Fig. 2). Petitioner argues that by providing the predetermined user

selected stored location information as taught by Hunzinger and Nanda, with Spain-I’s database, “such modification(s) would have predictably resulted in the *Spain-I* database maintaining fingerprints corresponding to locations of interest to the user so that later, . . . when the MU is determined to be in proximity of such a location (*e.g.*, retailer, service provider/vendor, etc.), relevant personalized services can be provided.” *Id.* at 24.

With respect to *comparing* signal strengths between a user selected location and a current location, Petitioner argues that “*Hunzinger* further discloses the mobile device monitors its current location, and ‘compares’ remembered location information with current location information to determine whether the device has left or entered a remembered location to execute particular actions.” *Id.* at 27–28 (citing Ex. 1054, 3:49–60, 4:21–57). In addition, Petitioner asserts that Nanda discloses “comparing signal strength and station ID data for current and stored fingerprints when determining if a device is in proximity of a location.” *Id.* at 29 (citing Ex. 1006, Figs. 3A–B, 2:43–51, 6:12–66, 7:6–13, 8:29–55). According to Petitioner, Nanda stores IDs and associated signal strength parameters as shown in the table below. *Id.* at 29–30 (citing Ex. 1006, 8:29–55, 9:31–10:13).

WAN ID	WLAN SSID	WLAN BSS ID	Signal Strength	Phase
A	I1	A ₁	s ₁ (A ₁) . . . s _n (A ₁)	p ₁ (A ₁) . . . p _n (A ₁)
		A ₂	s ₁ (A ₂) . . . s _n (A ₂)	p ₁ (A ₂) . . . p _n (A ₂)
	I2	A ₃	s ₁ (A ₃) . . . s _n (A ₃)	p ₁ (A ₃) . . . p _n (A ₃)
B	I1	B ₁	S ₁ (B ₁) . . . s _n (B ₁)	
	I2	B ₂	S ₁ (B ₂) . . . s _n (B ₂)	

Nanda explains with respect to the table that “[t]he first column of the table refers to the WAN ID of the WAN The particular base stations in the

WAN may be identified by the pilot offsets, pilot signal strengths or other attribute which are part of the finger print . . . [which] identifies the location of the mobile device.” Ex. 1006, 8:56–62.

Further, considering Nanda’s Figure 3B reproduced below as annotated by Petitioner, Petitioner argues that just as in claim 1, in Nanda “*Nanda’s* comparisons performed for each WAN ID (322) and ‘each BSS ID’ (324) indicates a comparison of respective station IDs since the stored number(s) (‘Si’) and current number(s) (‘Xi’) are compared for the same BSS ID and associated WAN ID.” Pet. 32 (citing Ex. 1002 ¶ 162; Ex. 1006, 10:60–61).

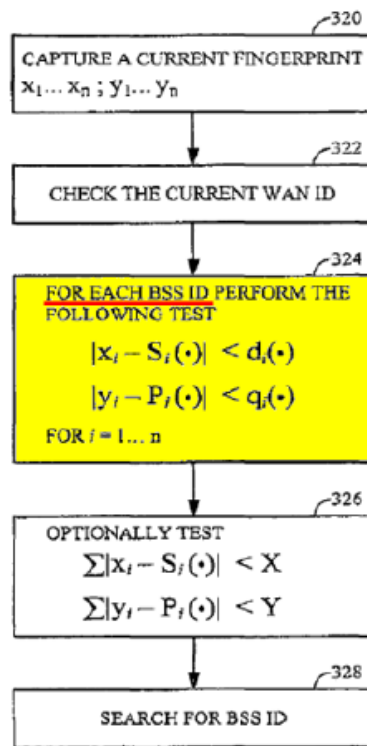


FIG. 3B

Nanda’s Figure 3B “depicts a flowchart of an exemplary method to compare fingerprints of different locations.” Ex. 1006, 3:18–19. Petitioner asserts that in Nanda “[a] ‘match’ is determined when the difference

between a stored and current measured signal strengths(x-s) is less than (<) a predetermined threshold (d).” *Id.* (citing Ex. 1006, 10:62–11:10; Ex. 1002 ¶ 161).

For the “at least one number” limitation in 1(b)(ii), Petitioner argues that “*Spain-I* discloses that signal strength may be ‘sampled multiple times for each frequency in order to smooth out any variations,’ thereby suggesting some calculation to process and/or generate fingerprint signal strength value(s).” *Id.* at 36 (quoting Ex. 1011, 13:51–55). Petitioner also points out that Nanda “discloses generating a fingerprint based on calculated average strength values.” *Id.* (citing Ex. 1006, Fig. 3B, 8:29–36, 7:19–28). Dr. Almeroth testifies that a person of ordinary skill in the art, considering using the signal strength based mathematical operations described in *Spain-I* or Nanda, “would have foreseeably resulted in the MU in the modified system/process to use refined signal characteristic number(s) for the above-discussed comparison technique/features used to determine whether the MU first monitored location is within proximity of a chosen location.” Ex. 1002 ¶ 174. According to Petitioner, *Spain-I*’s disclosure thus falls within the plain meaning of the phrase “at least one number based on,” as discussed in our claim construction *supra*. Pet. 26–35.

b) Patent Owner’s Arguments

Patent Owner’s Response does not advance arguments directed to claim 1. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for this claim. We have reviewed Petitioner’s arguments regarding claim 1, which Patent Owner does not contest, and find them persuasive. Pet. 6–41. 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 1 would have been unpatentable over Spain-I, Hunzinger, and Nanda.

We turn next to dependent claims 4 and 6 which Patent Owner specifically argues are not obvious in view of Spain-I, Hunzinger, and Nanda. PO Resp. 5–11.

2. Dependent Claims 2 and 4–6

a) Petitioner’s Arguments

Claim 4 depends directly from claim 2, which in turn depends from claim 1. Claim 2 simply requires that the “characteristic” in claim 1, “is the communications signal strength,” and claim 4 requires that “the chosen location signal strengths were measured by *a second portable RF communication device*,” Ex. 1001, 26:39–41 (emphasis added). Patent Owner’s Response does not advance arguments directed to claim 2 and Patent Owner has forfeited any argument regarding Petitioner’s contentions for this claim. *See generally* PO Resp, *see also 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 claim 2, which Patent Owner does not contest, and find them persuasive. Pet. 41–42. Accordingly, we adopt Petitioner’s contentions as our own.

As for claim 4, Petitioner argues that, similar to Spain-I, “*Nanda* teaches/suggests similar features where a mobile device creates/sends fingerprint(s) to a remote database.” Pet. 43 (citing Ex. 1006, 12:14–31). In addition, Petitioner asserts that in Nanda the “remote database ‘receiv[es]

fingerprints from multiple mobile[] devices’ to allow for a ‘much larger database of available access points than would be found in a single mobile device.’” *Id.* (quoting Ex. 1006, 12:26–27). Based on Nanda’s disclosure, Dr. Almeroth testifies that, based on Nanda, “[a] person of ordinary skill in the art would have been motivated to consider and implement such features to allow the modified system/processes to receive and process fingerprints from multiple MUs to create/maintain a larger database of antenna station fingerprint information,” Ex. 1002 ¶ 187 (citing Ex. 1006, 12:26–29).

Claim 6 depends from claim 5, which in turn depends from claim 2 and ultimately claim 1. Claim 5 requires “the chosen location signal strengths and the at least one ID originated from a database of geographic locations and corresponding signal strengths and IDs.” Ex. 1001, 26:42–44. Considering annotated Figures 9 and 10 from Spain-I, reproduced below, Petitioner argues that “*Spain-I*’s MU builds a fingerprint ‘database’ including fingerprints (red), which includes signal strengths/IDs (yellow/blue) corresponding to geographic locations (purple).” Pet. 46.

Fingerprint Structure					
Time of Capture:					
Station ID:	I1	I2	I3	...	In
Frequency:	F1	F2	F3	...	Fn
Tuning Parameters:	P1	P2	P3	...	Pn
Transmitter Location:	L1	L2	L3	...	Ln
Signal Strength 1:	S11	S12	S13	...	S1n
Signal Strength 2:	S21	S22	S23	...	S2n
...	...	...	...	...	...
Signal Strengths m:	Sm1	Sm2	Sm3	...	Smn

Fig. 9

Fingerprint Database					
No.	Lat.	Long.	Time	Fingerprint	Description
1					
2					
3					
4					
5					
6					
...					
L					

Fig. 10

Petitioner’s annotated Figures 9 and 10 highlight in red a Fingerprint field in

Fingerprint database 501 and illustrate the corresponding purple highlighted “latitude and longitude of the location to which *the fingerprint corresponds.*” Pet. 46 (quoting Ex. 1011, 13:64–14:14).

Patent Owner’s Response does not advance arguments for claim 5 and Patent Owner has forfeited any argument regarding Petitioner’s contentions for this claim. *See generally* PO Resp. We have reviewed Petitioner’s arguments regarding claim 5, which Patent Owner does not contest, and find them persuasive. Pet. 45–47. Accordingly, we adopt Petitioner’s contentions as our own.

Claim 6 adds that, “the database is stored remotely from the first portable RF communications device.” *Id.* at 26:46–47. Dr. Almeroth testifies that similar to Spain-I “*Nanda* also discloses similar features where the mobile device creates a fingerprint and transmits it for storage in a remote database for subsequent analysis.” Ex. 1002 ¶ 194 (citing Ex. 1006, 12:14–31). Dr. Almeroth testifies further that in using a remotely stored database “a skilled person would have recognized advantages, such as conserving memory/processing resources in the MU that would have otherwise been used to build and maintain the fingerprint database locally, while still providing the ability for the MU to perform the comparison processes.” *Id.* ¶ 199 (citing Ex. 1028, 5:1–62, 6:34–37, 16:42–63; Ex. 1032, 1:15–31, 2:48–52, 3:59–4:7).

b) Patent Owner’s Arguments

Patent Owner focuses its arguments on dependent claims 4 and 6 asserting that Petitioner’s obviousness theory, with respect to claim 1, is based solely on the MU performing the comparison, and that “[t]here is no suggestion in the context of Claim 1 that a POSITA would be motivated to

configure a remote server, or anything other than the MU, to perform the comparison operation.” PO Resp. 6–7. Patent Owner argues specifically that

the Petition’s claim 1 theory requires the signal strength comparison between stored fingerprint data and measured signal strengths to happen at the MU, but the Petition’s theory for claims 4 and 6 requires the stored fingerprint data be stored *remotely* from the first MU. The Petition, however, articulates no motivation that a POSITA would have had to arrive at such a combination of elements.

Id. at 8.

Patent Owner argues that different from Petitioner’s theory that the MU must perform the comparison, “both Spain-I and Nanda specifically teach that when the database is stored on a remote server, *the comparisons are also performed on the remote server.*” *Id.* (citing Ex. 2003 ¶ 34). Patent Owner further argues that Petitioner has failed to show any motivation for combining the prior art embodiment where the MU does the comparison, with the embodiment where the remote server does the comparison. *Id.* at 11.

c) Analysis

Patent Owner’s arguments both misinterpret claim 1 and misapprehend Petitioner’s arguments. First, neither claim limitations 1(b)(i)–(ii), nor any limitation in claim 1, require that “the varying signal characteristics . . . at the location chosen by the user” are stored in any specific place or on any particular device, e.g., the MU or the remote database. Ex. 1001, 26:5–31. The specification of the ’698 patent is consistent with this understanding noting that the stored signal strengths and IDs can be maintained either on the MU or remotely. *See id.* at 6:61–65 (The ’698 patent explaining that “[t]he device needs a means for remembering

this signal strength (preferably with the antennas' IDs), and this means may be on the device per se, kept at a remote storage (or even transferred from the current device to the owner's next cell phone).").

Second, claim 1 does not require, nor did Petitioner ascribe an exclusive interpretation to claim 1, requiring the MU to perform the ID and varying signal characteristic "comparing" steps at limitations 1(b)(i)-(ii). The plain language of claim limitation 1(b) requires that the "first portable RF communication device," i.e., an MU, "determin[e] if a first monitored location . . . is within proximity of a location chosen by a user." Ex. 1001, 26:19–21. Yet the claim is ambiguous as to where the "comparing" sub-steps in limitation 1(b)(i) and 1(b)(ii) are carried out. Limitation 1(b) uses the phrase "as a result of electronically comparing" to distinguish the following sub-steps 1(b)(i) and 1(b)(ii) and does not further specify where these sub-steps occur. *Id.* at 26:19–32.¹⁰

We appreciate that Petitioner argues Spain-I's "MU electronically compares fingerprint information (including signal strengths and station ID(s)) for the MU's current location . . . with stored fingerprint information (having similar parameters) associated with particular location(s) to determine a 'closest' match." Pet. 12–13. Petitioner's argument, however, reflects on one embodiment in Spain-1's disclosure asserted to meet the

¹⁰ Notably, Patent Owner does not expressly argue that claim 1 is limited to the MU performing sub-steps 1(b)(i) and 1(b)(ii). *See* PO Resp. 3–5 (Patent Owner "agree[ing] that no formal claim construction is necessary."). Patent Owner argues mainly that *Petitioner* has limited the claim to such an interpretation based on "its a single obviousness theory for this 'determining' limitation: that the MU itself performs a determination by itself comparing a station ID and at least one figure based on signal strengths." *Id.* at 5 (citing Pet. 33).

claim limitations. Petitioner’s argument, and prior art embodiment, does not limit the breadth of the claim, or what other devices and functions described in Spain-I besides an MU, are also encompassed by the claim. *Compare* Ex. 1011, 5:61–6:4 (Spain I describing that “[i]n one embodiment the data base is stored in the mobile unit. The generated fingerprint is compared with the fingerprints in the database and the fingerprint in the database that is closest to the generated fingerprint is selected as the match.”), *with id.* at 6:9–14 (Spain-I explaining “[i]n another embodiment, the fingerprint database is stored at the location server. . . . The search for the closest fingerprint is then done in the location server from which it determines the location of the mobile unit.”).

Petitioner unequivocally asserts, particularly for dependent claim 6, that “*Spain-I* describes configurations where the fingerprint database is stored at a remote location server.” Pet. 47 (citing Ex. 1011, Fig. 3, 6:9–14, 6:15–30; Ex. 1005, FIG. 3, 4:28–58; Ex. 1009, 5:22–42; Ex. 1010, 5:20–41). And Dr. Almeroth testifies persuasively that

[t]he MU creates and stores fingerprints based on the collected/measured information, including station identifier information and measured signal strengths corresponding to the received communication signals from the stations. . . . A collection of the fingerprint structures may be stored in a fingerprint database used for subsequent location-determination processes, *where the database may be stored locally on the MU or remotely.*

Ex 1002 ¶ 96 (emphasis added).

Moreover, we agree with Petitioner that “[Patent Owner]’s attempt to limit the claim’s sub-steps to being performed at the MU is not supported by the language of the claim or the specification of the ’698 Patent.” Pet. Reply 4 (citing Ex. 1001, 11:62–63). Consistent with the plain language of claim 1

that does not limit the MU to performing the “comparing” steps at limitations 1(b)(i)-(ii), the ’698 specification itself describes alternative embodiments, e.g., “[w]here privacy is of concern then all of the four steps should be performed on a single mobile device,” and if privacy is not an issue “Storing is done in an offsite facility, and Determining is done in a different offsite facility.” Ex. 1001, 11:34–39.

To be clear, we determine (1) that claim 1 is not limited to the comparison being performed on the MU, nor has Petitioner somehow limited it, and (2) that both Spain-I embodiments, storing and comparing fingerprint data at the MU and, alternatively, at a remote server location, are encompassed by claim 1. And, because we determine both embodiments in Spain-I separately meet the claim language of claim 1, we also find unavailing Patent Owner’s argument that the Petition “does not even *allege* that a POSITA would have been motivated to mix and match these alternative embodiments in this haphazard manner.” PO Resp. 11.

Turning specifically to claim 4, apart from its mixed embodiments argument as to claim 1, Patent Owner does not expressly dispute that Spain-I and Nanda fail to disclose “wherein the chosen location signal strengths were measured by a second portable RF communication device.” PO Resp. 5–13. Dr. Almeroth testifies persuasively, for example, that “*Nanda* explains ‘receiv[ing] fingerprints from multiple mobiles devices’ allows for a ‘much larger database of available access points than would be found in a single mobile device.’” Ex. 1002 ¶ 185 (quoting Ex. 1006, 12:14–31). With respect to a motivation to combine, Dr. Almeroth testifies further that a person of ordinary skill in the art would have considered “multiple MUs to create/maintain a larger database of antenna station fingerprint information,

like that suggested by *Nanda* (Ex-1006, 12:26-29), thus beneficially expanding applications of *Spain-I*'s disclosed features.” *Id.* ¶ 187.

For claim 6, as discussed above, Petitioner argues that *Spain-I* teaches remotely storing the fingerprint database, as does *Nanda*. Pet. 47–49. Dr. Almeroth testifies persuasively in support that “*Spain-I* describes configurations where the fingerprint database may be stored remotely from the MU,” and “*Nanda* also discloses similar features where the mobile device creates a fingerprint and transmits it for storage in a remote database for subsequent analysis.” Ex. 1002 ¶ 194 (citing Ex. 1005, Fig. 3, 4:28–58; Ex. 1006, 12:14–31; Ex. 1009, 5:22–42; Ex. 1010, 5:20–41; Ex. 1011, Fig. 3, 6:9–14, 6:15–30).

As discussed above, claims 1, 2, from which claim 4 depends, and claim 5, from which claim 6 depends, are not contested by Patent Owner. Dr. Almeroth’s testimony as to the prior art teachings and disclosure with respect to claims 1, 2, 4, 5, and 6 is credible, supported by the record, and essentially unrebutted in this proceeding. Ex. 1002 ¶¶ 93–182, 191–201. Accordingly, based on the complete record, we are persuaded that Petitioner has shown a preponderance of evidence that claims 4 and 6 would have been obvious over *Spain-I* in view of Hunzinger and *Nanda*.

3. *Dependent Claims 3, 7, 9–13, and 21*

Petitioner argues that dependent claims 3, 7, 9–13, and 21 would have been rendered obvious by the combined teachings of *Spain-I*, Hunzinger, and *Nanda*. Pet. 42, 49–64. For example, with respect to claim 3, Petitioner contends, persuasively, that the *Spain-I* and *Nanda* combination teaches how the “MU measures signal strengths—including for the user ‘chosen location’.” *Id.* at 42 (citing Ex. 1002 ¶ 183; Ex. 1006, 9:61–11:9; Ex. 1011,

3:55–58, 5:20–32, 13:49–55. By way of example, for claim 7, which requires that the “database is built by a service provider,” Petitioner argues that “*Nanda* teaches configurations where base station controllers or mobile switching center maintain the fingerprint database (Ex. 1006, 12:14–31), which a POSITA would have understood to be related to a service provider (e.g., wireless communication services for MUs).” *Id.* at 49–50 (citing Ex. 1002 ¶ 206; Ex. 1011, 3:58–7:17).

As Petitioner explains it, a person of ordinary skill in the art would have also considered the combination of Spain-I, Hunzinger, and Nanda to meet the limitations of dependent claims 9–13 for the same and similar reasons to claims 1. *Id.* at 50–59. For example, with respect to claim 12 which requires “wherein the signal characteristic is the signal’s phase,” Petitioner points out that “*Nanda* also contemplated/suggests the use of other types of signal characteristics, such as phase.” *Id.* at 53 (citing Ex. 1006 6:12–25, 6:52–59, 7:19–28, 8:43–10:8). Petitioner points to the following table from Nanda, reproduced below.

WAN ID	WLAN SSID	WLAN BSS ID	Signal Strength	Phase
A	I1	A ₁	s ₁ (A ₁) . . . s _n (A ₁)	p ₁ (A ₁) . . . p _n (A ₁)
		A ₂	s ₁ (A ₂) . . . s _n (A ₂)	p ₁ (A ₂) . . . p _n (A ₂)
		A ₃	s ₁ (A ₃) . . . s _n (A ₃)	p ₁ (A ₃) . . . p _n (A ₃)
B	I1	B ₁	S ₁ (B ₁) . . . s _n (B ₁)	
	I2	B ₂	S ₁ (B ₂) . . . s _n (B ₂)	

Ex. 1006, 8:47–55. Nanda’s WLAN search table example, above, includes signal phase as an exemplary characteristic of a fingerprint. *See id.* at 9:8–11 (“The two remaining columns include the values that comprise the fingerprint itself. In this example table the fingerprints for the access points A₁, A₂, and A₃ include both strength and phase information.”)

As for claim 21, in conjunction with Figure 9, reproduced below, Petitioner argues that “*Spain-I* describes measuring multiple signals strengths for the signal received from a single respective station in range of the MU (e.g., Station I1 (S11-Sm1) (yellow below), Station I2 (S12-Sm2) (blue), etc.). (§IX.A.1; Ex-1011, FIG. 9 (below).)” *Id.* at 60.

400	Fingerprint Structure					
401	Time of Capture:					
403	Station ID:	I1	I2	I3	...	In
405	Frequency:	F1	F2	F3	...	Fn
407	Tuning Parameters:	P1	P2	P3	...	Pn
409	Transmitter Location:	L1	L2	L3	...	Ln
411	Signal Strength 1:	S11	S12	S13	...	S1n
413	Signal Strength 2:	S21	S22	S23	...	S2n
415	...	...	...	...	...	...
417	Signal Strength m:	Sm1	Sm2	Sm3	...	Smn

Fig. 9

The table in Figure 9 illustrates an embodiment of a fingerprint data storage structure including signal strength S11–Sm1 for Station I1.

As noted above, Patent Owner’s Response does not advance arguments directed to claims 1–3, 5, 7, 9–10, 12–13 and 21. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for these claims. We have reviewed Petitioner’s

arguments regarding claims 3, 7, 9–13, and 21, 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 3, 7, 9–13, and 21 would have been unpatentable over 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 1–7, 9–10, 12–13, and 21 would have been unpatentable over the combined teachings of Spain-I, Hunzinger, and Nanda.

F. Alleged Obviousness Over Spain-I, Hunzinger, Nanda, and Blomqvist: Claims 15–16

Petitioner contends that dependent claims 15–16 would have been obvious over the combined teachings of Spain-I, Hunzinger, Nanda, and Blomqvist. Pet. 74–79. Specifically, with respect to high and low “accuracy monitoring” as called for in claims 17–20, Petitioner argues that an ordinarily skilled artisan, upon considering Hunzinger and Blomqvist’s teachings, would have understood that “*Blomqvist* describes automatically activating a location-based function when it is determined that a mobile device is at or within vicinity of a specified location.” *Id.* at 76 (citing Ex. 1033, 1:14–39, 2:20–62, 5:10–60; (Ex. 1002 ¶¶ 81–85, 261–263). Ex. 1033, 7:43–8:5). Petitioner asserts that “*Blomqvist* describes then conventional mobile device features of activating a location-based function (a reminder, picture/text/sound message, application, etc.) when the device is at or within vicinity of a specified location.” *Id.* at 77 (citing Ex. 1002 ¶¶ 264–266; Ex.

1033, Figs. 1a-2, 1:14–39, 2:20–62, 3:44–64, 5:10–6:36, 8:52–62).

Patent Owner’s Response does not advance arguments directed to claims 15 and 16. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for these claims. *Nuvasive*, 842 F.3d at 1381. We have reviewed Petitioner’s arguments regarding claims 15 and 16, 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 15 and 16 would have been unpatentable over Spain-I, Hunzinger, Nanda, and Blomqvist.

*G. Alleged Obviousness Over Spain-I, Hunzinger, Nanda, and
Budampati: Claim 11*

Claim 11 depends from claim 1 and requires “wherein the signal characteristic is the signal’s arrival time.” Ex. 1001, 26: 61–62. Petitioner argues that “[a] POSITA would have understood (and was aware of) the use of signal arrival time (or time of arrival (TOA)) was a common signal characteristic used to assist systems in determining location(s) for mobile devices.” Pet. 70 (citing Ex. 1002 ¶ 248; Ex. 1105 ¶ 89). Petitioner argues further that “[a]mong other features, *Budampati* describes fingerprint matching/comparisons process using time of arrival signal characteristics.” *Id.* at 71 (citing Ex. 1002 ¶¶ 79–80, 249–250).

Patent Owner’s Response does not advance arguments directed to claim 11. *See generally* PO Resp. Accordingly, Patent Owner has forfeited any argument regarding Petitioner’s contentions for these claims. *Nuvasive*, 842 F.3d at 1381. We have reviewed Petitioner’s arguments regarding claim

11, 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 11 would have been unpatentable over Spain-I, Hunzinger, Nanda, and Budampati.

H. Petitioner's Challenges to Claims 4 and 6–7 Based on Spain-I, Hunzinger, Nanda, and Damarla

Because we have determined that claims 1–7, 9–10, 12–13, 15–16, and 21 are unpatentable based on Spain-I, Hunzinger, and Nanda, we need not decide the remaining challenge to these claims, including Damarla.

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

Petitioner filed an objection to Patent Owner's demonstrative slides 19 and 30–33. 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 the objected to slides 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. CONCLUSION¹¹

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 1–7, 9–10, 12–13, 15–16, and 21 of the '698 patent are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not shown Unpatentable
1–7, 9–10, 12–13, 21	103(a)	Spain-I, Hunzinger, Nanda	1–7, 9–10, 12–13, 21	
4, 6–7	103(a)	Spain-I, Hunzinger, Nanda, Damarla		4, 6–7
11	103(a)	Spain-I, Hunzinger, Nanda, Budampati	11	
15–16	103(a)	Spain-I, Hunzinger, Nanda, Blomquist	15–16	
Overall Outcome			1–7, 9–10, 12–13, 15–16, 21	

¹¹ 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).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1–7, 9–10, 12–13, 15–16, and 21 of the '698 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.

IPR2024-00154
Patent 8,594,698 B2

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