

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

BROADPHONE LLC.,
Patent Owner.

Case 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*.

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

I. INTRODUCTION

Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition (Paper 1 (“Pet.”)), seeking *inter partes* review of claims 1–7, 9–13, 15, 16, and 21 of U.S. Patent No. 8,594,698 B2 (Ex. 1001 (“the ’698 patent”)). Pet. 1. Broadphone LLC (“Patent Owner”) filed an untimely Preliminary Response. Paper 6 (“Prelim. Resp.”); *see* Paper 3 (Notice of Filing Date Accorded). With our email authorization (Ex. 2001), Patent Owner filed a Motion to Excuse Late Filing of its Preliminary Response by One Day (Paper 7 (“Motion”)), and Petitioner filed a Response to Patent Owner’s Motion to Excuse Late Filing (Paper 8). We granted Patent Owner’s Motion (Paper 9) and have considered the arguments Patent Owner presents in its Preliminary Response, which we address below.

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the arguments and evidence presented by Petitioner and Patent Owner, we are persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. *See* 35 U.S.C. § 314(a). Accordingly, we institute an *inter partes* review of the challenged claims in this proceeding.

A. *Real Parties in Interest*

Petitioner states that Samsung Electronics Co., Ltd., is the real party in interest. Pet. 1. Patent Owner states that “Broadphone LLC (exclusive licensee of U.S. Pat. No. 8,594,6[9]8)” is the sole real party in interest. Paper 4, 1.

B. 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. 8,179,583 and 10,341,811 involved in the district court litigation and at issue in additional proceedings before the Board, namely, IPR2024-00153 (U.S. Patent No. 8,179,583 B2) and IPR2024-00155 (U.S. Patent No. 10,341,811 B2). Pet. 1.

Petitioner informs us that “[t]he '698 patent is also [the] subject of a pending ex parte reexamination (‘EPR’) (Control No. 90/019,209), filed by third party Unified Patents, LLC (‘Unified’). *Id.*

C. The '698 Patent (Ex. 1001)

The '698 patent is titled “Signal Comparison-Based Location Determining Method” and discloses a technique for monitoring and determining a location of a mobile telecommunications device using signal strength measurements from multiple antenna stations, i.e., cells.¹ Ex. 1001, codes (54), (57), 6:18–32, 7:10–26. 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.² *Id.* at 1:39–49, 5:25–40.

¹ The '698 patent refers alternatively to mobile phone network antenna towers as both “antenna stations” and “cells.” *Compare, e.g.*, Ex. 1001, 16:17–19 *with id.* at 14:41–44.

² The '698 patent refers to “a mobile telephone, or [] a mobile communications device” as both a “mobile” and “portable” device as well as a “cell phone.” Ex. 1001, 1:26–28, 62–63, 2:60, 5:65–66.

To solve these problems, the '698 patent discloses causing the mobile device to compare measured signal strengths from a current location with recorded, i.e., stored, signal strengths from a desired, or selected, location to determine whether the mobile device's current location is also the desired location. *Id.* at 7:10–26.

Figure 2, below, shows “a schematic view of an antenna space reception map.” Ex. 1001, 10:43–44.

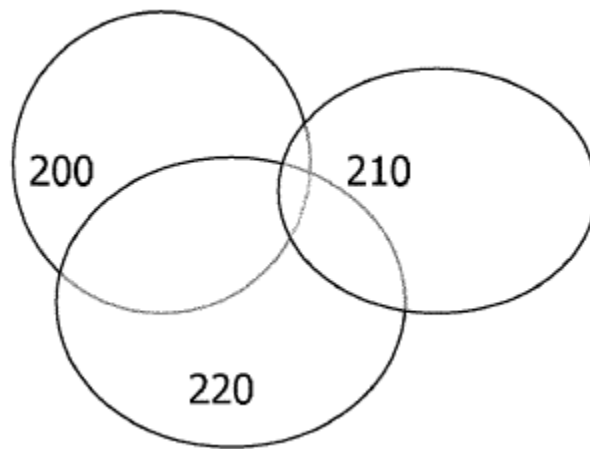


Figure 2 illustrates overlapping coverage areas for three antenna stations 200, 210, 220, resembling a Venn diagram. *Id.* at Fig. 2, 8:25–33. The '698 patent explains that, for a given building or cell phone within the coverage areas shown in Figure 2,

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. at 8:28–33. To determine its location, the cell phone obtains “distance equivalent measurement(s) between itself . . . and each of the area service antenna(s).” *Id.* at 8:33–36. In one embodiment, at a selected location, the

cell phone measures *and stores* at least two signal strength measurements from nearby antenna stations. *Id.* at 6:23–28. In this embodiment, the cell phone is then able to monitor its location “by causing the [mobile] device to measure reception signal strength associated with local fixed-location service-area antenna stations signals, and to electronically compare these measurements with the stored at least two measurements.” *Id.* at 6:29–32.

In a further embodiment, the ’698 patent discloses that a user may select an action to occur each time they are at, or within a particular range of, the desired location. Ex. 1001, 18:17–24. For example, a user might “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.

D. Illustrative Claim

Claim 1 is independent. Each of dependent claims 2–7, 9–13, 15–16, and 21 ultimately depend from independent claim 1. Claim 1 illustrates the claimed subject matter and is reproduced below

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.

E. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–7, 9–13, 15–16, and 21 would have been unpatentable based on the following grounds:³

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

³ Petitioner supports its challenge with the Declaration of Kevin C. Almeroth, Ph.D. Ex. 1002. Patent Owner has not submitted declaration testimony at this stage.

⁴ 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).

⁵ U.S. Patent No. 6,944,465 B2, issued September 13, 2005 (Ex. 1011).

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

⁷ U.S. Patent No. 8,477,731 B2, issued July 2, 2013 (Ex. 1006).

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
2	4, 6–7	103(a)	Spain-I, Hunzinger, Nanda, Damarla ⁸
3	11	103(a)	Spain-I, Hunzinger, Nanda, Budampati ⁹
4	15–16	103(a)	Spain-I, Hunzinger, Nanda, Blomqvist ¹⁰

II. ANALYSIS

A. *Legal Standards*

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). “[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 50–51 (1966)). The question of obviousness is resolved based on 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 non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

⁸ U.S. Patent No. 7,346,359 B2, issued March 18, 2008 (Ex. 1028).

⁹ U.S. Patent Appl’n No. 11/252,434, pub. April 19, 2007 (Ex. 1109).

¹⁰ U.S. Patent No. 7,305,244 B2, issued December 4, 2007 (Ex. 1033).

B. Level of Ordinary Skill in the Art

Relying on the declaration of Dr. Almeroth for support, Petitioner contends 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). . . [m]ore education can supplement practical experience and vice versa.

Pet. 4 (citing Ex. 1002 ¶¶ 31–32). At this juncture, Patent Owner does not challenge Petitioner’s proposed level of ordinary skill in the art. Prelim. Resp. 1–2.

For purposes of this Decision, we adopt the level of ordinary skill in the art articulated by Petitioner because, based on the current record, it is not disputed and is consistent with our review and understanding of the technology and descriptions in the ’698 patent and prior art of record.

Okajima v. Bourdeau, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2020). Under this standard, we construe the claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.* Furthermore, at this stage in the proceeding, we expressly construe the claims only to the extent necessary to determine whether to institute *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e 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))).

Petitioner submits that “no special constructions are necessary” beyond the plain meaning of the claims. Pet. 5. Similarly, for purposes of their Preliminary Response, Patent Owner states that “no formal claim construction is necessary.” Prelim. Resp. 2.

We do, however, 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. Prelim. 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.

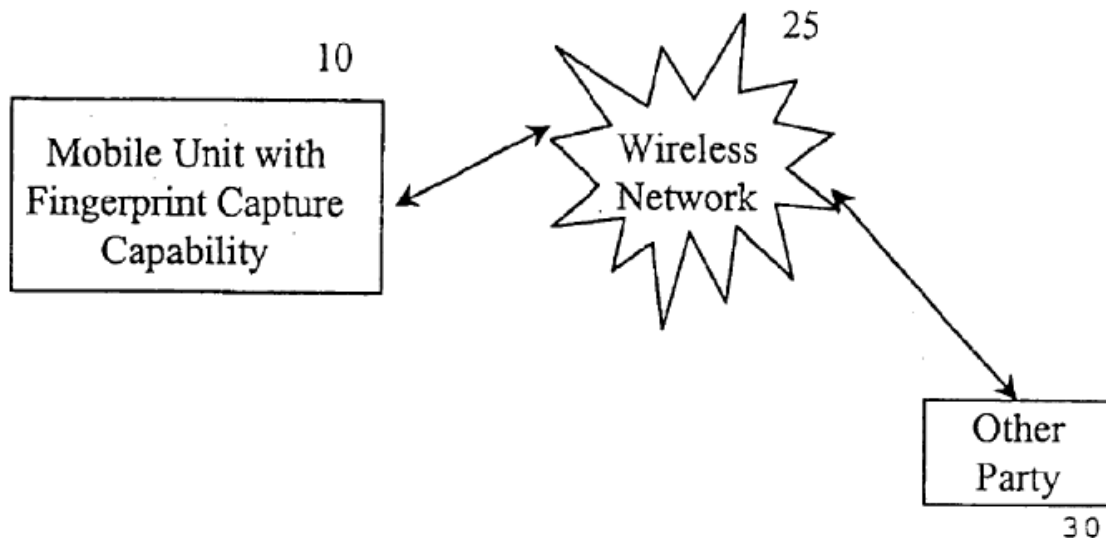
Apart from this, where neither party proposes any particular construction or indicates disagreement as to the meaning of any claim language, we need not explicitly construe any claim terms at this stage of the proceeding.

D. Ground 1: Claims 1–7, 9–10, 15–16, and 21—Alleged Obviousness over Spain-I, Hunzinger, and Nanda

On this record, Petitioner has established a reasonable likelihood of prevailing on its assertion that claims 1–7, 9–10, 15–16, and 21 would have been obvious in view of Spain-I, Hunzinger, and Nanda, for the reasons explained below.

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.



Spain-I’s Figure 1 depicts an exemplary wireless communication network, with mobile unit, i.e. mobile device, 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 device is activated to capture information from portions of the RF

spectrum when a location estimate of the mobile device 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 stored in a database, and a corresponding location of a closest fingerprint match in the database is selected as the location of the mobile device. *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 describes 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, 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 describes 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 for 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. *Independent Claim 1*

We consider initially the elements of claim 1.

a) *Petitioner’s Arguments*

(1) *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).

(2) *Limitation 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.

(3) *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*

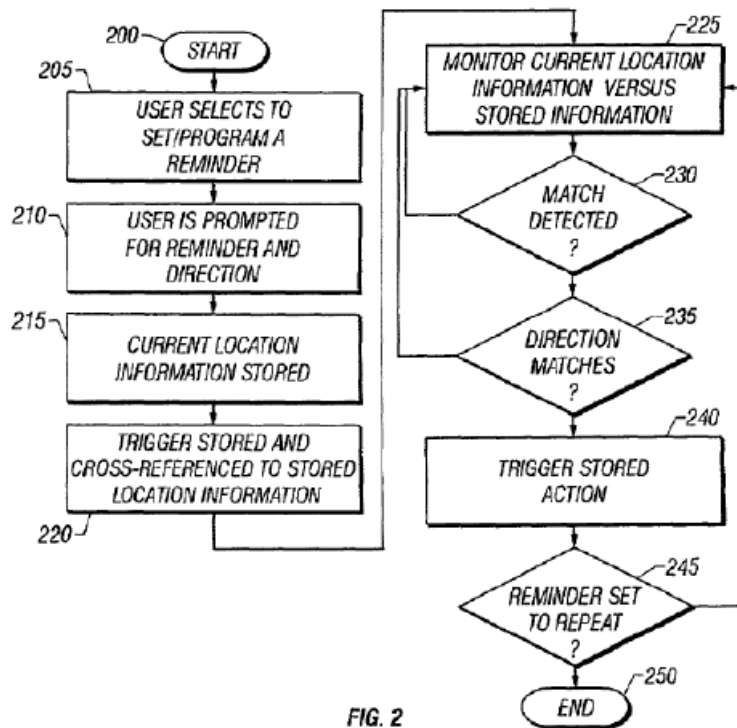
(i) the at least one ID at the first monitored location with at least one ID at the location chosen by the user and

(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.



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)
		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).

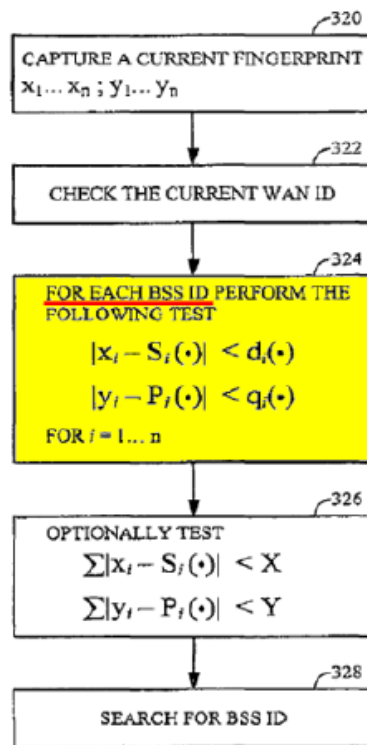


FIG. 3B

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 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

On this preliminary record, Patent Owner argues Petitioner has failed to demonstrate the obviousness of claim 1 by not showing that the ordinarily skilled artisan would have been motivated to combine the teachings of *Spain-I*, Hunzinger, and Nanda, and that the Petition relies on hindsight. Prelim. Resp. 2–7.

Patent Owner argues that *Spain-I* uses “a server separate from the portable device to estimate the portable device’s location,” rather than “identifying whether the device is at a location that is of interest to the *user*.”

Id. at 3. According to Patent Owner, “nothing in Spain-I discloses or suggests a target location that is selected by a user, or indeed even specific to a particular device.” *Id.* Patent Owner argues that Petitioner’s reasoning that Spain-I’s estimated location, somehow suggests “determining proximity to a location chosen by a user of the device, . . . is merely assuming that a POSITA would be trying to reach the specific solution claimed in the ’698 Patent—the soul of hindsight.” *Id.* at 3–4.

Patent Owner further argues Petitioner’s rationale to combine the teachings of Spain-I, Hunzinger, and Nanda is “based almost entirely on the teachings of the secondary references” in isolation. *Id.* at 5 (citing Pet. 23–26). In particular, Patent Owner contends that Hunzinger and Nanda already provide benefits Petitioner articulates, and the skilled artisan would have considered those teachings without the addition of Spain-I. *Id.* at 5 (citing Pet. 23–24). Furthermore, Patent Owner argues Petitioner’s reliance on *Bayer Pharma AB v. Watson Laboratories, Inc.* is misplaced because “Hunzinger and Nanda provide qualitatively different purported improvements over Spain-I.” *Id.* at 6 (citing *Bayer*, 874 F.3d at 1321–1324; Pet. 15–19).

Patent Owner further contends Petitioner’s rationale to combine the teachings of the asserted art “is purely generic and results oriented” because it contradicts Petitioner’s reasoning in related IPR2024-00155 (“the ’155 IPR”). Prelim. Resp. 4 (citing ’155 IPR, Paper 1, 16).

c) Analysis and Conclusion as to Claim 1

As an initial matter, Petitioner’s reasoning and evidence in this IPR is not inconsistent with Petitioner’s obviousness reasoning in the ’155 IPR as Patent Owner contends. *Id.* In the ’155 IPR Petitioner relies on similar teachings and suggestions in Spain-I as in this proceeding. *Compare* Pet. 14,

with '155 IPR, Paper 1, 16. In both cases, Petitioner argues that in addition to storing fingerprints in a database for selected locations, “*Spain-I* discloses configurations where a user can initiate a request that causes ‘the MU [to] capture[] the fingerprint of its current location.’” Pet. 14 (quoting Ex. 1011, 6:9–30) (citing 6:43–47, Fig. 3; Ex. 1005, 6:43–47); *see also* '155 IPR, Paper 1, 16 (“*Spain-I* thus suggests the concept of user initiated target location fingerprint data collection.”). Similar to the '155 IPR, Petitioner reasons in this IPR that based on *Spain-I*’s disclosure of “generating/storing in a database fingerprints corresponding to selected location(s)” the ordinarily skilled artisan would have considered “that the MU is configurable to receive user requests to measure/collect other fingerprint locations.” Pet. 14. We appreciate that there are differences in Petitioner’s analyses and conclusions between the two proceedings. This is because, at least in part, the claims are written differently. For example, in this proceeding the claims do not recite a “device-specific target location” as claim 1 in IPR2024-00155, but instead, “a location chosen by a user.” Ex. 1001, 26:21–22. Overall, Petitioner’s arguments and evidence between both cases do not appear to be inconsistent where both of these claim limitations refer similarly to a “desired location.” *See, e.g., id.* at 15:43–45 (the '698 patent describing the function of “determin[ing] whether the cell phone or the ubiquitous computer of the present location is also at the desired location”).

We also appreciate, as Patent Owner points out, that *Spain-I* discloses storing the fingerprint database and performing the location estimation at a separate “location server.” Prelim. Resp. 3. However, *Spain-I* also discloses that the mobile unit can perform this function as well. *See* Ex. 1011 at 5:65–6:2 (*Spain-I* describing that “[i]n one embodiment the database 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.”).

Specifically relating to this proceeding, Dr. Almeroth testifies that “a person of ordinary skill in the art would have understood that *Spain-I* describes that the fingerprints generated and stored in the fingerprint database correspond to location(s) that were selected or predetermined.” Ex. 1002 ¶ 116. In other words, Petitioner and Dr. Almeroth assert that where *Spain-I* teaches that for purposes of comparing location data, by obtaining a user requested *current* fingerprint of the MU, an ordinarily skilled artisan would have also understood that a predetermined or previously stored location in the database, could also have been a user initiated or requested location capture. *See id.* at ¶ 117 (Dr. Almeroth testifies that “[a] person of ordinary skill in the art would have understood that *Spain-I* at least suggests features where generating fingerprints and building the fingerprint database stems from signal characteristic (*e.g.*, signal strength) measurements and related information collected when the MU was carried by a user to specific locations of the MU.”).

On this early record, Dr. Almeroth’s testimony is unrebutted as to what the teachings of *Spain-I* would have imparted to a person of ordinary skill in the art. Moreover, as discussed below, we have before us, at least initially, persuasive testimony that a person of ordinary skill in the art would have considered other teachings and references in the field of mobile telecommunications location determination, namely Hunzinger and Nanda, in determining how specific comparison locations can be selected by the user. *See* Ex. 1002 ¶ 119 (Dr. Almeroth testifies that “*Spain-I* thus suggests the concept generally of user-initiated location-based fingerprint data

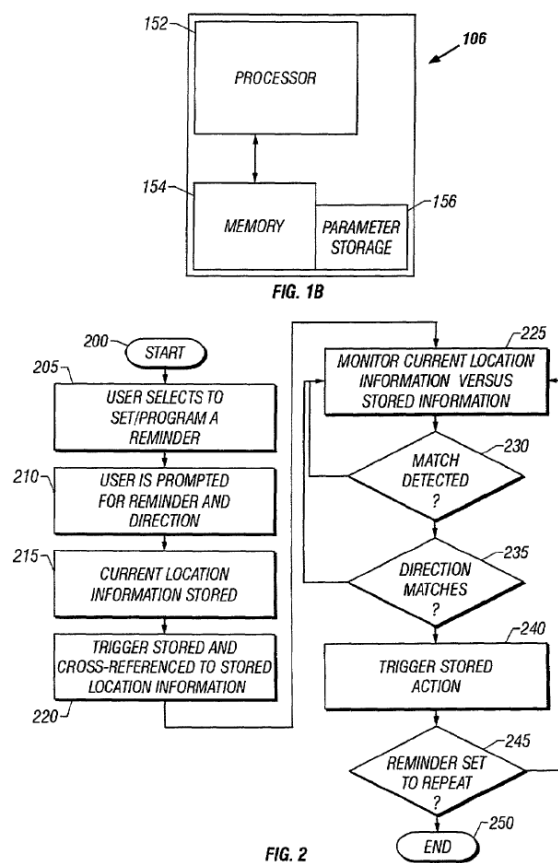
collection generally . . . and thus would have been motivated to consider teachings in the art when considering the teachings of *Spain-I*.”).

Turning to Patent Owner’s accusations of hindsight with respect to the combination of *Spain-I*, Hunzinger, and Nanda, on the record before us, and as discussed below, we determine that Petitioner has sufficiently demonstrated *why* the ordinarily skilled artisan would have found it obvious to combine the teachings of *Spain-I*, Hunzinger, and Nanda, to achieve the claimed “location chosen by a user,” in this proceeding, and a “device-specific target location” in the ’155 IPR, and performing actions on the mobile device as a result of determining that that device is in proximity of the device-specific target location.

Patent Owner argues, for instance, that Petitioner’s explanations and evidence “fails to address why a POSITA would be motivated to combine Hunzinger and/or Nanda *with Spain-I*.” Prelim. Resp. 5. We disagree. Petitioner articulates multiple reasons why the ordinarily skilled artisan would have modified *Spain-I* with the teachings of Hunzinger and Nanda. *See* Pet. 14–25. And regardless of whether the ordinarily skilled artisan may have alternatively used Hunzinger and/or Nanda alone to provide a system for selecting device-specific target locations, “[i]t’s not necessary to show that a combination is ‘the *best* option, only that it be a *suitable* option.’” *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021) (citing *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–1198 (Fed. Cir. 2014)); *see also In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references.”).

For example, Petitioner argues that to the extent *Spain-I*’s predetermined database stored locations do not expressly describe “a user

chosen location” with which to compare a current location, “*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.” Pet. 15 (citing Ex. 1054, Abstract, 1:38–2:6, 2:10–44, 3:4–67, Figs. 1A–4; Ex. 1002 ¶ 121). Considering Hunzinger’s Figure 2, reproduced below, Petitioner argues that “[p]osition-monitoring function[s] ‘compare[] one or more ‘remembered’ locations with current location information.’” *Id.* at 16 (quoting Ex. 1054, 3:56–60).



Hunzinger’s Figure 2 “is a flow chart illustrating location reminder programming, monitoring and triggering procedures according to one

embodiment of the present invention.” Ex. 1054, 2:59–61. Hunzinger explains further that “[t]he mobile terminal also includes memory for storing location related information (‘remembered’ locations) and trigger or action information.” *Id.* at 3:56–59. Hunzinger then compares a current mobile terminal location to the remembered location so that “[t]he mobile may detect that it is has transitioned out of the area described by the stored location information or that the current location matches the stored location information 230.” *Id.* at 4:28–31.

Similarly, Nanda discloses in Figure 3A reproduced below that a user captures and stores fingerprint attributes for a specific location.

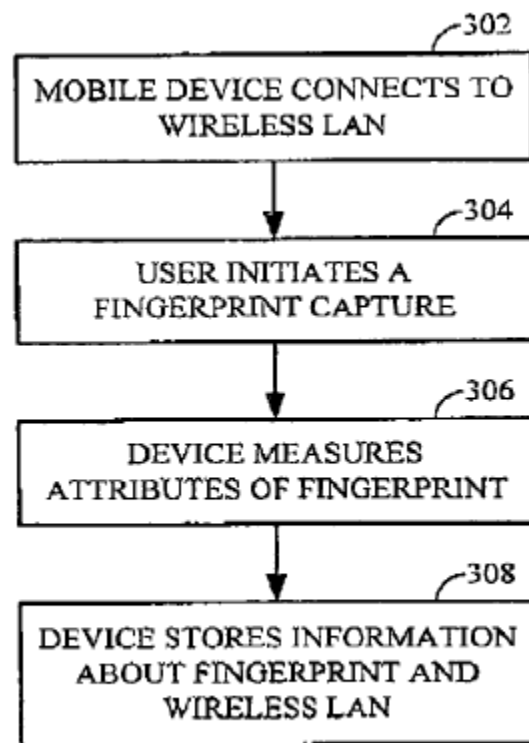


FIG. 3A

Nanda’s Figure 3 “depicts a flowchart of an exemplary method to create fingerprints on a mobile communications device.” Ex. 1006, 3:16–17.

Relying on the prior art teachings, Dr. Almeroth's testimony, and the knowledge of the ordinarily skilled artisan, Petitioner asserts that modifying Spain-I by

configuring the MU with user-friendly interface mechanisms (e.g., menus (*Hunzinger*), key-based (*Nanda*)) and related functionalities that enabled a user to easily choose locations would have enhanced the way the *Spain-I* system facilitated how locations are selected to build the fingerprint database, thus promoting use of the modified system while expanding its potential applications.

Pet. 23 (citing Ex. 1002 ¶ 136–143). Petitioner reasons that to add Hunzinger and Nanda's features would have “result[ed] in a more marketable, desirable, and/or user-friendly and feature-based location determining system, thus expanding application options.” *Id.* Patent Owner's arguments at this stage are unpersuasive to show that Petitioner's reasoning above lacks a rational underpinning or is gleaned only from the '698 patent's Specification. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) (“Any judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as [a conclusion of obviousness] takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper.”).

As another example, Petitioner relies on the prior art teachings, Dr. Almeroth's testimony, and the knowledge and skills of the ordinarily skilled artisan to support its conclusions that the modifications Petitioner proposes would have been implemented by the ordinarily skilled artisan using known techniques and with a reasonable expectation of success. *See* Pet. 24 (Petitioner arguing that “[g]iven the familiar features/technologies taught by

Spain-I-Hunzinger (and *Nanda*) and state of art . . . a POSITA would [have] had the skills/knowledge/rationale to consider/implement such modifications with a reasonable expectation of success.”) (citing Ex. 1002 ¶¶ 143–145).

With respect to Petitioner’s overall rationale to combine, we acknowledge that Hunzinger and Nanda may provide different specific improvements over Spain-I, yet we understand Petitioner’s position to be that Hunzinger and Nanda show that features such as user selected target locations and numerical and algorithmic ID signal strength comparisons were well-known in the art. *See* Pet. 19 n.11. “There is a motivation to combine when a known technique ‘has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way,’ . . . using the ‘prior art elements according to their established functions.’” *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380–1381 (Fed. Cir. 2023) (citing *KSR*, 550 U.S. at 417; *Qualcomm*, 21 F.4th at 799–800). Furthermore, Dr. Almeroth’s testimony as to the level and knowledge of skill in the art is unrebutted at this early stage and we do not discern any persuasive evidence on this preliminary record that modifying Spain-I’s MU to achieve the user selected specific target location or location-based actions of Hunzinger and Nanda would be “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418–19). Accordingly, for purposes of institution, we find persuasive Petitioner’s position that a person of ordinary skill in the art would have, for at least the above discussed reasons, been motivated to combine the teachings of Spain-I, Hunzinger, and Nanda with a reasonable expectation of success.

5. Analysis and Conclusion as to Dependent Claims 2–7, 9–10, 12–13, and 21

Petitioner provides an element-by-element analysis of where each element in challenged dependent claims 2–7, 9–10, 12–13, and 21 is disclosed by or would have been obvious in view of Spain-I, Hunzinger, and Nanda. Pet. 41–64.

We determine on the evidence before us at this early stage that Petitioner has shown that Spain-I, Hunzinger, and Nanda disclose or would have taught to a person of ordinary skill in the art, each additional limitation recited in dependent claims 2–7, 9–10, 12–13, and 21 as they depend from claim 1. Petitioner explains for example, with respect to dependent claim 4, that given the teachings in Hunzinger and Nanda,

a POSITA would have been motivated, and found obvious, to configure the modified *Spain-I* system/processes such that multiple MUs (including a second different MU different) measures/collects signal strengths from signals received when at a user chosen location selected by the user of the first MU (§IX.A.1(b)(ii)(1)) to generate respective fingerprints used for building a robust fingerprint database stored at a remote server, consistent with features contemplated by *Spain-I* and *Nanda*.

Id. at 43 (citing Ex. 1002 ¶ 186), *see also* Ex. 1006, 12:14–31 (Nanda explaining that the remote database “receiv[es] fingerprints from multiple mobiles devices” enabling a “much larger database of available access points than would be found in a single mobile device.”).

E. Grounds 2–4: Dependent Claims 4, 6–7, 11, and 15–16 — Alleged Obviousness over Spain-I, Hunzinger, Nanda and one of Damarla, Budampati, and Blomqvist

Patent Owner does not specifically address the limitations relating to the dependent claims in grounds 2–4 and Petitioner’s challenges based on Damarla, Budampati, and Blomqvist. *See* Prelim. Resp. 7 (Patent Owner

stating that “[t]he Petition’s failure to show motivation to combine Spain-I with either Hunzinger or Nanda or both dooms all asserted grounds.”).

Because we institute on another ground on this record, we need not determine at this point if Petitioner has met its burden to show that the combination of Spain-I, Hunzinger, Nanda and one of Damarla, Budampati, and Blomqvist renders the claims of the ’698 patent obvious.

III. CONCLUSION

On this record, we are persuaded that Petitioner demonstrates a reasonable likelihood of prevailing on its challenges that Spain-I, Hunzinger, and Nanda renders obvious at least claims 1–3, 5, 9–10, 12–13, and 21 of the ’698 patent. That said, Petitioner’s remaining obviousness challenges, namely those based on Damarla, Budampati, and Blomqvist in grounds 2–4, are best left for trial after full development of the record. 37 C.F.R.

§ 42.108(c); *SAS Inst. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (“Equal treatment of claims and grounds for institution purposes has pervasive support in *SAS*.”). We therefore institute trial on all claims and all challenges included in the Petition.

Our factual findings and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review of the '698 patent is hereby instituted as to claims 1–7, 9–13, 15, 16, and 21 on all grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial on the grounds of unpatentability authorized above; the trial commences on the entry date of this decision.

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