

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.
Petitioner

v.

BROADPHONE LLC
Patent Owner

Patent No. 10,341,811

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,341,811**

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LIST OF EXHIBITS

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Ex-1006	U.S. Patent No. 8,477,731 (“ <i>Nanda</i> ”)
Ex-1007	U.S. Patent Application Publication 2001/0022558 (“ <i>Karr</i> ”)
Ex-1008	U.S. Patent No. 7,116,987 (“ <i>Spain-II</i> ”)
Ex-1009	U.S. Patent No. 6,782,265 (“ <i>Perez-Breva-II</i> ”)
Ex-1010	U.S. Patent No. 6,393,294 (“ <i>Perez-Breva-I</i> ”)
Ex-1011	U.S. Patent No. 6,944,465 (“ <i>Spain-I</i> ”)
Ex-1012	T Suzuki, et al., The Moving-body Position Detection Method; JP Patent Application (shown as 63-195800), August 1988
Ex-1013	M. Hellebrandt, et al., Estimating Position and Velocity of Mobiles in a Cellular Radio Network, IEEE Trans. On Vehicular Technology, Vol. 46, No. 1, pp. 65-71
Ex-1014	I Gaspard, et al., Position Assignment in Digital Cellular Mobile Radio Networks (e.g., GSM) Derived from Measurements at the Protocol Interface, IEEE Journal, pp. 592-596, March 1997
Ex-1015	J. Jimenez et al., Mobile Location Using Coverage Information: Theoretical Analysis and Results, COST 259 TD (98), April 1999
Ex-1016	U.S. Patent No. 7,848,765 (“ <i>Phillips</i> ”)
Ex-1017	U.S. Patent No. 7,213,057 (“ <i>Trethewey</i> ”)

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Ex-1018	U.S. Patent Application Publication No. 2004/0203768 (“ <i>Ylitalo</i> ”)
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Ex-1026	U.S. Patent No. 6,167,274 (“ <i>Smith-P</i> ”)
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Ex-1028	U.S. Patent No. 7,346,359 (“ <i>Damarla</i> ”)
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Ex-1032	U.S. Patent No. 7,397,424 (“ <i>Houri</i> ”)
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Ex-1045	U.S. Patent No. 7,286,835 (“ <i>Dietrich</i> ”)
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Exs-1048-1052	RESERVED
Ex-1053	U.S. Patent Application Publication No. 2005/0159174 (“ <i>Bar-On</i> ”)
Ex-1054	U.S. Patent No. 6,957,076 (“ <i>Hunzinger</i> ”)
Ex-1055	U.S. Patent No. 7,263,441 (“ <i>Janky</i> ”)
Ex-1056	U.S. Patent Application Publication No. 2005/0136845 (“ <i>Masuoka</i> ”)
Ex-1057	U.S. Patent Application Publication No. 2004/0198386 (“ <i>Dupray</i> ”)
Ex-1058	U.S. Patent Application Publication No. 2005/0282557 (“ <i>Mikko</i> ”)
Ex-1059	U.S. Patent No. 7,474,897 (“ <i>Morgan-I</i> ”)
Ex-1060	U.S. Patent No. 6,714,865 (“ <i>Angwin</i> ”)
Ex-1061	U.S. Patent No. 7,525,425 (“ <i>Diem</i> ”)
Ex-1062	U.S. Patent No. 7,433,693 (“ <i>Sheynblat-I</i> ”)
Ex-1063	U.S. Patent Application Publication No. 2007/0013584 (“ <i>Camp</i> ”)
Ex-1064	U.S. Patent Application Publication No. 2008/0139219 (“ <i>Boeiro</i> ”)
Ex-1065	U.S. Patent Application Publication No. 2006/0240841 (“ <i>Bhattacharya</i> ”)
Ex-1066	U.S. Patent Application Publication No. 2006/0095349 (“ <i>Morgan-II</i> ”)

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Ex-1067	U.S. Patent No. 6,915,123 (“ <i>Daudelin</i> ”)
Ex-1068	U.S. Patent Application Publication No. 2007/0010956 (“ <i>Nerguizian</i> ”)
Ex-1069	U.S. Patent Application Publication No. 2005/0195761 (“ <i>Alicherry</i> ”)
Ex-1070	U.S. Patent Application Publication No. 2007/0133487 (“ <i>Wang</i> ”)
Ex-1071	U.S. Patent Application Publication No. 2006/0089153 (“ <i>Sheynblat-II</i> ”)
Ex-1072	U.S. Patent Application Publication No. 2007/0249365 (“ <i>Jendbro</i> ”)
Ex-1073	U.S. Patent No. 7,941,656 (“ <i>Hans</i> ”)
Ex-1074	U.S. Patent No. 7,454,608 (“ <i>Gopalakrishnan</i> ”)
Ex-1075	U.S. Patent No. 8,948,785 (“ <i>Grindeland</i> ”)
Ex-1076	U.S. Patent No. 8,725,406 (“ <i>Kitajima</i> ”)
Exs-1077-1200	RESERVED
Ex-1201	U.S. Patent Application Publication No. 2006/0009235 (“ <i>Sheynblat-III</i> ”)
Ex-1202	U.S. Patent Application Publication No. 2004/0259573 (“ <i>Cheng</i> ”)
Ex-1203	U.S. Patent No. 7,359,713 (“ <i>Tiwari</i> ”)
Ex-1204	U.S. Patent Application Publication No. 2003/0129995 (“ <i>Niwa</i> ”)
Ex-1205	U.S. Patent No. 8,509,814 (“ <i>Parker</i> ”)
Ex-1206	U.S. Patent Application Publication No. 2002/0102993 (“ <i>Hendrey</i> ”)
Ex-1207	U.S. Patent No. 7,072,666 (“ <i>Kullman</i> ”)

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Ex-1208	U.S. Patent No. 7,343,564 (“ <i>Othmer</i> ”)
Ex-1209	U.S. Patent Application Publication No. 2005/0215243 (“ <i>Black</i> ”)
Ex-1210	U.S. Patent No. 5,978,673 (“ <i>Alperovich</i> ”)
Ex-1211	U.S. Patent No. 6,038,451 (“ <i>Syed</i> ”)
Ex-1212	U.S. Patent Application Publication No. 2001/0055974 (“ <i>Bates</i> ”)

I. INTRODUCTION

Samsung Electronics Co., Ltd. (“Petitioner”) requests *inter partes* review of claims 1, 4, 5, 8, 14-15, 18-19, 22, 24-25, and 28 (“challenged claims”) of U.S. Patent No. 10,341,811 (“the ’811 patent”) (Ex-1001) assigned to Broadphone LLC (“PO”). As explained below, each challenged claim should be canceled as unpatentable.

II. MANDATORY NOTICES

Real Parties-in-Interest: Petitioner identifies the following as the real parties-in-interest: Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc.

Related Matters: The ’811 patent is at issue in the following matter(s): *Broadphone LLC v. Samsung Elecs. Co., Ltd.*, No. 23-cv-00001 (E.D. Tex.) (asserting the ’811 patent and also U.S. Patent Nos. 8,594,698 and 8,170,583) (“Texas Litigation”).

The ’822 patent is a continuation of U.S. Patent No. 8,594,698 (“the ’698 patent”), which is a continuation of U.S. Patent No. 8,170,583. (Ex-1001, Cover.) Petitioner has concurrently submitted petitions for *inter partes* review of challenging claims of U.S. Patent Nos. 8,594,698 and 8,170,583.

Counsel and Service Information: Lead counsel: Joseph E. Palys (Reg. No. 46,508), and Backup counsel are (1) Naveen Modi (Reg. No. 46,224) and (2) Kevin

Stewart (Reg. No. 78,581). Service information is Paul Hastings LLP, 2050 M St., Washington, D.C., 20036, Tel.: 202.551.1700, Fax: 202.551.1705, email: PH-Samsung-Broadphone-IPR@paulhastings.com. Petitioner consents to electronic service.

III. PAYMENT OF FEES

The PTO is authorized to charge any fees due during this proceeding to Deposit Account No. 50-2613.

IV. GROUNDS FOR STANDING

Petitioner certifies the '811 patent is available for review and Petitioner is not barred or estopped from requesting review on the identified grounds.

V. PRECISE RELIEF REQUESTED AND GROUNDS

The challenged claims should be canceled as unpatentable based on the following grounds under pre-AIA 35 U.S.C. § 103:

Ground	Claim(s)	References
1	1, 8, 14-15, 22, 28	<i>Spain-I</i> in view of <i>Hunzinger</i> and <i>Nanda</i>
2	4, 18	<i>Spain-I</i> in view of <i>Hunzinger</i> , <i>Nanda</i> , and <i>Blomqvist</i>
3	5, 19	<i>Spain-I</i> in view of <i>Hunzinger</i> , <i>Nanda</i> , and <i>Tiwari</i>
4	24	<i>Spain-I</i> in view of <i>Hunzinger</i> , <i>Nanda</i> , and <i>Othmer</i>
5	25	<i>Spain-I</i> in view of <i>Hunzinger</i> , <i>Nanda</i> , and <i>Bates</i>

The '811 patent issued from an application filed 9/19/2006, which Petitioner assumes (without conceding such entitlement) is the effective date of the '811 patent.

Spain-I was filed 11/18/2002, *Hunzinger* was filed 11/15/2001, *Nanda* was filed 2/15/2006, *Blomqvist* was filed 1/21/2004, *Tiwari* was filed 2/28/2003, *Othmer* was filed 12/9/2005, and *Bates* was filed 1/12/2001, and thus each qualifies as prior art at least under 35 U.S.C. § 102(e).

These references were not substantively considered during prosecution. (Ex-1004; §X.)

VI. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art as of the assumed date of the '811 patent ("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). (Ex-1002, ¶¶31-32.)¹ More education can supplement practical experience and vice versa. (*Id.*)

VII. THE '811 PATENT

The '811 patent describes systems/methods for determining a location for a portable device, where, *e.g.*, the device compares current location signal strengths with desired location signal strengths. (Ex-1001, 5:63-6:39, 9:7-22, 11:35-12:58,

¹ Petitioner submits the declaration of Kevin Almeroth, Ph.D (Ex-1002), an expert in the field of the '811 patent. (Ex-1002, ¶¶1-30; Ex-1003.)

15:51-:9, 18:31-19:58, 21:52-22:13.) If they match, the “cell phone is determined to have returned to the desired location (i.e., current location=desired location).” (*Id.*, 19:39-46.)

During prosecution, the applicant appealed the examiner’s rejections (Ex-1004, 170-188, 205-219, 276-292) addressing the claimed “comparing at least one number based on signal strengths” features. (*Id.*, 74-83, 126-130, 135-161.) The applicant referred to such features as including “direct” signal strength comparisons or comparing any calculation based on signal strength, such as an arithmetic/logical-based metric or value “derived from” signal strengths. (*Id.*, 41-43, 127, 136, 140.) The Board reversed (*id.*, 29-66), which led to allowance (*id.*, 12-17). During prosecution of the parent ’698 patent (*supra* §II), the applicant represented similar location determining features relate to “determining whether a mobile device is or is not at a specified location (‘*am I there*’),” as opposed to “determining where a mobile device is (‘where am I’).” (Ex-1031, 167.)² Moreover, applicant represented that “number based on...” language is intended to refer to the output of a formula/similar derivations. (*Id.*, 166.)

However, use of fingerprints/signal strength information and corresponding comparisons to determine whether a mobile device was “at a particular location or

² Emphasis added unless stated otherwise.

not” (e.g., “am I there”) and other features like that claimed was known. (Ex-1002, ¶¶33-58, 62-74; Ex-1011, 4:23-25; Exs-1008, 1018, 1032, 1056-1060, 1063-1071, 1076; §IX.)

VIII. CLAIM CONSTRUCTION

For purposes of this proceeding, no special constructions are necessary to assess whether the challenged claims are unpatentable over the asserted prior art, and thus Petitioner applies their plain meanings.³ *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper No. 11 at 16 (Aug. 14, 2015). (Ex-1002, ¶¶59-60; *infra* §IX.)

This petition demonstrates how claim limitations are met in context of their plain language and also in context of the specification, and where applicable, the file history, including the location “proximity,” “number based on signal strengths,” and “device-specific target location” features. (*Supra* §VII; Ex-1004, 41-43, 75, 127, 136, 140; Ex-1031, 166-167.) Thus, to the extent PO argues the claims should be construed in context of such file history representations, the analysis below

³ Petitioner reserves all rights to raise claim construction and other arguments (e.g., §112, etc.) in other proceedings. *See, e.g., Target Corp. v. Proxicom Wireless, LLC*, IPR2020-00904, Paper 11 at 11-13 (Nov. 10, 2020).

demonstrates how such features are disclosed/suggested by the prior art. (§IX.) (Ex-1002, ¶¶60.)

IX. DETAILED EXPLANATION OF GROUNDS⁴

A. Ground 1: Claims 1, 8, 14-15, 22, and 28 are obvious over *Spain-I* in view of *Hunzinger* and *Nanda*

1. Claim 1

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

To the extent limiting, *Spain-I*⁵ (including as modified below) discloses/suggests these limitations. (Ex-1002, ¶¶100-106; §§IX.A.1(a)-(c).)

Spain-I discloses a mobile unit (MU) that is operable to perform location-determining process(es). (Ex-1011, 3:35-41, FIGS. 1-2 (annotated below), 9-10, 1:18-49, 3:5-4:63, 5:20-6:34, 7:58-8:44, 9:25-14:37, 15:19-35; Ex-1005, FIGS. 1-2, 4-5, Abstract, 1:26-3:9, 3:29-61, 4:59-63, 5:40-56; Ex-1010, FIGS. 1-2, 5-10, 1:10-

⁴ References to prior art exhibits other than those asserted in the identified grounds demonstrate a POSITA's state-of-art knowledge at the time.

⁵ *Spain-I* (Ex-1011) is a CIP of Exhibits 1005, 1009-1010 (Ex-1011, Cover) and incorporates by reference each of those patents (*id.*, 1:5-14) and the disclosures in Exhibits 1012-1015 (*id.*, 15:1-16), which are thus part of *Spain-I*'s disclosures.

60, 2:23-5:41, 7:1-54, 8:42-11:29; Ex-1009, Abstract, FIGS 1-2, 9-10, 1:14-64, 2:25-6:50, 7:4-11:17; Ex-1002, ¶¶62-68, 102.)

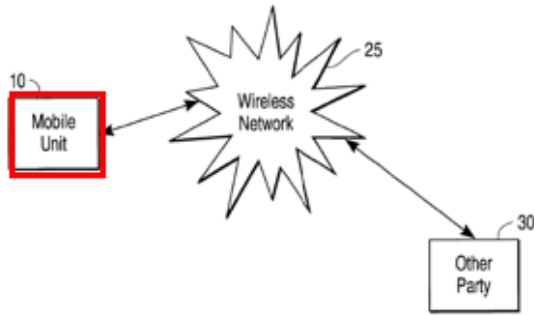


FIG. 1

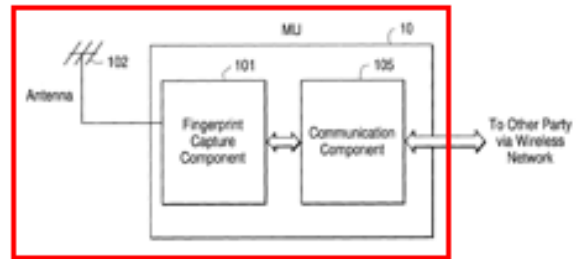


FIG. 2

The MU performs processes to build a fingerprint database, by collecting/measuring information from signals received from stations within RF communication range of the MU when at specific location(s) and recording/generating it as fingerprint(s) in a database. (Ex-1011, FIGS. 9-10, 1:25-28, 3:42-4:63, 5:20-6:8, 7:58-8:8, 10:35-65, 13:16-14:37; Ex-1005, FIGS. 4-5, 3:29-5:9, 5:40-6:51; Ex-1009, FIG. 9, 2:61-5:21, 7:4-57, 9:15-10:37; Ex-1010, FIG. 9, 3:4-5:57, 7:1-36, 9:10-49, 10:4-32.) (Ex-1002, ¶¶103-104.) The fingerprints may be generated using “*many different parameters*, either *individually or in combination*,” including signal strength. (Ex-1011, 3:55-58, 4:55-63, 5:20-32, FIG. 9; Ex-1005, 3:40-4:18; Ex-1009, 3:7-4:44; Ex-1010, 3:4-4:44.) (Ex-1002, ¶¶103-104.)

When the MU returns to the specific location, the MU collects/measures signal information (signal strength) from signals received from surrounding antenna

stations and creates a current fingerprint as above. (Ex-1011, 4:42-46, 5:20-6:8, 7:64-8:44, 9:25-10:27; Ex-1005, 3:29-4:24; Ex-1009, 3:60-4:44; Ex-1010, 3:56-5:19.)

The MU compares the currently received and stored location fingerprint information to determine whether it is “at a particular location or not.” (Ex-1011, 4:23-47; Ex-1005, 3:10 18.) Upon a match (or close match), the MU determines the MU is at the matching fingerprint location. (Ex-1011, FIGS. 9-10, 5:61-6:8, 7:58-67, 8:1-13:15, 14:10-37, 17:15-19; Ex-1005, 3:29-4:37, 4:65-6:51, FIGS. 4-5; Ex-1009, 3:40-4:46, 5:1-9:14; Ex-1010, 3:37-5:19, 7:1-9:10; §§IX.A.1(a)-(c); Ex-1002, ¶¶103-104.)

Accordingly, *Spain-I* (including as modified below) discloses/suggests features like that claimed/described in the '811 patent. (*Compare supra* with Ex-1001, 5:63-6:23 (“registering/recording” steps (A)-(B) (6:4-13)—similar to *Spain-I*’s fingerprint database built using signal strengths; “monitoring” step (C) (6:14-18)—similar to *Spain-I*’s MU measuring signal strengths/fingerprint; “determining” step (D) (6:19-23)—similar to *Spain-I*’s comparing fingerprint information to determine if the MU is “at the selected location” of a matching fingerprint).) (Ex-1002, ¶105.)

The MU is further configured with components/software to automatically perform/facilitate such features/operations. (Ex-1011, FIG. 2, 3:55-4:22, 5:20-32,

15:19-25; Ex-1002, ¶106.) Further, the MU in the modified *Spain-I* system/processes would have automatically performed processes for determining whether the MU is present at a “device-specific target location” like that recited in claim 1 as additionally explained below. (§§IX.A.1(a)-(c); *e.g.*, IX.A.1(b)(5); Ex-1002, ¶106.)

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

Spain-I (including as modified herein) discloses/suggests these limitations. (Ex-1002, ¶¶107-118.)⁶ The MU monitors its location by receiving a first plurality of communication signals respectively from a first plurality of antenna stations within range of the MU. (*Supra* §IX.A.1(pre); *infra* §IX.A.1(b); Ex-1002, ¶107; Ex-1201, ¶0094; Ex-1045, 3:17-22 (“mobile station measures the signal strength of each of access points within range”); Ex-1202, ¶0025 (“the receiving range of the mobile telephone 1000”).) (*See also* §IX.A.1(b)(5) (“automatic” features).)

⁶ To the extent *Spain-I* does not disclose features in limitation 1(a), such features would have been obvious for reasons explained for limitation 1(b) (§IX.A.1(b)). (Ex-1002, ¶107, n.7.)

For example, *Spain-I* explains that when the MU is at a current/monitored location the MU “capture[s] predetermined information from a predetermined portion of the RF spectrum” from stations that are within range of the MU. (Ex-1011, 3:5-16, 4:42-54, 3:55-58, 5:20-22; Ex-1005, FIGS. 1-3, 1:40-54, 2:5-16, 2:32-3:9, 3:29-39, 4:38-5:9, 5:20-58, 6:2-11; Ex-1009, 3:60-63; Ex-1010, 3:56-60.) The MU creates a fingerprint for that current location based on the received signal information, which includes signal strength. (Ex-1011, 6:9-30 (MU capturing fingerprint of “current location”), 3:55-58, FIG. 9 (below), 4:55-63, 5:20-32, 5:33-6:8, 7:64-8:44, 9:25-10:27, 13:16-33; Ex-1005, FIG. 4, 3:29-4:24, 5:40-6:12; Ex-1009, FIG. 9, 3:7-4:44, 5:7-21; Ex-1010, FIG. 9, 3:4-4:44, 5:5-19; §IX.A.1(pre).) (Ex-1002, ¶¶108-113.)

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

(Ex-1011, FIG. 9 (measured signal strengths (yellow) for signals received from a plurality of stations (Station ID1-In); *id.*, 3:42-54, 4:33-36, 7:58-8:8, 13:51-44

(sampling multiple times); Ex-1005, 2:40-52, 3:57-61, 4:59-5:9).) (Ex-1002, ¶¶108-113.)

The “station(s)” communicating signals to the MU were 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. (Ex-1002, ¶114; Ex-1011, FIG. 2, 1:18-48, 3:42-4:61, 5:33-54, 7:58-67, 13:27-31, FIG. 9, 6:31-39; Ex-1005, 1:10-34, 2:40-3:9, 3:50-61, FIGS. 2, 4, 4:59-63, 5:51-56; Ex-1009, 3:25-39, 4:9-10, 5:44-51, 7:4-21, 9:26-54; Ex-1010, 1:31-41, 3:22-36, 4:1-7, 5:46-49, 7:1-18, 9:21-49; Ex-1007, FIGS. 3-4, ¶¶0009-0020, 0183-0185 (“standard high traffic, fixed location base stations...”), 0193, 0236-0237 (fixed BS 122); Ex-1001, 1:50-5:18.) *Spain-I* also discusses coverages areas served by such antenna stations. (Ex-1011, FIG. 14 (below), 10:29-13:15.) (Ex-1002, ¶114; *infra* §§IX.A.1(b).)

FIG. 11

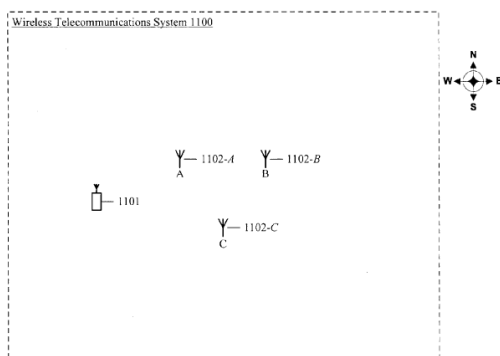
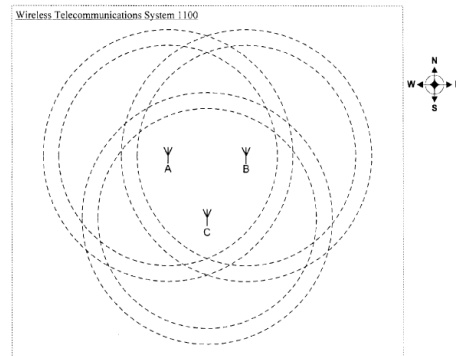


FIG. 14



Thus, a POSITA would have understood that *Spain-I*'s antenna stations are substantially continuously operating as claimed. (Ex-1002, ¶¶115-116; Ex-1011, 8:1-8, 9:64-67, 10:64-67, 13:16-55, 14:1-3.)

To the extent PO argues such features are not disclosed, a POSITA would have found it obvious to configure *Spain-I*'s system/processes to operate with such stations as claimed, consistent with known wireless infrastructures as contemplated by *Spain-I*. (Ex-1002, ¶117; Ex-1011, 1:16-50, 3:8-4:22, 5:33-51, 10:34-11:26; Ex-1005, 1:8-37, 2:53-3:3, 3:62-4:12, 5:28-33; Ex-1007 (*supra*); Ex-1027, FIGS. 1-2, 16, ¶¶0002-0021, 0042-0045, 0102-0103.) Such features would have been a foreseeable and obvious implementation of known technologies within the skills of a POSITA, who thus would have had a reasonable expectation of success in implementing. (Ex-1002, ¶117.) Such features would have been further obvious for reasons in §IX.A.1(b)(4). (Ex-1002, ¶191.)

Further, the modified *Spain-I-Hunzinger-Nanda* system/processes would have included the MU automatically performing the features corresponding to limitation 1(a) for reasons similar to those discussed above (§IX.A.1(pre)) and below (§IX.A.1(b)(5)). (Ex-1002, ¶118.)

- b) (b) causing a determination of whether the portable RF communications device is within proximity of the device-specific target location by electronically comparing at least one number based on signal strengths of each of the first plurality of**

communications signals with at least one number based on corresponding signal strengths of each of a second plurality of communication signals from a second plurality of antenna stations that have been identified as being within range of the same location as the device-specific target location, which signal strengths have been determined for the same location as the device-specific target location; and

Spain-I in view of *Hunzinger* and *Nanda* discloses/suggests these limitations.

(Ex-1002, ¶¶119-202.)

Spain-I's MU performs processes causing a determination whether it is currently “at a particular location or not.” (Ex-1011, 4:23-25, 4:43-47; Ex-1005, 3:10-18; §§IX.A.1(pre)-1(a).) The MU electronically compares fingerprint information (including signal strength parameters (*e.g.*, number(s))) for the MU's monitored location first communication signals (§IX.A.1(a)) with stored fingerprint information for particular target location(s) second communication signals (from second antenna stations) to determine a “closest” match. (§§IX.A.1(a), *infra* IX.A.1(b)(2).) Upon a “match” (or close match) the “corresponding location in the database is then chosen as the location of the mobile unit.” (Ex-1011, 5:61-6:4, 8:1-26; §§IX.A.1(pre)-1(a); Ex-1002, ¶120.)⁷ Thus, the second antenna stations

⁷ *Spain-I* also discloses various ways to build the database, determine closeness, and refine the analysis. (Ex-1011, FIGS. 1-3, 9-10, 5:61-6:8, 7:58-67, 8:1-13:15,

providing the second signals used to build the fingerprints in the database would have been identified as being within range of the same location as the target monitored location like that claimed. (Ex-1001, 6:4-23; Ex-1004, 126-139; §IX.A.1(b)(1)-(3).) The first antenna stations (and first signals) relate to those communicating with the MU when at the monitored target location (§IX.A.1(a)), and the second antenna stations (and second signals) relate to those communicating with the MU when generating signal strength-based fingerprints used to build the database. Upon a match, the same antenna stations (station ID) would have been identified as providing the first and second signals that formed the matching fingerprint information. (Ex-1002, ¶¶120-122.)

Spain-I discloses and/or suggests features/functionalities attributable to claim 1, but lacks certain details for particular claimed features. Petitioner demonstrates below how such features would have been obvious in view of the collective

14:10-31, 17:15-19; Ex-1005, 3:29-4:37, 4:65-6:51, FIGS. 4-5; Ex-1009, 3:40-4:46, 5:1-9:14; Ex-1010, 3:37-5:19, 7:1-9:10; Ex-1002, ¶122.)

teachings/suggestions of *Hunzinger-Nanda*.⁸ (§§IX.A.1(b)(1)-(3); Ex-1002, ¶¶123-124.)

(1) Determining If Device is Within Proximity of the Device-Specific Target Location

During prosecution, the applicant associated the claimed proximity features to features in the specification where “upon observing an *identical list of service antennas with substantially identical respective signal strengths*—can reasonably conclude that it is within a predetermined proximity of the original []selected location.” (Ex-1004, 128 (citing now Ex-1001, 9:10-14).) And also referenced the specification’s reference to “selected location” in discussing the claimed “device-specific target location” (Ex-1004, 136 (citing now Ex-1001, 6:19-23).) As explained below, *Spain-I* in view of *Hunzinger-Nanda* discloses/suggests the claimed device-specific target location proximity features in context of the plain claim language, specification, and file history, including where the “device-specific

⁸ The obviousness positions do not rely on bodily-incorporation of components/processes from one reference to another. Thus, references to “combined” prior art or the like is short-hand for the resulting modified/configured system/process. (Ex-1002, ¶124.) *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1343 (Fed. Cir. 2020).

target location” encompasses locations specifically targeted/selected by a MU user.
(Ex-1002, ¶¶125-126.)

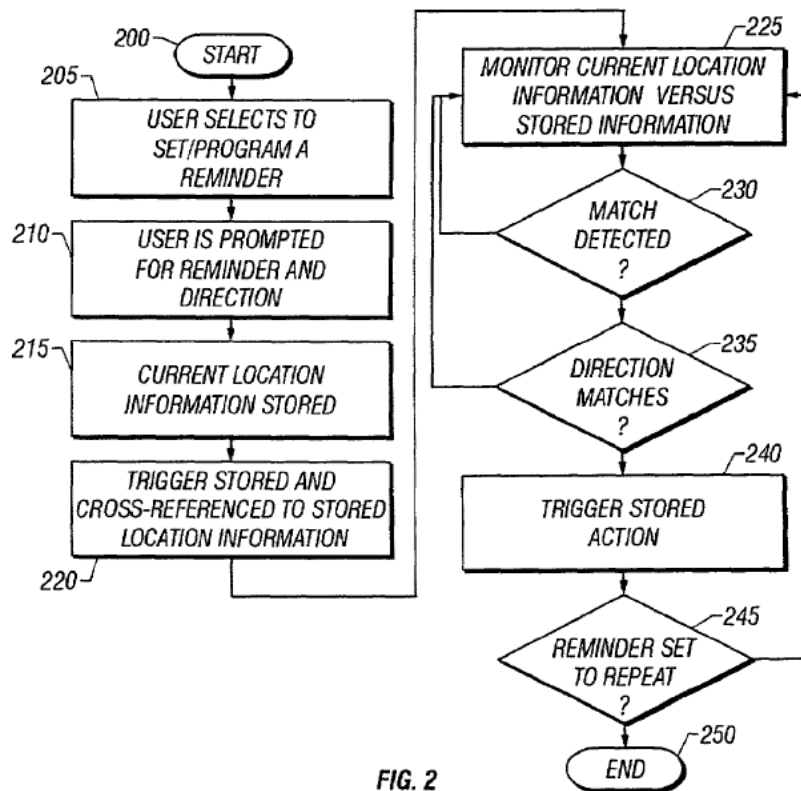
Spain-I describes generating/storing in a database fingerprints corresponding to selected location(s) that are compared to monitored fingerprint information to determine whether the MU’s current location is “at a particular location or not.” (Ex-1011, 4:23-25, 4:43-47, FIG. 9, 3:42-4:23, 5:20-6:31, 7:58-8:26, 13:16-14:37; Ex-1005, 2:40-6:56; §§IX.A.1(pre)-(b).) *Spain-I* also discloses configurations where a user can initiate a request that causes “the MU [to] capture[] the fingerprint of its current location.” (Ex-1011, FIG. 3, 6:9-30, 6:43-47; Ex-1005, 6:43-47; Ex-1002, ¶¶127-129.)

Spain-I thus suggests the concept of user initiated target location fingerprint data collection. Such suggestions, with the understanding that there were various ways and reasons providing for device-specific target locations corresponding to fingerprints generated at monitored and/or database generating locations, would have motivated a POSITA to consider teachings in the art when considering *Spain-I*. (Ex-1002, ¶¶130-131.) Upon doing so, a POSITA would have been persuaded by *Hunzinger*’s and *Nanda*’s teachings, and thus found it obvious to configure *Spain-I*’s system/processes to allow the MU to provide for device-specific target location selections (e.g., initiating location determining while at a monitored location and when building the database) and perform processes that determine if the MU’s

current location was in proximity of a device-specific target location in the database, consistent with that claimed (and discussed in the patent/file history (*e.g.*, am I there)). (Ex-1002, ¶¶130-131; §§VII-VIII.)

Like *Spain-I*, *Hunzinger* is in the same technical field as the '811 patent and discloses features reasonably pertinent to particular problem(s) the '811 patent (and a POSITA) looked to solve, and thus would have been consulted by a POSITA contemplating *Spain-I*. (§IX.A.1(b); Ex-1054, 1:13-2:49, 3:44-4:59, 6:37-8:44 (and below); §IX.A.1(pre)-(a); Ex-1001, Abstract, 1:23-10:39; Ex-1002, ¶¶89-93, 137.)

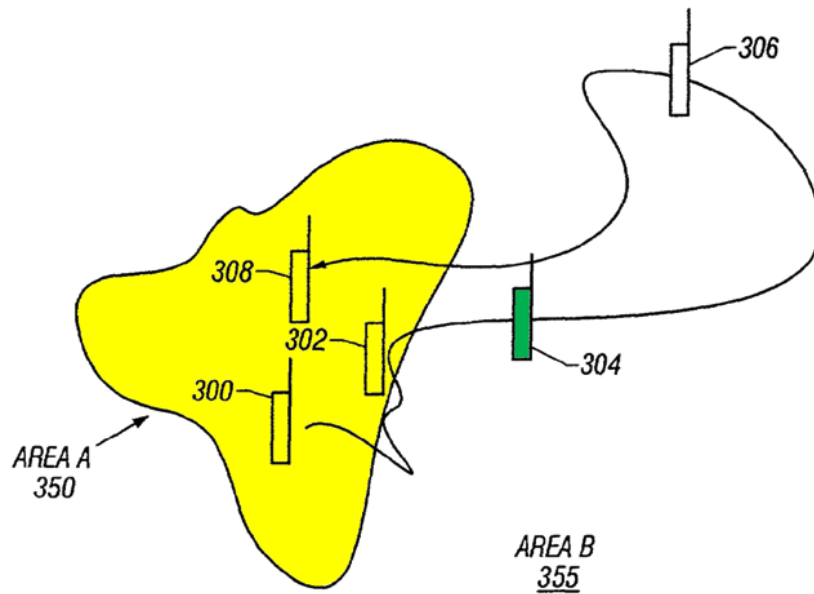
Hunzinger discloses a location determining system/process where a mobile device (with “position location technology”) enables a user to choose locations for their specific device and the device performs related actions when it determines it is at such device-specific target locations. (Ex-1054, Abstract, FIGS. 1A-4, 1:38-2:6, 2:10-44, 3:4-67, FIG. 2 (below).) (Ex-1002, ¶132.)



Position-monitoring functions “compare[] one or more ‘remembered’ locations with current location information.” (Ex-1054, 3:56-60.) Location information (e.g., “signal strength,” etc.) is stored that “allow[s] the terminal to *recognize whether or not it has left or returned to the same location.*” (*Id.*, 4:1-12, 6:37-49, 7:9-22; *infra* §IX.A.1(b)(2).) Such information can include a “set area [that] may be defined several ways” (e.g., point/radius, geographic geometric shape, etc.). (Ex-1054, 4:12-18.) “The *location area characteristics may be settable by the user....*” (*Id.*, 4:18-20.) (Ex-1002, ¶133.)

The device stores location trigger/action information and monitors “the current location until it is outside of the ‘set’ location area.” (Ex-1054, 4:21-24.)

“[T]he mobile may *detect it has transitioned out of the area* described by the stored location information *or that the current location matches* the stored location information 230....” (*Id.*, 4:24-31; 4:31-38, 4:44-5:22, FIG. 3 (below).) (Ex-1002, ¶134.)



The device also allows the user to easily choose locations for its specific device and corresponding actions/reminders to be executed based on chosen device-specific target locations. (Ex-1054, 5:22-40, 5:51-52 (“user may select the current location...”), FIG. 4 (below).) (Ex-1002, ¶¶135-136.)

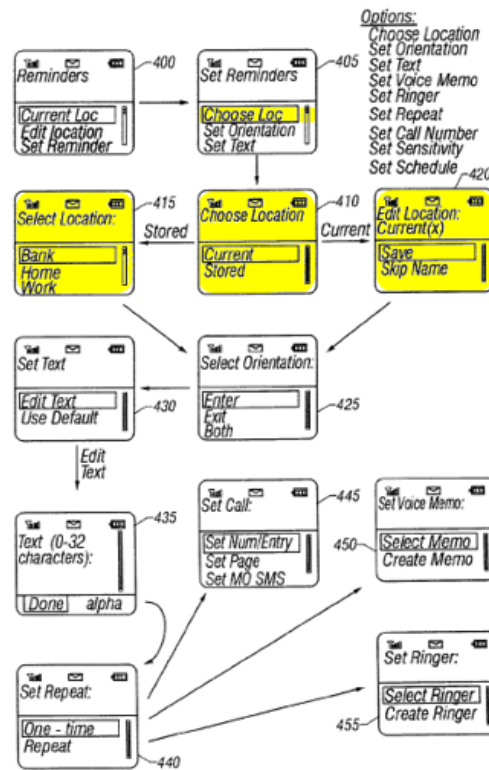


FIG. 4

The user may choose trigger conditions for such actions/reminders, such as when exiting or entering a region, or both. (Ex-1054, 5:52-61.) Reminder actions can take many forms. (*Id.*, 5:62-6:7.) (*See also id.*, 6:8-22; Ex-1002, ¶¶134-136.)

Hunzinger's teachings were consistent with technologies/techniques known at the time. (Ex-1002, ¶138; Ex-1016, Abstract, FIGS. 1:18-4:63, 6:30-7:3, 14:38-44 (geofence), 16:41-67, 17:39-20:46; Ex-1019, ¶¶0008-0081, 0164-0171, 0177-0185, 0217-0240; Ex-1055, 1:49, 2:20-3:3, 3:49-4:22, 6:12-7:41 (zones/tasks); Ex-1061, FIG. 13c, 1:61-2:8, 8:54-9:10, 21:4-13.) Indeed, a POSITA would have likewise found *Nanda's* teachings beneficial when considering ways to allow a user

to choose device-specific target locations for location-determining operations.⁹ (Ex-1002, ¶138.)

Nanda discloses describes systems/processes that determine whether a mobile device is “in the vicinity of” a location by comparing fingerprint information. (Ex-1006, FIGS. 1A-1B (below), 2:16-59, 3:48-4:14, 5:50-7:28; Ex-1002, ¶¶69-75, 139-146.)

⁹ A POSITA would have been motivated to consider *Nanda* for reasons explained below (§IX.A.1(b)(2)-(5)). Thus, *Nanda*’s teachings here (and below) would have contributed to the rationale for configuring *Spain-I* as discussed in view of *Hunzinger*. Indeed, an invention is likely obvious where it merely combines familiar elements according to known methods and yields only predictable results. *KSR*, 550 U.S. at 416. Here, Petitioner’s evidence of multiple references teaching known features (*e.g.*, device-specific target locations, signal strength comparisons (§IX.A.1(b)(2)-(3))) bolsters obviousness, rather than detracts from it. *See, e.g.*, *Bayer Pharma AG v. Watson Laboratories, Inc.*, 874 F.3d 1316, 1321-24 (Fed. Cir. 2017) (finding motivation “**plainly evident from the face of multiple prior art references**”); *Chanel, Inc. v. Molo Design, Ltd.*, IPR2022-00544, Paper 44 at 28, 33 (P.T.A.B. Aug. 9, 2023).

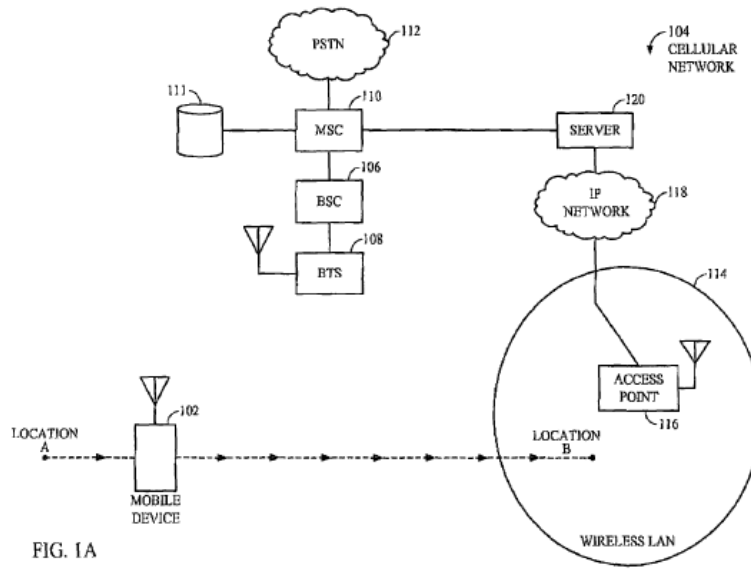


FIG. 1A

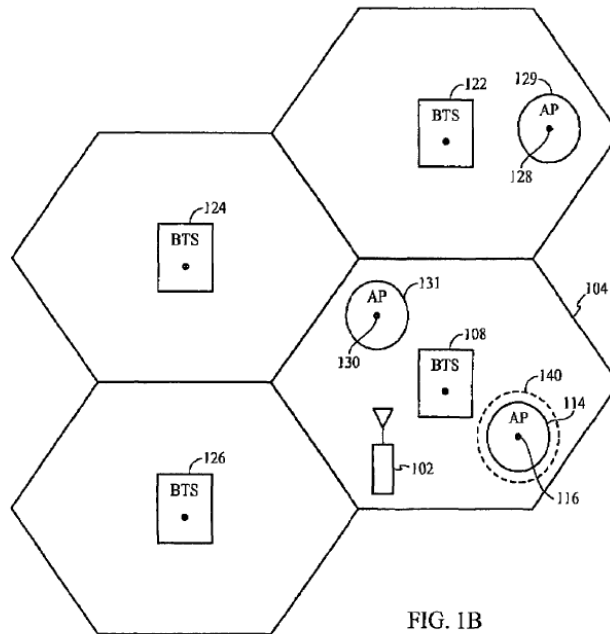


FIG. 1B

(See also *id.*, 4:64-6:3 (“base station identifier and a signal strength”), 6:4-7:28 (MAC ID/RSSI fingerprint information “used by the mobile device to determine the proximity of a second communication network”), 6:52-58 (device “can determine its

current fingerprint and compare it to the known fingerprint to determine whether the mobile device is located within the area 140”).) (Ex-1002, ¶¶139-143.)

Thus, like *Hunzinger* and *Spain-I*, *Nanda* discloses features in the same technical field and address problems similar to that as the '811 patent, and thus would have been consulted by a POSITA for reasons above and those below (§§IX.A.1(b)(2)-(4)). (Ex-1002, ¶140.) Relevant here, and consistent with *Hunzinger* and state of art (Ex-1054, 3:29-5:22; Ex-1053, ¶¶0007-0013), *Nanda* describes features that allow a mobile device user to select when to create a device-specific fingerprint, which causes fingerprint information (*e.g.*, strength data) to be collected/measured while the MU is at a target location chosen by the user. (Ex-1006, 8:29-36 (describing keypad 212 a user may use to cause device 102 “to create a current fingerprint and store that fingerprint in memory 211”), FIG. 2 (below).) (Ex-1002, ¶¶144-146.)

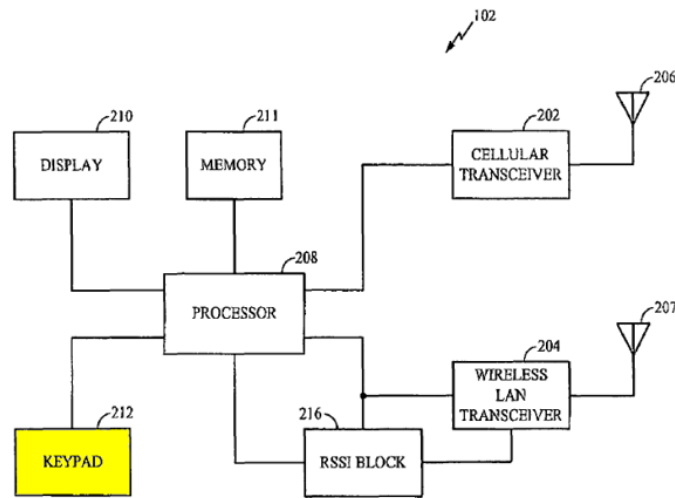


FIG. 2

“Once the mobile device has connected with the access point, *the user may, in step 304, signal to the device to capture the current fingerprint.* This step may typically be *user-initiated....*” (Ex-1006, 9:61-10:7, FIG. 3A (below).) And like *Spain-I*, the fingerprint database may be stored locally on the MU. (Ex-1006, 9:61-10:13, 12:14-31; Ex-1011, 5:60-6:14.) (Ex-1002, ¶144.)

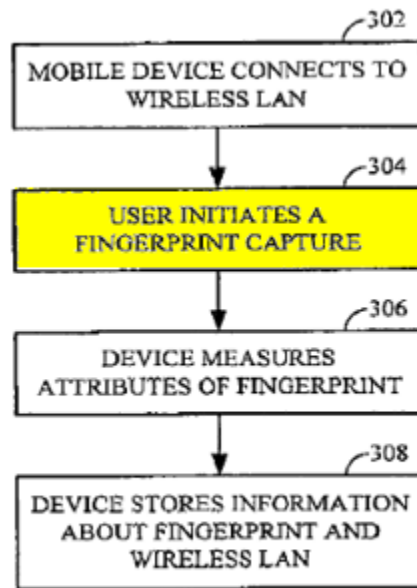


FIG. 3A

Furthermore, the signal strengths of such a device-specific target location fingerprint were determined for the same location as the device-specific target location because the system measures observed signal strengths when a user directs its device to capture a reference fingerprint there, consistent with *Spain-I*'s disclosures regarding signal strength measurements when a fingerprint is generated for a reference and a monitored location fingerprint. (Ex-1006, 9:60-10:13; Ex-1011, 5:60-6:14, 4:55-57, 14:10-37, FIGS. 9-10; §§IX.A.1(a)-(b)(1); Ex-1002, ¶145.)

In light of *Hunzinger* and *Nanda*,¹⁰ a POSITA would have been motivated, and found obvious, to configure the MU in the *Spain-I* system/process with mechanisms/features consistent with the user chosen location and location-based action features like that taught/suggested by *Hunzinger* (and *Nanda*) to cause a determination to detect proximity of device-specific target locations. (Ex-1002, ¶¶147-157.) A POSITA would have appreciated the advantages/benefits/teachings associated with *Hunzinger*'s (and *Nanda*'s) mechanisms for enabling a MU user to choose device-specific target location(s) from which location information is collected for comparison with current location information to cause a determination of whether the MU is at, entered, or left the device-specific target location in order to trigger corresponding selected actions. (Ex-1002, ¶¶147-158.)

Configuring the MU with such user-friendly interface mechanisms (*e.g.*, menus (*Hunzinger*), key-based (*Nanda*)) and related functionalities that enabled a user to easily choose device-specific target locations would have enhanced *Spain-I*'s features. (*Id.*) For instance, a POSITA would have discovered from *Hunzinger* benefits in allowing the user to both choose locations, and corresponding action(s) to be performed upon determining the MU is within proximity of a device-specific

¹⁰ While *Hunzinger* alone supports obviousness here, *Nanda* further bolsters the motivation/reasons for configuring *Spain-I* as explained. (*Supra*, n.9.)

target location (*e.g.*, “am I there”—MU is at, entering, or has left a chosen location). (Ex-1002, ¶146; Ex-1054, FIGS. 1A-4, 1:38-2:44, 3:4-67, 4:1-5:22; §IX.A.1(b).) Such features would have beneficially expanded the capabilities/functionalities of the *Spain-I* system/process with improved features, resulting in a more marketable, desirable, and/or user-friendly and feature-based location determining system, thus expanding application options, consistent with *Hunzinger* (*e.g.*, Ex-1054, 2:10-44, 5:29-6:30), a POSITA’s state of art knowledge (Ex-1016, 14:16-16:8; Ex-1055, 2:29-3:3, 7:8-41; Ex-1061, 1:53-2:52, 17:1-20:4; Ex-1019, ¶¶0164-0171), and features contemplated by *Spain-I* (Ex-1011, 3:5-16). (Ex-1002, ¶154.)

Thus, in some exemplary applications, such modification(s) would have predictably resulted in the *Spain-I* database maintaining fingerprints, depending on how programmed/user-configured, so that when the MU is determined to be in proximity of such a device-specific target location chosen by a user (*e.g.*, retailer, service provider/vendor, etc.), relevant personalized services can be provided by, *e.g.*, the MU, server (30), consistent with *Spain-I*’s and *Hunzinger*’s teachings and that known in the art. (Ex-1011, 3:5-16, 4:23-33; Ex-1002, ¶154; Ex-1033, 1:43-59, 5:46-6:38; Ex-1016, 1:18-4:63, 6:30-7:3, 16:41-67; Ex-1028, Abstract, FIGS. 4-8, 1:10-4:14, 5:10-16, 5:16-63, 7:23-8:28; Ex-1029, FIGS. 6A-6E ¶¶0033-0034, 0045, 0063, 0071, 0074-0075.) Given the familiar features/technologies taught by *Spain-I-Hunzinger-Nanda* (*supra*) and state of art (*e.g.*, 1011, 3:34-40, 15:19-35; Ex-1062,

1:26-33; Ex-1028, 12:55-13:18), a POSITA would have had the skills/knowledge/rationale to consider/implement such modifications with a reasonable expectation of success. (Ex-1002, ¶155.)

There were various ways to configure/implement such features. For example, a POSITA would have found it obvious to configure the modified *Spain-I* system/processes such that the MU included interface mechanisms/features (similar to those described by *Hunzinger*) to allow the MU user to choose device-specific target location(s) (where signal strength data was collected/measured for building the fingerprint database as discussed in §IX.A.1(b)). (Ex-1002, ¶157.) Likewise, a POSITA would have found it obvious to configure the MU to perform features that performed user-selected actions/operations upon determining that the MU is at, has entered, or is no longer in a user chosen location. (Ex-1054, 4:1-5:22; Ex-1011, 4:23-26; Ex-1006, 2:16-59; *infra* §§IX.A.1(b)(2)-(3); Ex-1002, ¶158.)

The modified *Spain-I-Hunzinger-Nanda* system/processes would have included the MU automatically performing above features corresponding to

limitation 1(b) for reasons similar to those discussed above (§IX.A.1(pre)-A.1(a)) and below (§IX.A.1(b)(5)). (Ex-1002, ¶¶158-159.)¹¹

**(2) Comparing Signal Strengths Number(s)
Features and Identifying in Range
Stations/Signals**

Under the plain language of claim 1, the “at least one *number* based on signal strengths” encompasses signal strength measurement(s), which is a number (*e.g.*, value), consistent with that described in the ’811 patent (Ex-1001, 6:43-47) (“the majority of the description relates to direct measurements of signal strengths and direct comparisons of those measurements”), 7:9-13), and consistent with the representation that the claimed “number(s) based on” encompass “direct” signal strength measurements. (§§VII-VIII; Ex-1004, 41-43; Ex-1002, ¶¶160-161.)

Spain-I describes measuring signal strengths represented by strength value(s), which are “number(s)” based on the signals received from the antenna stations when the MU is at target locations (monitored/recorded-reference locations), similar to that claimed. (§§IX.A.1(pre)-IX.A.1(a); Ex-1011, 12:11-14 (“-11 dBm”), FIG. 9 (SS values).) Thus, the signal strength values (*e.g.*, SS) in each fingerprint (for

¹¹ To the extent PO argues, or it is determined, *Spain-I* discloses such features (thus meets the limitation), reasons for modifying *Spain-I* (and bases for obviousness) remain for reasons below. (§§IX.A.1(b)(2)-(5).)

monitored and target/chosen location(s)) includes “at least one number” based on signal strengths from each of a plurality of communication signals. (*Supra* §IX.A.1(a)-1(b)(1); Ex-1002, ¶162.)

When *Spain-I* monitors the currently received fingerprint and corresponding signal strength information (§IX.A.1(a)), current signal strength measurements for the received signals includes “at least one number” based on signal strengths of each of the first plurality of communication signals like that claimed. (§IX.A.1(a); Ex-1011, 12:11-14 (“-11 dBm”), FIGS. 9-10; Ex-1002, ¶¶162-163.)

Previously stored fingerprint information and corresponding signal strength information is stored in a database located on the MU. (Ex-1011, 5:60-6:14 (“a fingerprint database...is stored in the mobile unit”), 4:55-57, 14:10-31, FIGS. 9-10; §IX.A.1(a).) Thus, when *Spain-I* creates a fingerprint with corresponding signal strength information for building the database, signal strength measurements for the received signals includes “at least one number” based on signal strengths of each of the second plurality of communication signals received from second antenna stations like that claimed. (*Supra*; Ex-1002, ¶164.)

Spain-I also discloses generating a fingerprint (including a stored/reference fingerprint for a target location in the database) wherein signal strengths are “lower and upper limited to eliminate very weak and very strong signals.” (Ex-1011, 5:54-60, 4:55-57, 5:60-6:14, 14:10-37, FIGS. 9-10.) In one example, by eliminating very

weak signals and corresponding antenna station IDs from a fingerprint, the system identifies whether a second plurality of antenna stations and corresponding signal strengths of a stored/reference fingerprint are within range of the location where the fingerprint is taken. (Ex-1011, 5:54-60, 4:55-57, 5:60-6:14, 14:10-37, FIGS. 9-10; Ex-1002, ¶165; §IX.A.1(b)(1).) Such processing disclosed by *Spain-I* would have been a part of the fingerprint generation process, including when the user specified a device-specific target location as discussed above. (§IX.A.1(b)(1); Ex-1002, ¶165.)

Spain-I discloses comparing the “generated fingerprint” with “the fingerprints in the database” and choosing the MU location as the one corresponding to the “closest” matching fingerprint in the database. (Ex-1011, 5:66-6:14, 4:55-63 (fingerprints based on station ID/signal strength), 8:8-21 (“many choices...to determine the closest matching fingerprint”); Ex-1005, 4:22-36, 5:10-33.) (Ex-1002, ¶¶166-167.)

While *Spain-I* discloses such fingerprint comparison features, *Spain-I* lacks details as to how such comparisons are performed/used, including in context of underlying parameters (comparing received and device-specific target location signal strength number(s)). (Ex-1002, ¶168.) However, a POSITA would have understood there were various ways for analyzing fingerprints/signal characteristics to determine location proximity, and thus would have been motivated to consider

such teachings. (*Id.*; Ex-1019, Abstract, ¶¶0012-0078, 0176-0177, 0333; Ex-1020, Abstract, ¶¶0013, 0029, 0048-0059; Ex-1017, Abstract, 3:64-4:7, 6:23-8:38; Ex-1026, Abstract, 3:58-4:56; Ex-1027, Abstract, ¶¶0012-0023, 0096-0099; Ex-1028, Abstract, FIGS. 4-8, 1:10-4:14, 5:10-16, 5:16-63.) Upon doing so, including for reasons noted above (§IX.A.1(b)(1)), a POSITA would have been motivated by the collective teachings of *Hunzinger-Nanda* (*see* n.9), and found it obvious, to configure the MU in the modified *Spain-I* system/processes to determine if the MU's current location is in proximity of a device-specific target location (§IX.A.1(b)(1)) by electronically comparing at least one number based on signal strengths of each of the first plurality of communications signals with at least one number based on corresponding signal strengths of each of a second plurality of communication signals from a second plurality of antenna stations that have been identified as being within range of the same location as the device-specific target location, which signal strengths have been determined for the same location as the device-specific target location as claimed in limitation 1(b). (Ex-1002, ¶168.)

Here, *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. (Ex-1054, 3:49-60, 4:21-57; §IX.A.1(b)(ii)(1).) Location information can include “signal strength” values. (Ex-1054, 4:3-8, 6:37-49 (claim 1 (comparison

between current terminal *location information* and first set of *location information*)), 7:9-22 (e.g., claim 8 (“said *location information* consists of at least one of...pilot *signal strength*...”)), 7:29-42, 8:25-38; §IX.A.1(b)(1) (*Hunzinger*).) (Ex-1002, ¶169.)

FIG. 3 (below) illustrates a monitoring/triggering action where the device monitors the current location information *compared* to the stored reminder *location information*. (Ex-1054, 4:60-5:22, 4:1-12, 6:37-49, 7:9-22, 7:29-42, 8:25-38.) (Ex-1002, ¶170.)

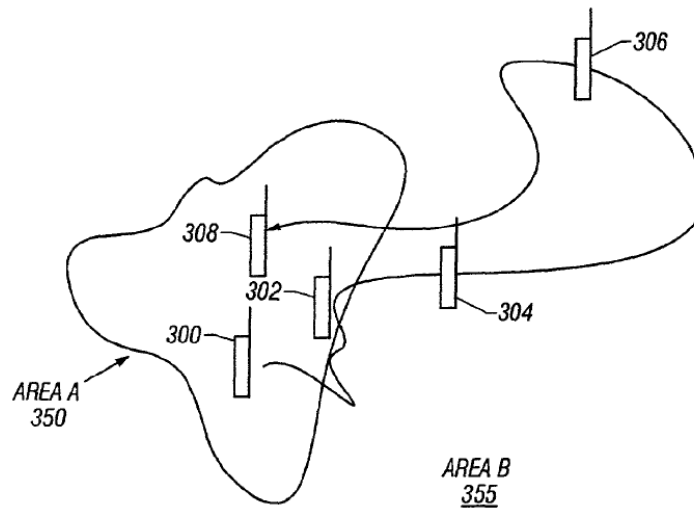


FIG. 3

Hunzinger's teachings were consistent with technologies/techniques known to a POSITA. (*Supra* (state-of-art); Ex-1002, ¶171.) For example, in consulting *Nanda* for reasons above (§IX.A.1(b)(1)) a POSITA would have discovered teachings of comparing signal strength data for current and stored fingerprints when

determining if a device is in proximity of a location. (§IX.A.1(b)(1); Ex-1006, FIGS. 3A-3B, 2:43-51, 6:12-66, 7:6-13, 8:29-55.) For example, *Nanda* discloses storing previously monitored location information (signal strength) like the table below.

WAN ID	WLAN SSID	WLAN BSS ID	Signal Strength	Phase
A	I1	A ₁	$s_1(A_1) \dots s_n(A_1)$	$p_1(A_1) \dots p_n(A_1)$
		A ₂	$s_1(A_2) \dots s_n(A_2)$	$p_1(A_2) \dots p_n(A_2)$
		A ₃	$s_1(A_3) \dots s_n(A_3)$	$p_1(A_3) \dots p_n(A_3)$
B	I1	B ₁	$S_1(B_1) \dots s_n(B_1)$	
	I2	B ₂	$S_1(B_2) \dots s_n(B_2)$	

(Ex-1006, 8:29-55, 9:31-10:13; 8:56-9:13; Ex-1002, ¶173.) The device may “calculate a fingerprint for its current location and compare it” to the stored information. (Ex-1006, 9:17-20, 10:14-25, 10:36-51; Ex-1002, ¶173.)

Nanda describes how the MU captures a current location fingerprint (including signal strengths) with respect to Figure 3B. (Ex-1006, FIG. 3B (below), 3:18-19, 10:51-56; *see also id.*, 10:58-60; 9:31-52, 10:60-61.) (Ex-1002, ¶¶172-176.)

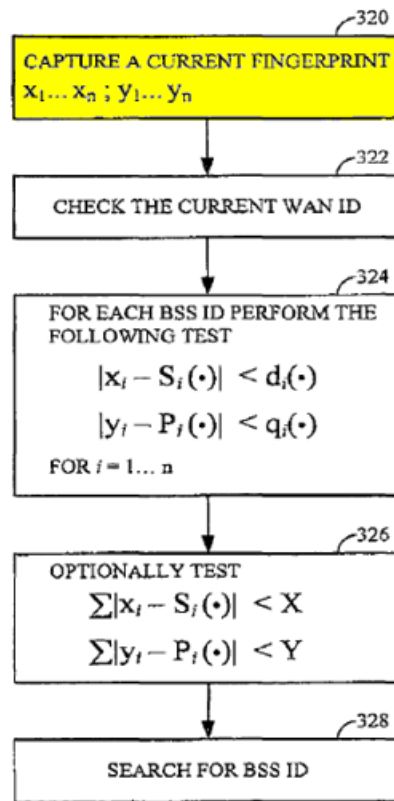
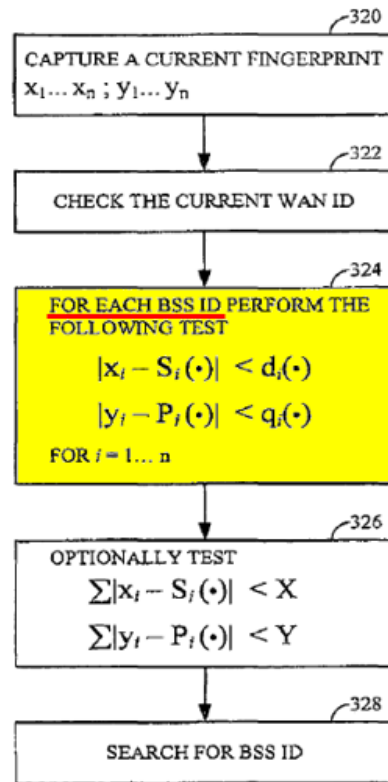


FIG. 3B

The signal strength(s) of fingerprint(s) for each BSS ID (access point) within an identified WAN ID (A or B) are compared to the current fingerprint strengths to determine if the difference is below a predetermined threshold. (Ex-1002, ¶176.)



For i = 1 to n:
 determine if $|x_i - s_i(\cdot)| < d_i(\cdot)$
 determine if $|y_i - p_i(\cdot)| < q_i(\cdot)$

(Ex-1006, 10:62-11:10.) 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.*) (Ex-1002, ¶176.)

In light of *Hunzinger-Nanda*, a POSITA would have been motivated, and found obvious, to configure the above-modified *Spain-I* system/processes (§IX.A.1(b)(1)) such that the MU’s location determining processes include comparing at least one number based on the signal strengths (*e.g.*, SS value(s)) for a

current monitored location with at least one number based on the signal strengths (*e.g.*, SS value(s)) of stations for the device-specific target locations in the fingerprint database of the MU that are identified as being in range. (Ex-1002, ¶177.) As configured, the signal strengths of the received fingerprint (monitored location) would have been determined for the same location as the device-specific target location associated with the **matching** signal strength fingerprint in the database, consistent with the comparison teachings of *Spain-I-Hunzinger-Nanda*. (Ex-1006, 9:60-10:13; Ex-1011, 5:60-6:14, 4:55-57, 14:10-37, FIGS. 9-10; Ex-1054, 4:1-5:22; §§IX.A.1(a)-(b)(1); Ex-1002, ¶177.)

A POSITA would have appreciated *Spain-I*'s teachings/suggestions (§§IX.A.1(pre)-1(b)(2)) in context of those of *Hunzinger* (comparing current location (signal strength) information with remembered location (signal strength) information) and *Nanda* (comparing signal strengths for a current location and a previously monitored/stored location), and thus been motivated to employ similar features in the above-discussed *Spain-I* system/processes (§IX.A.1(b)(1)). (Ex-1002, ¶178.) Such features would have enhanced the MU's processes by using relevant signal characteristics in determining whether the MU's monitored location is in proximity of a user selected location, promoted accuracy, and conserved resources, consistent with features disclosed/suggested by *Spain-I*, *Hunzinger*, and

Nanda. (Ex-1006, FIG. 3B, 8:43-30, 10:49-11:19; §§IX.A.1(pre)-IX.A.1(b)(1); Ex-1002, ¶178; Ex-1054, 3:49-60, 4:3-5:22, 6:37-49, 7:9-22.)

Additionally, and in light of the guidance provided by *Hunzinger* and *Nanda* (and a POSITA's knowledge in the art) in context of *Spain-I*, a POSITA would have appreciated the benefits of comparing monitored/user chosen number(s) based on signal strength in determining whether the MU's location (§IX.A.1(a)) is proximate to a device-specific target location (§IX.A.1(b)(1)) to allow appropriate actions to be performed by the *Spain-I* modified system in view of *Hunzinger* and *Nanda* as explained above. (Ex-1002, ¶179; §IX.A.1(b)(1); Ex-1006, 2:15-24; Ex-1011, 3:8-16, 4:23-35; Ex-1054, 3:49-60, 4:3-5:22, 6:37-49, 7:9-22.)

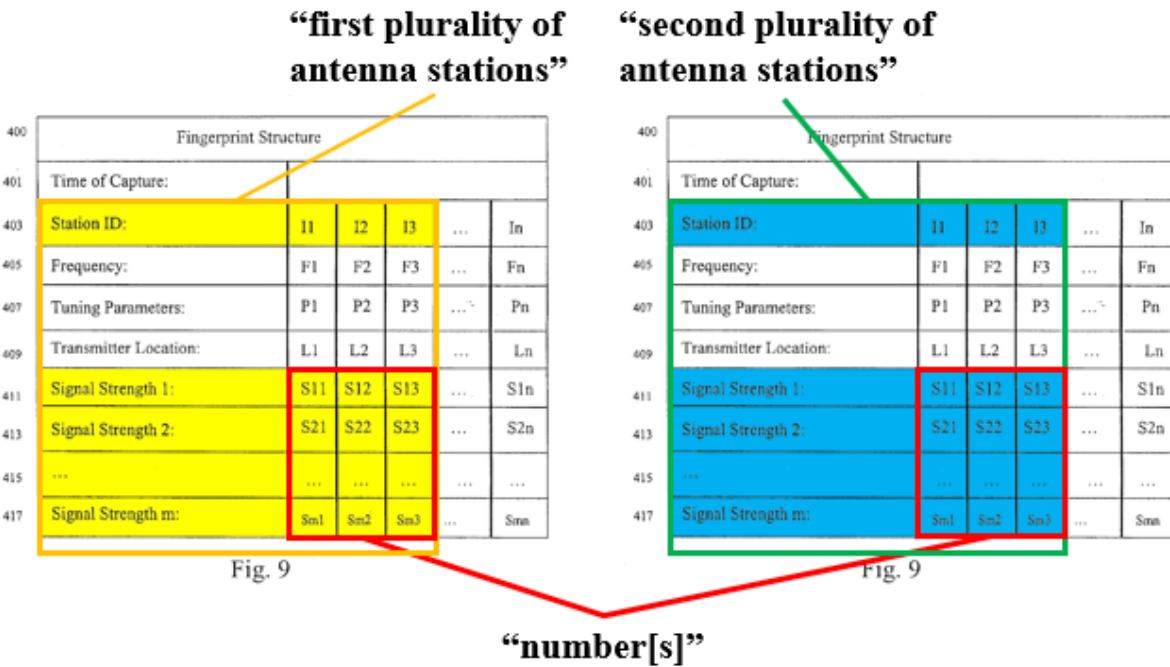
A POSITA would have leveraged their experience and skills, along with the teachings of *Spain-I/Hunzinger/Nanda* to, for example, program/configure the MU to implement the above-discussed signal strength number(s) comparison features like that claimed, which would have predictably resulted in conserved processing/memory resources by, *e.g.*, avoiding comparison operations (and other subsequent location determining operations) if no signal strengths for stored station stations matched (*e.g.*, such as when the MU has received signals from station(s) that was/were not previously within communication range to facilitate generation of a fingerprint in the database). (Ex-1002, ¶180.)

A POSITA would have considered known tradeoffs—balancing costs, processing resources, etc.—to ultimately design the modified *Spain-I* system/processes with such signal strength number(s) comparison features in a successful manner relevant for a given application. (Ex-1011, 1:50-2:20, 3:5-16, 3:34-40, 6:31-7:57, 8:27-13:35; Ex-1002, ¶180.) Given such modifications would have involved use of technologies/techniques within the capabilities/knowledge of a POSITA, a POSITA would have had a reasonable expectation of success in implementing such modifications. (Ex-1002, ¶181.)

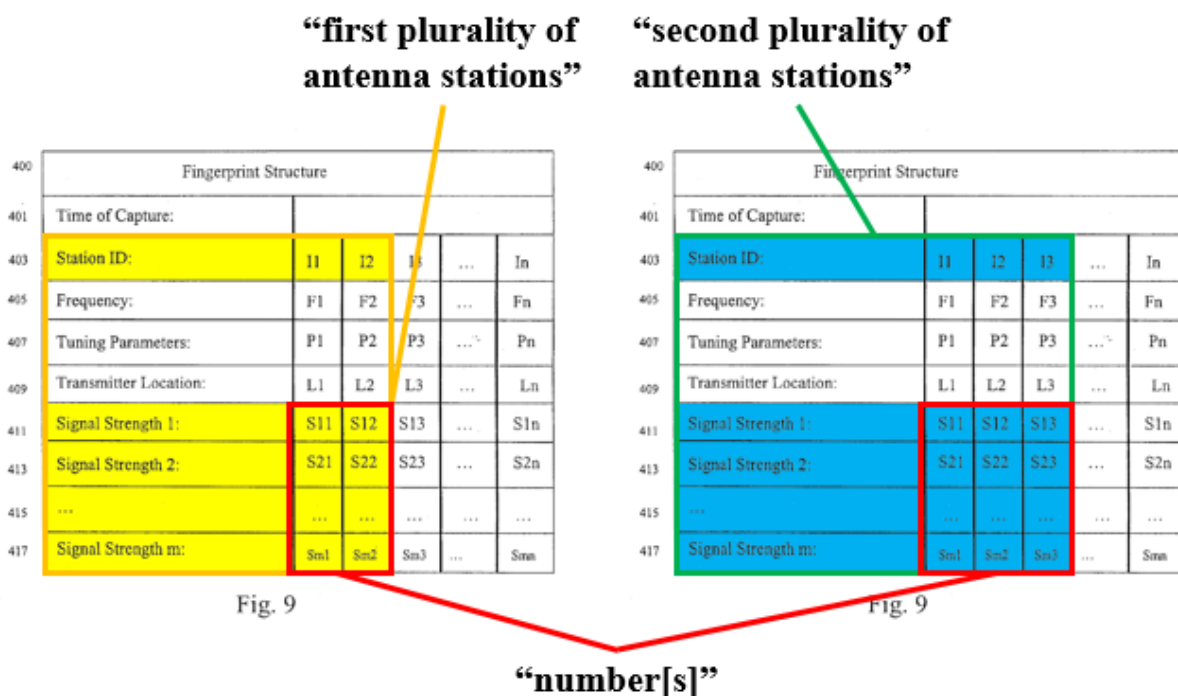
The reference fingerprints associated with such device-specific target locations stored in the database of the modified system (*supra*; §IX.A.1(b)(1)) would have similarly included “at least one number” based on corresponding signal strengths of each of a second plurality of communication signals from a second plurality of antenna stations (SS numbers for respective stations (ID1, ID2, etc.)). (Ex-1011, 12:11-14 (“-11 dBm”), FIGS. 9-10; *infra* §IX.A.1(b)(3); Ex-1002, ¶182.) Likewise, for reasons above, the modified *Spain-I* system/processes would have been configured such that in the comparison/determining operations, the MU identifies the second plurality of antenna stations as being within range of the same location as the device-specific target location, which signal strengths have been determined for the same location as the device-specific target location (*e.g.*, the antenna stations that were in communication range with the MU when sending

signals used to generate the signal strength-based fingerprints for the database were the same as those for monitored location fingerprint (*e.g.*, stations ID1, ID2, etc.)). (Ex-1002, ¶182.)

As shown below using Figure 9 of *Spain-I* as an example, the modified system/process would have been implemented such that numbers based on signal strength (SS values (yellow)) for a first plurality of signals received from a first plurality of antenna stations (station IDs (yellow)) was obtained when the MU is at a monitored location and numbers based on signal strength (SS values (blue)) for a second plurality of signals received from a second plurality of antenna stations (station IDs (blue)) was obtained when the MU is at the device-specific target location (§IX.A.1(b)(1)) for building the database. (§§IX.A.1(a)-(b); Ex-1011, 12:11-14 (“-11 dBm”), FIGS. 9-10; Ex-1002, ¶183.) Accordingly, where the “first” and “second” plurality of stations include the same stations (*e.g.*, three stations (ID1-ID3 (yellow)) and three stations (ID1-ID3 (blue))), the signal strength “numbers” for signals from those stations would be compared in a manner consistent with that discussed above. (Ex-1002, ¶183; Ex-1011, FIG. 9 (annotated below showing the same three stations as part of the “first” and “second” plurality of stations).)



The same is true where the modified *Spain-I* system involves a “first plurality” and a “second plurality” of stations that include respective sets of stations that overlap (but not completely). (Ex-1002, ¶183; Ex-1011, FIG. 9 (annotated below showing a first plurality of stations (ID1-ID2 (yellow)) that overlap with a second plurality of stations (ID1-ID3 (blue)), from which the signal strength numbers from ID1-ID2 in each set of stations would have been compared in accordance with the features discussed).)



The modified *Spain-I-Hunzinger-Nanda* system/processes would have included the MU automatically performing above features corresponding to limitation 1(b) for reasons similar to those discussed above (§IX.A.1(pre)-A.1(a)) and below (§IX.A.1(b)(5)). (Ex-1002, ¶184.)

(3) At Least One Number Features in Context of Prosecution History Statements

To the extent “at least one number based on...” is interpreted consistent with applicant’s representations during prosecution (*supra* §§VII-VIII (signal strength metric, formula, derivation)), it would have been obvious to configure the *Spain-I-Hunzinger-Nanda* system/processes to execute a formula/mathematical algorithm/function (or otherwise derive signal strength number(s) using a signal strength metric) to the signal strengths measured for the currently monitored location

fingerprint and for the device-specific target location(s) fingerprint to derive number(s) from which the above-discussed comparison is made to determine whether the MU is in proximity of the device-specific target location (*e.g.*, “am I there”). (Ex-1002, ¶185; §IX.A.1(b)(1).)

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/mathematical normalization to process and/or generate fingerprint signal strength value(s). (Ex-1011, 13:51-55; §IX.A.1(a)-(b); Ex-1002, ¶186.) *Nanda* further discloses generating a fingerprint based on calculated “average” strength values. (Ex-1006, FIG. 3B (324-326), 8:29-36, 7:19-28, 11:11-18, 6:19-25; Ex-1002, ¶186.) *Hunzinger* also teaches/suggests that “averaging multiple measurements...is well known in the art.” (Ex-1054, 6:17-19.) Such averaging techniques were applicable to the fingerprints for device-specific target location(s) and currently monitored locations. (Ex-1006, FIG. 3B, 8:29-36, 7:19-28, 11:11-18, 6:19-25; Ex-1002, ¶186.) Moreover, a POSITA was aware of techniques for performing calculations via a formula or similar mathematical operation to measured signal characteristic data. (Ex-1002, ¶187; *see, e.g.*, Ex-1029, 2:18-29 (averaging signal strength values to smooth fading); Ex-1030, ¶0087.)

Thus, *Nanda-Hunzinger*’s teachings in context of *Spain-I* and knowledge in the art would have motivated a POSITA to configure the modified *Spain-I*-

Hunzinger-Nanda system/process such that the MU performed processes that applied a formula or similar mathematical operation to refine/adjust collected signal characteristic data (*e.g.*, signal strengths) that compensates for, *e.g.*, outlier data (*e.g.*, extreme high/low readings/measurements) or adjusts for “environment variability” (Ex-1006, 7:19-28) to increase the accuracy or confidence in the location proximity determinations performed by the modified system/process. (Ex-1002, ¶188.) A POSITA would have appreciated that using such formula-based calculations to smooth or average the collected signal strengths as contemplated by *Spain-I* and *Nanda* would have been an obvious and predictable combination of known techniques/technologies that would have foreseeably resulted in the MU in the modified system/process using refined signal characteristic number(s) for the above-discussed comparison technique/features used to determine whether the MU current location is within proximity of a device-specific target location. (Ex-1002, ¶188.) *See KSR*, 550 U.S. at 416. Accordingly, a POSITA would have had a reasonable expectation of success in implementing such a known and understood feature. (Ex-1002, ¶188.)

The modified *Spain-I-Hunzinger-Nanda* system/processes would have included the MU automatically performing above features corresponding to limitation 1(b) for reasons similar to those discussed above (§IX.A.1(pre)-A.1(a)) and below (§IX.A.1(b)(5)). (Ex-1002, ¶189.) This would have included

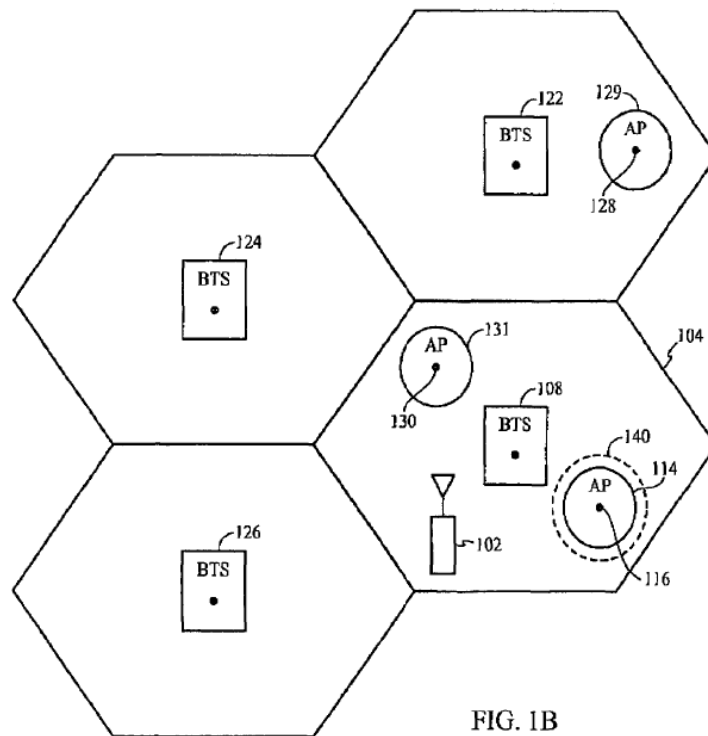
respectively comparing the calculated signal strength “number(s)” in each of the first plurality of signals with the calculated signal strength “number(s)” of each of a second plurality of signals like that discussed above (§IX.A.1(b)(2)) and claimed. (Ex-1002, ¶189.)

Thus, for reasons explained here and in §IX.A.1(b)(1)-(2), the *Spain-I-Hunzinger-Nanda* combination discloses/suggests the claimed “number based on...” features “whether” such features encompass “signal strength comparison *directly* or comparing any *calculation* based on signal strength” like that represented during prosecution. (Ex-1004, 42-43; *id.*, 127, 136, 140.) (Ex-1002, ¶190.)

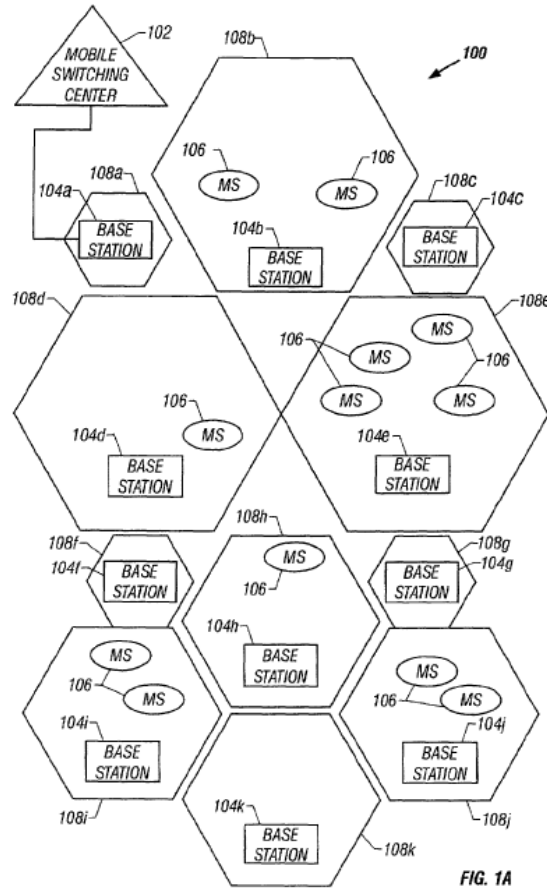
(4) Substantially Continuously Operating Fixed-Location Service Area Antenna Stations

To the extent PO argues or it is determined that *Spain-I* does not disclose (or by itself support obviousness of) *continuously operating fixed-location service area antenna stations* as claimed, it would have been obvious to implement them in light of *Nanda* and *Hunzinger*. (Ex-1002, ¶191.)

Upon considering *Nanda-Hunzinger* for reasons above (§§IX.A.1(b)(1)-(3)), a POSITA would have recognized that *Nanda* discloses the well-known use of “*fixed base transceiver station[s] (BTS)*” within cell coverage regions that “communicates with mobile users.” (Ex-1006, 1:49-53, 1:29-49; *see also id.*, FIG. 1B (below), 5:15-49.) (Ex-1002, ¶192.)



The BTSs and access points exemplify substantially continuously operating fixed-location service area antenna stations given they are in fixed locations and continuously provide signals that facilitate radio communications with mobile device 102 within a coverage area. (Ex-1002, ¶¶193-194.) *Hunzinger* also discloses use of known base stations (*Id.*, ¶195; Ex-1054, FIG. 1A (below), 1:21-54, 5:6-12, 7:9-14.)



A POSITA would have appreciated that implementing fixed antenna stations, similar to how those operate in the systems described by *Nanda* and *Hunzinger* (and known in the art), would have promoted use of *Spain-I*'s MU in known wireless network infrastructures, which involve wireless communications used to facilitate location-determination processes similar to that disclosed by *Hunzinger* and *Nanda*. (§IX.A.1(b); Ex-1002, ¶196.) Such disclosures/suggestions would have motivated a POSITA to configure/implement the MU in the above modified *Spain-I* system/process to work in a wireless network including such substantially continuously operating fixed antenna stations so that signals are substantially

continuously provided to the MU so that location determining operations like those discussed above in §§IX.A.1(pre)-IX.A.1(b)(1)-(3). (Ex-1002, ¶197.) Such modification would have involved known technologies/techniques and thus a POSITA would have had the skills/rationale and reasonable expectation of success to consider/configure/implement such features in the above-described modified *Spain-I* system/processes. (*Id.*, ¶197.)

(5) Automatically Receiving and Causing a Determination Features

The *Spain-I-Hunzinger-Nanda* system/process would have been configured such that the MU automatically performs processes like those recited in claim 1. (§IX.A.1(pre)-1(b)(4) and *infra* §IX.A.1(c); Ex-1002, ¶198.) In addition to those reasons, a POSITA would have found it obvious to configure the MU in the modified *Spain-I* system to perform the above features (limitations 1(a)-(b)) automatically in light of *Nanda-Hunzinger*. (Ex-1002, ¶198.)

As discussed, the *Spain-I-Hunzinger-Nanda* system/processes would have been configured such that the MU monitors/measures/collects/compares number(s) based on signal strengths. (Ex-1002, ¶199; §IX.A.1(pre)-1(b).) *Spain-I* also discloses constructing the database by capturing fingerprints at different times. (Ex-1011, 8:1-8, 6:62-65, 7:51-54.) Such teachings/suggestions in context of *Hunzinger-Nanda* would have motivated a POSITA to consider other ways to control when location-determining operations are performed. (Ex-1002, ¶199.)

For example, *Hunzinger* and *Nanda* demonstrate the known use of performing automatic, periodic monitoring and resulting location determining operations by a mobile device. For example, *Hunzinger* explains the “mobile may monitor the current location periodically....” (Ex-1054, 4:39-40.) Further, *Nanda* discloses that “when the mobile device 102 periodically awakes...it may also determine its location.” (Ex-1006, 5:41-49, 10:49-57.) *Nanda* also teaches that its location determining process entails taking a fingerprint, which encompasses features where fingerprints would have been “recorded automatically on a periodic basis.” (*Id.*, 8:30-42, 10:49-11:11, FIG. 3B; §IX.A.1(b); Ex-1002, ¶200.) Such teachings/suggestions were consistent with a POSITA’s understanding regarding automatic generation/recording of fingerprint information. (Ex-1002, ¶200; Ex-1029, 3:24-41; Ex-1019, ¶0214; Ex-1047, FIG. 7, 13:63-14:1.)

In light of such teachings/suggestions/knowledge, a POSITA would have been motivated and found obvious to configure the *Spain-I-Hunzinger-Nanda* system/process to program the MU to periodically (automatically) perform the “receiving...” (1(a)) and “causing a determination...” (1(b)) operations/features like that discussed above (§IX.A.1(pre)-1(b)(4)) and “initiating” features (1(c)) as discussed below (§IX.A.1(c)). (Ex-1002, ¶201.) A POSITA would have appreciated the benefits/advantages of implementing such features in context of the modified *Spain-I* system/processes, such as ensuring the MU location was monitored and

checked automatically at appropriate time intervals. (*Id.*) In some applications, such modifications would have enhanced/complimented the location-based action features employed in modified system by ensuring the MU's location was monitored at proper intervals to ensure appropriate actions/operations were executed upon determining the MU was at a device-specific target location, as discussed in §IX.A.1(b)(1). (*Id.*) In other configurations/applications, a POSITA would have recognized advantages in extending the time frame between iterative monitoring operations (and subsequent location determining/comparing operations) to conserve power/processing resources of the MU, depending on the application of the modified system. (*Id.*; Ex-1006, 5:41-49.) Indeed, in such configurations, a POSITA would have appreciated that such a conventional, periodic delay may be “determined in real time based on factors including...maximum estimated or average velocity of the mobile unit in network traffic” and other considerations for a given application/design. (Ex-1002, ¶201; Ex-1029, 3:24-41.) Such modifications would have resulted in the MU automatically performing (via program/circuitry, etc.) the described functions.

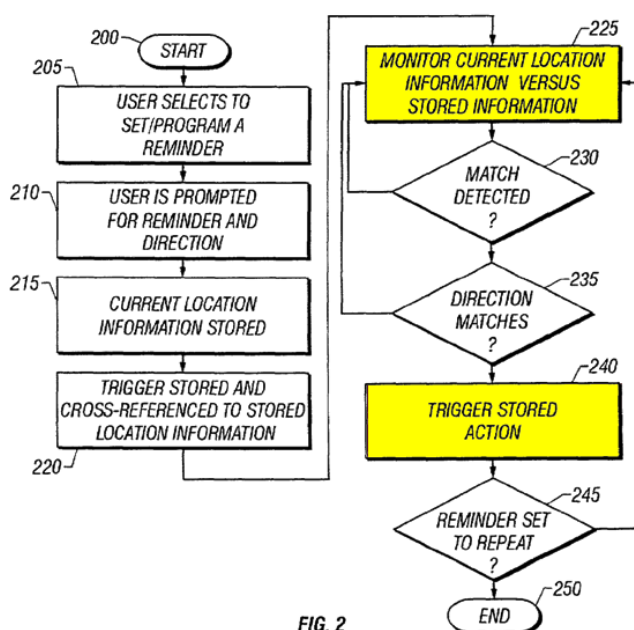
A POSITA would have had the skills/knowledge/rationale/capabilities to configure and implement such modifications, with a reasonable expectation of success, especially given they would have involved employing known and conventional techniques/technologies. (Ex-1002, ¶202; Ex-1006, 8:30-42, 10:49-

11:11; Ex-1029, 3:24-41; Ex-1019, ¶¶214; Ex-1047, FIG. 7, 13:63-14:1.) *See KSR*, 550 U.S. at 416.

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

The *Spain-I-Hunzinger-Nanda* combination discussed above discloses/suggests these limitations.¹² (Ex-1002, ¶¶203-204.) The analysis above in §IX.A.1(b)(1) explains how, in view of *Hunzinger*, the modified *Spain-I* system/processes would have been configured to initiate and perform a location-based action associated/assigned with the target location when the MU is determined to be in proximity of that location. (§IX.A.1(b)(1).) As explained, *Hunzinger* describes initiating location-based actions based on a determined/selected MU target location. (Ex-1002, ¶¶203; Ex-1054, Abstract, FIGS. 1A-4, 1:38-2:6, 2:10-44, 3:4-67, 4:1-5:22, FIG. 2 (below), 5:23-40.)

¹² *Blomqvist*'s additional teachings of such location-based action features (§IX.B) would have further motivated a POSITA to configure the modified *Spain-I* system in a manner that meets limitations 1(c)/15(c) (§IX.A.4) for similar reasons here. (Ex-1002, ¶¶203.)



Moreover, *Nanda* suggests configuring an MU to automatically look for a wireless LAN access point when the device-specific target location is detected. (§IX.A.1(b); Ex-1006, 2:16-59, 5:15-49, 11:20-32; Ex-1002, ¶203.)

Thus, in light of such teachings and the reasons noted above, a POSITA would have been motivated, and found obvious, to configure the *Spain-I-Hunzinger-Nanda* system/processes (§IX.A.1(pre)-1(b)) such that as a result of the determination that the MU is within proximity of the device-specific target location (§IX.A.1(b)), the MU automatically initiates a location-based action associated with the device-specific target location, like that taught/suggested by *Hunzinger*. (Ex-1002, ¶204.) A POSITA would have had the same skills, motivation, capabilities, knowledge, and expectation of success as that described above in §IX.A.1(b)(1) (regarding use of location-based actions assigned to user selected locations (device-specific target

locations)) and automatic features (§IX.A.1(b)(5)). (Ex-1002, ¶204; Ex-1054, FIGS. 2-3, 3:61-66, 4:60-5:22, 5:23-40.) Thus, modifying the *Spain-I-Hunzinger-Nanda* system/process to include such a location-based action like that claimed would have been obvious for substantially the same reasons, motivations, and analysis discussed above. (Ex-1002, ¶204; §IX.A.1(b).)

2. Claim 8

- a) **The method of claim 1 wherein the at least one number based on the signal strengths of each of the first plurality of communications signals from the first plurality of antenna stations is more than one number, each of which number is based on the signal strength of one of the first plurality of communications signals from only one of the first plurality of antenna stations.**

Spain-I-Hunzinger-Nanda discloses/suggests this limitation. (Ex-1002, ¶¶205-210; §IX.A.1.) As discussed, the *Spain-I-Hunzinger-Nanda* combination discloses/suggests comparing multiple numbers based signal strengths of respective signals received from respective stations (FIG. 9 (below) (yellow, blue, green)) for received signals and device-specific target locations. (§IX.A.1; Ex-1002, ¶205; Ex-1011, 4:42-63, 5:61-6:4; Ex-1006, FIG. 3B, 8:29-36.)

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

Nanda also discloses collecting signal strength numbers for respective stations, and comparing them for each respective station. (Ex-1006, FIG. 3B (below), 6:12-25, 8:29-9:15, 10:49-11:19; §IX.A.1(b); Ex-1002, ¶207.)

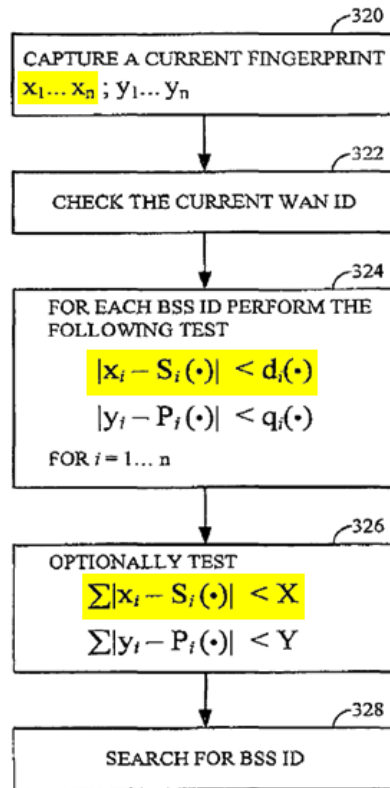


FIG. 3B

Accordingly, a POSITA would have found it obvious to configure the *Spain-I-Hunzinger-Nanda* system/process such that the location determining operations discussed above for limitation 1(b) included comparing multiple signal strengths based numbers (§IX.A.1(b)(2)-(3)), such that more than one number based on the signal strengths of each of the first signals from the first antenna stations is more than one number, where each of which number is based on the signal strength of one of the first signals from only one of the first antenna stations, as recited in claim 8. (§IX.A.1; Ex-1011, 4:42-63, 5:61-6:4; Ex-1006, FIG. 3B, 6:12-25, 8:29-9:15, 10:49-11:19; Ex-1002, ¶208.) The modified *Spain-I* system/process would have been

configured to perform comparison and determination operations as recited in claim 1, where multiple “number(s)” (§IX.A.1(b)(2)-(3)) based on responsive signal strengths were used for the monitored location (§IX.A.1(a)) and the target location to build the database and resulting comparison processes like that claimed (§IX.A.1(b)). (Ex-1002, ¶206.) Indeed, similar features would have been implemented in to the *Spain-I-Hunzinger-Nanda* system/process when determining if the MU is in proximity of the device-specific target location as discussed for limitation 1(b). (§IX.A.1(b); §§IX.A.1(pre)-IX.A.1(a); Ex-1011, 4:42-63, 5:61-6:4; Ex-1006, FIG. 3B, 6:12-25, 8:29-9:15, 10:49-11:19; Ex-1002, ¶208.)

A POSITA would have had similar reasons/knowledge/skills and expectation of success to configure/implement such features as recited in claim 8 as explained for claim 1. (§IX.A.1(b); Ex-1002, ¶209.) Thus, the modified *Spain-I-Hunzinger-Nanda* system/process discloses/suggests the “number(s)” features recited in limitation 1(b) in context of claim 8 for the same reasons explained above in §IX.A.1(b)(2) (*e.g.*, “number(s)” reflect the signal strength measurement values) and the reasons in §IX.A.1(b)(3) (*e.g.*, “number(s)” are a result of a formula (*e.g.*, calculated averages, etc.)). (Ex-1002, ¶209.)

Consequently, and in one non-limiting example using *Spain-I*’s FIG. 9 (above) as an example, the modified *Spain-I* system/process would have been configured such that the “at least one number...is more than one number...” (*e.g.*,

whether a signal strength value (§IX.A.1(b)(2)) or a value derived from signal strengths (§IX.A.1(b)(3))) as claimed. For example, a POSITA would have been motivated to configure the modified system in one application such that multiple signal strengths (S11-Sm1) for a signal received from station ID1 (yellow) were averaged/smoothed, etc. (*Nanda*) to generate a number (e.g., a signal strength metric) for only that antenna station (ID1), and also the signal strengths (S12-Sm2) for a signal received from a different station ID2 (blue) were averaged/smoothed, etc. to generate a second number (e.g., a second signal strength metric) (“more than one number”) for only that different antenna station (ID2), consistent with the teachings in *Spain-I* and *Nanda*. (Ex-1002, ¶210; *supra* here and §IX.A.1(b).) Such features would have been employed to the monitored MU location (§IX.A.1(a)) and the reference fingerprint and corresponding signals (§IX.A.1(b)). (Ex-1002, ¶210; *see also* Ex-1004, 81-82 (discussing similar features during prosecution).)

3. Claim 14

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

Spain-I in view of *Hunzinger* and *Nanda* discloses/suggests these limitations.

(Ex-1002, ¶¶211-215; §IX.A.1.)

As discussed (§IX.A.1(b)), the MU in the modified *Spain-I-Hunzinger-Nanda* system/processes would have been configured to automatically determine whether the MU monitored location is within proximity of the device specific target location in the fingerprint database. (§IX.A.1(b).) *Spain-I* also describes configurations where the fingerprint database may be stored at the location server remotely from the MU, and the remote server performs comparison operations to “search for the closest matching fingerprint.” (*Supra* §§IX.A.1, IX.A.4; Ex-1011, FIG. 3 (below), 6:9-30; Ex-1005, FIG. 3, 4:28-58; Ex-1009, 5:22-42; Ex-1010, 5:20-41.) (Ex-1002, ¶212.)

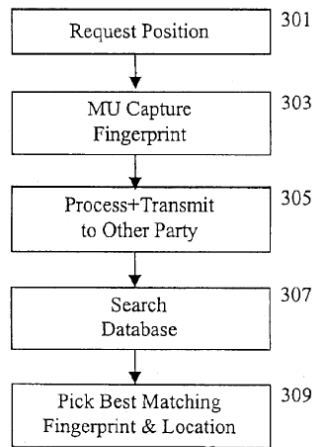


Fig. 3

Likewise, *Nanda* teaches/suggests similar features where a mobile device creates/sends fingerprint(s) to a remote database for location determination processes. (Ex-1006, 12:14-31.) (Ex-1002, ¶212.)

In light of such teachings/suggestions in context of the rationale/teachings/suggestions above (§IX.A.1(b)), a POSITA would have been motivated, and found obvious, to configure the above-modified *Spain-I* system/processes such that the MU generates/provides fingerprint information (number(s) based on signal strengths, etc.) when monitoring and building the database at device-specific target locations (§IX.A.1(b)(1)) to a remote database/server for storage and for subsequent location determining analysis, consistent with features contemplated by *Spain-I* and *Nanda*. (Ex-1002, ¶213.) The modifications would have predictably resulted in the system/processes automatically performing determining whether the MU is within proximity of the device-specific target location at a location remote (*e.g.*, server 30) from the MU, consistent with features disclosed/suggested by *Spain-I* and *Nanda*. (*Supra*; Ex-1002, ¶213.)

A POSITA would have appreciated the benefits/advantages of such modifications and thus been motivated to consider/implement such features, such as to reduce processing/storing requirements of the MU, in accordance with known fingerprint-based location applications. (Ex-1011, FIG. 3, 6:9-14, 6:15-30; Ex-1006, 12:14-31; Ex-1028, 16:50-64; Ex-1002, ¶214.) A POSITA would have had similar rationale, capabilities, expectation of success, and state-of-art knowledge, for considering such features from *Nanda* (and *Spain-I*) as explained above and also for

claim 1 (§IX.A.1(b)), that would have led to configuring the modified *Spain-I* system/processes as discussed and recited in claim 14. (Ex-1002, ¶214.)

Additionally, such a remote database/server configuration would have enabled the use of “fingerprints from multiple mobiles devices,” which would have allowed for a “much larger database of available access points than would be found in a single mobile device.” (Ex-1006, 12:14-31.) Such teachings would have motivated a POSITA to consider/configure the modified *Spain-I* system/processes such that the remote server receives signal strength data from multiple MUs to build a robust remote fingerprint database, consistent with features contemplated by *Spain-I-Nanda*. (*Supra*; Ex-1002, ¶215.) Such features would have allowed the modified *Spain-I* system/processes (§IX.A.1) to create/maintain a remote database of fingerprints using signal strength data from multiple MUs (Ex-1006, 12:26-29), thus beneficially expanding applications of the modified *Spain-I* system/processes. (Ex-1002, ¶215.) A POSITA would have had similar rationale for considering such features from *Nanda* (and *Spain-I*) as those explained above for claim 1 (§IX.A.1(b)), as well as had similar capabilities/expectation of success/state-of-art knowledge, that would have led to such alternate modifications. (Ex-1002, ¶215; *see also* Ex-1011, 3:34-40 (*Spain-I* contemplated designs that complemented/augmented existing technologies).)

4. Claim 15

[pre] A portable RF communications device comprising an antenna, a user interface, and a storage device, wherein the storage device contains computer program code that, when executed by the portable device, controls the portable device to cause the portable device to perform a location-determining method, the method comprising automatically:

To the extent limiting, *Spain-I* (including as modified discussed for claim 1 and below) discloses/suggests this limitation. (Ex-1002, ¶¶217-224.) In addition to the discussions/analysis for limitation 1(pre)-1(c) (§IX.A.1), *Spain-I* discloses that the MU comprises an antenna 102 used for RF communications in the network. (Ex-1011, 4:7-22, FIGS. 1, 2 (below).)

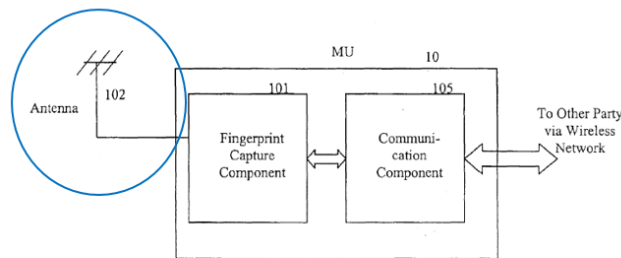


Fig. 2

Spain-I also suggests the MU is configured with software and a storage device for storing such code, which facilitates the execution of the location-determining processes described by *Spain-I*. (§IX.A.1(pre)-1(c); Ex-1011, 3:55-60 (MU is “equipped with circuitry and software that is capable of capture information...”), 5:20-22 (“software to capture the required signals and their parameters”), 5:55-6:7,

8:1-26 (database and decision/search algorithms), 14:23-37 (“algorithms” performed by MU), 15:19-25 (invention can be implemented with only “minor software changes in the mobile unit”).) (§IX.A.1(b)(1); Ex-1011, FIG. 3, 6:9-30.) (Ex-1002, ¶219.)

In addition to such suggested features, a POSITA would have understood there were various ways and reasons for configuring the MU (which would have included conventional mobile device features), and thus would have been motivated to consider such configurations when considering *Spain-I*. (Ex-1002, ¶220.) Upon doing so, a POSITA would have been persuaded by *Hunzinger*’s and *Nanda*’s teachings, and thus found it obvious to configure *Spain-I*’s MU to include a well-known or conventional user interface and a storage device containing computer program code that, when executed by the MU, controls the MU to cause it to perform a location-determining method with automatic steps like those recited in claim 15 and described previously. (Ex-1002, ¶220.)

Further, the analysis above in §IX.A.1(b)(1) demonstrates how/why it would have been obvious to configure the MU with a user interface in light of *Hunzinger-Nanda*. (§IX.A.1(b)(1); *see also* §IX.A.1(pre), IX.A.1(a)-(c).) The analysis for claim 1 also demonstrates how/why a POSITA would have been motivated, and found obvious to configure the modified *Spain-I-Hunzinger-Nanda* system/process with such a user interface to enable an MU user to choose device-specific target

location(s) and corresponding action(s) that are executed when the MU determines it is in proximity of a device-specific target location. (Ex-1054, FIGS. 1A-3, 4 (below), 1:38-2:6, 2:10-44, 3:4-67, 4:1-6:22, 7:9-22; Ex-1006, 7:20-45, 8:29-42.) (Ex-1002, ¶221.)

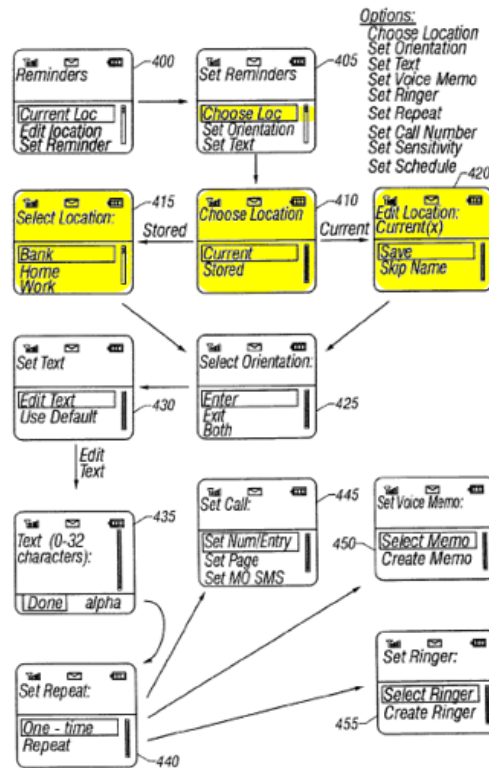


FIG. 4

Hunzinger and *Nanda* also disclose mobile device components, such as processor(s), memory, etc. and “programmed” features used by the device for performing the location-determining operations discussed therein. (Ex-1054, 2:29-38 (“programmed” conditions/reminder(s)), 2:58-60, 2:66-67, FIG. 4, 3:44-48 (FIG. 1B (below) showing mobile terminal with processor and memory where the

“processor 152 may be driven by a program stored in the memory 154”), 3:49-4:59, 5:23-6:22.) (Ex-1002, ¶222.)

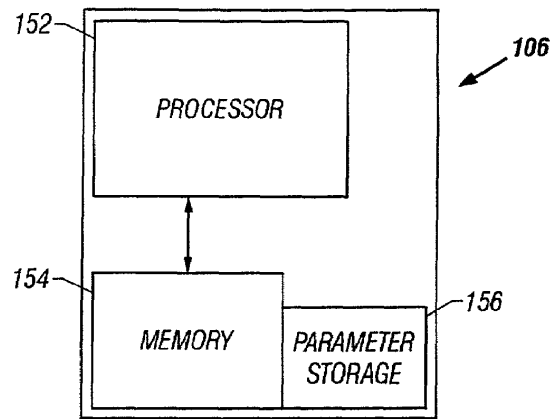


FIG. 1B

(Ex-1006, FIG. 2 (below), 7:29-8:13 (mobile device processor 208 can be implemented as “software” and “hardware” and supports “software applications,” and may be implemented based on “particular application”/design constraints, and configured to “execute an algorithm” (software applications)), 8:29-41 (processor 208 executes algorithm for creating and comparing fingerprints).)

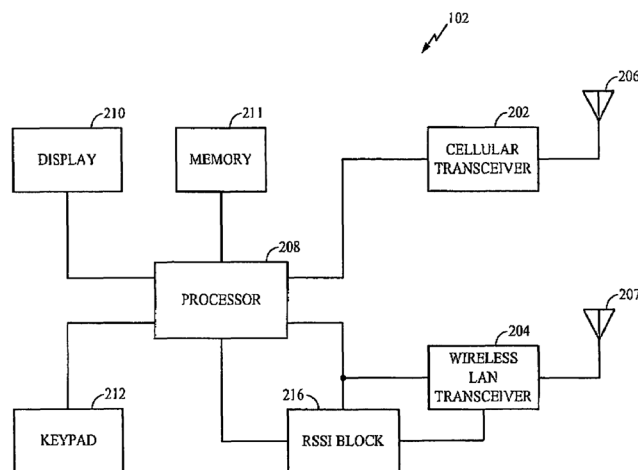


FIG. 2

Thus, in addition to the reasons discussed above for modifying *Spain-I* (§§IX.A.1(b)(1)-(5)), a POSITA would have been motivated, and found obvious, based on the additional teachings of *Hunzinger-Nanda* to configure the modified *Spain-I* system/process (discussed above for claim 1) to include a user interface, processor, and memory storing program code executed by the processor to perform the location determining processes discussed above for limitations 1(a)-1(c), which track those of limitations 15(a)-15(c). (§§IX.A.1, IX.A.4(a); Ex-1002, ¶223.) Indeed, the teachings/suggestions of *Hunzinger-Nanda* in context of those from *Spain-I* (including those regarding algorithms/software, etc., discussed above here) would have led a POSITA to configure the MU with features like those claimed in limitation 15(pre). (Ex-1002, ¶223.)

Such modifications would have involved use of technologies/techniques within the capabilities/knowledge of a POSITA (as demonstrated by *Spain-I-Hunzinger-Nanda* and state-of-art), that would have led a POSITA to have a reasonable expectation of success in implementing them. (Ex-1002, ¶224.) Thus, *Spain-I* (including as modified in view of *Hunzinger-Nanda*) discloses/suggests features recited in limitation 15(pre) for reasons above and those for claim limitation 1(pre) and 1(a)-1(c). (Ex-1002, ¶224; §IX.A.1(pre)-1(c).)

a) Limitations 15(a)-15(c)

Limitations 15(a)-15(c) track those of limitations 1(a)-1(c).¹³ Thus, *Spain-I* in view of *Hunzinger* and *Nanda* discloses/suggests limitations 15(a)-15(c) for the same reasons discussed for limitations 1(a)-1(c) and those above. (Ex-1002, ¶225; §§IX.A.1(1)-(c); IX.A.4 (pre).)

5. Claim 22

- a) **The portable RF communications device of claim 15 wherein the at least one number based on the signal strengths of each of the first plurality of communications signals from the first plurality of antenna stations is more than one number, each of which number is based on the signal strength of one of the first plurality of communications signals from only one of the first plurality of antenna stations.**

Spain-I in view of *Hunzinger* and *Nanda* discloses and/or suggests this limitation for the same reasons discussed for claims 8 (reciting same features) and 15. (Ex-1002, ¶226; §§IX.A.2, IX.A.4.)

6. Claim 28

- a) **The portable RF communications device of claim 15 wherein the determination of whether the portable RF communications device is within proximity of the device-specific target location is performed at a location remote from the portable RF communications device.**

¹³ As such, the text for limitations 15(a)-15(c) are not repeated below.

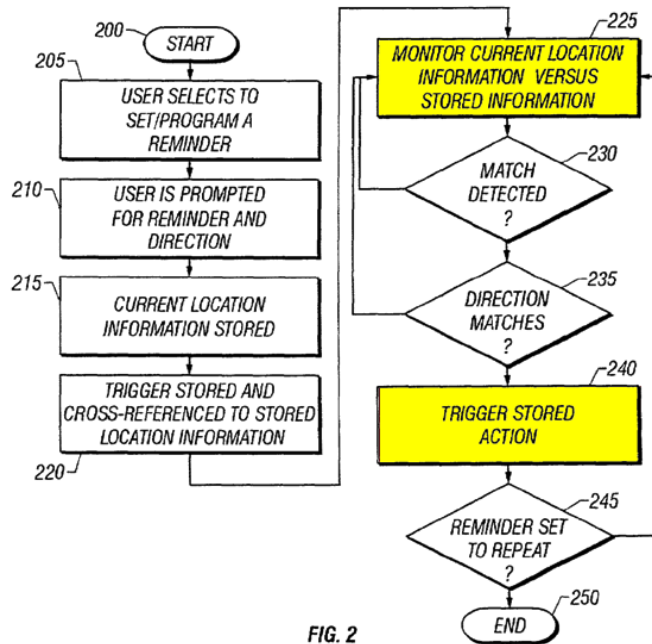
Spain-I in view of *Hunzinger* and *Nanda* discloses and/or suggests this limitation for the same reasons discussed above for claims 14 (reciting same features) and 15. (Ex-1002, ¶227; §§IX.A.3, IX.A.4.)

B. Ground 2: Claims 4 and 18 are obvious over *Spain-I* in view of *Hunzinger*, *Nanda*, and *Blomqvist*

1. Claim 4

- a) The method of claim 1 wherein the location-based action comprises launching a computer program application on the portable RF communications device.**

Spain-I in view of *Hunzinger*, *Nanda*, and *Blomqvist* discloses/suggests these limitations. (Ex-1002, ¶¶228-238; §IX.A.1.) As discussed, the *Spain-I-Hunzinger-Nanda* combination discloses/suggests determining if the MU is within proximity of a device-specific target location, as claimed. (§IX.A.1(b).) Moreover, as explained for limitation 1(c), the MU in the modified system/process would have been configured to take a location-based action when such proximity is determined, consistent with that taught by *Hunzinger*. (§IX.A.1(c); *see also* §IX.A.1(b); Ex-1054, FIGS. 2 (below), 3-4, 3:61-66, 4:60-5:40.) (Ex-1002, ¶228.)



In this location-based action context (*e.g.*, Ex-1011, 3:8-16), a POSITA would have had reasons to consider MU-based features that would leverage location determining/location-based action features discussed above, including use of known location-based software applications. (Ex-1002, ¶229.) In view of *Hunzinger* and *Blomqvist*, a POSITA would have been motivated and found obvious to configure the *Spain-I-Hunzinger-Nanda* system/process such the location-based action of the MU comprises launching a computer program application on the MU like that claimed. (Ex-1002, ¶229.)

Blomqvist discloses systems/processes relating to location services for mobile devices. (Ex-1033, Abstract, 1:43-2:16, 2:63-3:12; Ex-1002, ¶¶84-88, 230.) And like *Hunzinger*, *Blomqvist* describes then-conventional mobile device features of

automatically activating a location-based function (*e.g.*, reminder, picture/text/sound message, application, etc.) when the device is at or within vicinity of a specified location. (Ex-1033, FIG. 2, 1:14-39, 2:20-62, 3:44-64, 5:10-6:36, 8:52-62.) (Ex-1002, ¶230.)

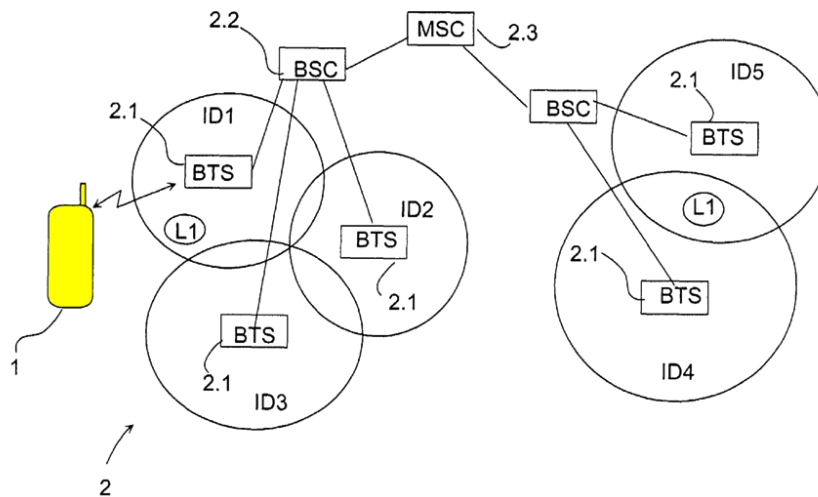


Fig. 2

(Ex-1033, FIG. 2.)

For example, *Blomqvist* discloses that when an “*application* has received information on the arrival in the determined location, the *application implements the determined function*, for example presents a message in text format.” (*Id.*, FIG. 1, 5:10-37.) Further, “it is obvious that [*Blomqvist*’s] invention can also be applied for activating and performing other functions” such as “*activat[ing] an application (program) installed in the device 1* at that stage when the device 1 is positioned close to a predetermined location” or “*starting a program*” on the device. (*Id.*, 3:44-50, 5:46-50, 8:52-62.) (Ex-1002, ¶¶231-235.)

Upon considering *Blomqvist* in context of the *Spain-I-Hunzinger-Nanda* system/processes discussed above for claim 1, a POSITA would have been motivated and found obvious to configure the MU in the *Spain-I-Hunzinger-Nanda* system/processes (§IX.A.1) to include location-based software program applications that are launched/executed when the device is within proximity of a device-specific target location, consistent with the teachings/guidance by *Blomqvist* and *Hunzinger*. (Ex-1002, ¶236.) Providing such applications on a mobile device would have been an obvious implementation of known features, given mobile devices at the time included various applications to assist the user with tasks, events, and the like based on location. (Ex-1002, ¶236, §V.) A POSITA would have been motivated to include similar features in the MU of the *Spain-I-Hunzinger-Nanda* system/processes in order to enhance user convenience and provide assistance with certain tasks (*e.g.*, reminders, to-do lists) or provide location-based applications when they/MU are determined to be at a given/chosen location, similar to the teachings/guidance offered by *Blomqvist-Hunzinger* and understood in the art. (Ex-1033, 1:43-58, 5:10-37; Ex-1054, Abstract; Ex-1002, ¶236; Ex-1072, ¶0065; Ex-1073, 19:48-54; Ex-1074, 5:33-57; Ex-1075, 1:12-29; Ex-1016, 2:33-47.) Indeed, a POSITA would have appreciated the benefits of such a modification as it would have enhanced/complemented the features offered by the MU in the *Spain-I-Hunzinger-Nanda* system/processes, including providing user-friendly service-based operations

that complemented the service-based features contemplated by *Spain-I*. (Ex-1002, ¶256; Ex-1011, 3:8-16.)

A POSITA would have had the skills, knowledge, and rationale to configure/implement the above modifications, with a reasonable expectation of success in achieving them, especially where they would have involved use of known cell phone location and application techniques/technologies. (Ex-1002, ¶238; Ex-1011, 15:19-29; Ex-1033, 8:33-62; Ex-1054, 3:49-5:22.) The collective teachings/suggestions of *Spain-I-Hunzinger-Nanda-Blomqvist* would have predictably led a POSITA to configure the location determining processes performed by the modified system to include launching a computer program application on the MU upon determining the MU is within proximity of the device-specific target location, consistent with features taught by *Blomqvist-Hunzinger* and understood in the art. (Ex-1002, ¶237; §IX.A.1(c).) See *KSR*, 550 U.S. at 416.

2. Claim 18

- a) **The portable RF communications device of claim 15 wherein the location-based action comprises launching a computer program application on the portable RF communications device.**

Spain-I in view of *Hunzinger*, *Nanda*, and *Blomqvist* discloses and/or suggests this limitation for the same reasons discussed for claims 4 and 15. (Ex-1002, ¶239; §§IX.B.1, IX.A.4.)

C. Ground 3: Claims 5 and 19 are obvious over *Spain-I* in view of *Hunzinger*, *Nanda*, and *Tiwari*

1. Claim 5

- a) The method of claim 1 wherein part (b) is performed depending on the rate of change of the user's location.**

Spain-I in view of *Hunzinger*, *Nanda*, and *Tiwari* discloses/suggests these limitations. (Ex-1002, ¶¶240-247; §IX.A.1.) As discussed, the *Spain-I-Hunzinger-Nanda* combination discloses/suggests the MU determining whether it is within proximity of a device-specific target location. (§IX.A.1(b).) *Spain-I* also describes features that consider dynamic location aspects of a mobile device. (Ex-1011, 8:27-10:27.) *Nanda* discloses features that consider a mobile device's movement. (Ex-1006, FIG. 1A, 3:58-4:4, 4:60-5:8.) *Hunzinger* also describes features where the mobile device may "monitor the current location periodically, whenever a significant change occurs." (Ex-1054, 4:39-42; *id.*, 3:29-34.) (Ex-1002, ¶240.)

Spain-I-Hunzinger-Nanda thus describe/suggest location features that depend on an MU's movement. Consistent with such teachings, a POSITA would have understood that location-determining processes can depend on various conditions and system goals, and thus would have had good reason to consider known ways for making such location determinations more efficient, accurate, etc. (§IX.A.1; Ex-1002, ¶241.) Upon doing so, a POSITA would have found it obvious to configure the above-modified system/process such that the determining features (as discussed

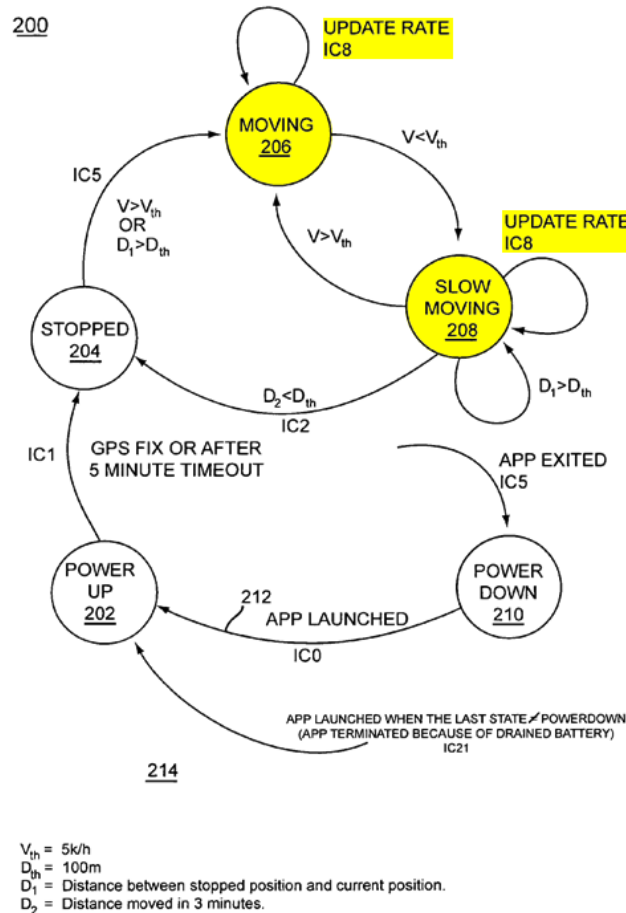
for limitation 1(b) above) were performed based on a rate of change of the MU/user's location in view of *Tiwari*. (Ex-1002, ¶241.)

Similar to *Spain-I*, *Tiwari* discloses systems/processes relating to location services for mobile devices, including where such a device may determine its location based on “cellular signals.” (Ex-1203, Abstract, FIG. 1, 2:39-67; Ex-1002, ¶¶76-79, 242.) *Tiwari* also discloses features that dynamically adjust how often a location determination is performed based on the rate of change of a user's location to save power. For example, *Tiwari* explains that a mobile device “usually has a limited amount of power available from its battery and frequent use of [a] location determination technique may quickly drain the battery.” (Ex-1203, 1:13-36.)

In order to make such location determining processes more efficient, *Tiwari* describes configurations where the device may monitor whether it is in a stopped state, moving state, or a slow moving state. (*Id.*, 3:30-4:50, FIG. 2.) For instance, “if mobile communication device 100 is in slow moving state 208,” *Tiwari* discloses that a **“location determination function may be performed at a lower frequency relative to when mobile communication device 100 is in moving state 206, because the location of mobile communication device 100 is changing at a slower rate.”** (Ex-1203, 4:15-24, 4:34-5:14.)

“By monitoring the state of the device (*e.g.*, stopped, slow moving, or moving),” *Tiwari* discloses that “it can be determined how often a location

determination should be performed.” (Ex-1203, 4:25-50.) In this fashion, “battery power may be conserved by preventing unnecessary location determinations, such as when mobile communication device 100 is stopped or moving slowly.” (*Id.*, 6:48-61, FIG. 2 (below); Ex-1002, ¶244.)



Such features parallel those described in the '811 patent and by applicant during prosecution. (Ex-1001, 19:20-34; Ex-1004, 151-152 (“[L]imitation highlights...power-saving benefits of the claimed invention by allowing the phone to perform potentially fewer comparisons based on the user’s movement. For

example, if the user is moving quickly, the comparison might be skipped.”.) (Ex-1002, ¶¶242-244.)

Accordingly, like *Spain-I-Hunzinger-Nanda*, *Tiwari* discloses technologies/techniques in the same technical field as the ’811 patent and that were reasonably pertinent to particular problem(s) addressed by the ’811 patent (and a POSITA). (Ex-1001, Abstract, 1:23-10:40; §IX.A.1; Ex-1203, FIG. 2, 1:13-36, 3:30-4:50.) Thus, a POSITA had reasons to consider *Tiwari* in context of *Spain-I-Hunzinger-Nanda*. (Ex-1002, ¶245.)

In light of *Tiwari*, a POSITA would have been motivated and found obvious to configure the MU in the modified *Spain-I* system/processes to perform the above-discussed proximity determination process (§IX.A.1(b)) depending on the rate of change of the user’s location. (Ex-1002, ¶246.) A POSITA would have appreciated the benefits of such a modification (e.g., programming/configuring the MU to monitor/detect when the MU has stopped, moving slowly etc. to control location determining operations—like that taught by *Tiwari*), such as improving power efficiencies of the MU, reducing battery drain, and improving location determination accuracy, similar to the teachings/guidance offered by *Tiwari* and understood in the art. (Ex-1203, 4:25-50, 6:48-61, 2:56-67; Ex-1204, ¶¶0026-27; Ex-1002, ¶246.) Such advantages would have led a POSITA to consider and implement similar features that predictably resulted in the MU perform determining operations

(§IX.A.1(b)) based on a rate of change of the MU/user's location, like that recited in claim 5. (Ex-1002, ¶246.)

A POSITA would have had the skills, knowledge, and rationale to configure/implement the above modifications, with a reasonable expectation of success in achieving them, especially since the modifications would have involved known techniques/technologies—consistent with that described by *Spain-I* and *Tiwari*. (Ex-1011, 15:19-29; Ex-1203, 6:10-24). (Ex-1002, ¶247.) *See KSR*, 550 U.S. at 416.

2. Claim 19

- a) The portable RF communications device of claim 15 wherein part (b) is performed depending on the rate of change of the user's location.**

Spain-I in view of *Nanda* and *Tiwari* discloses and/or suggests this limitation for the same reasons discussed for claims 5 and 15. (Ex-1002, ¶248; §§IX.A.4, IX.C.1.)

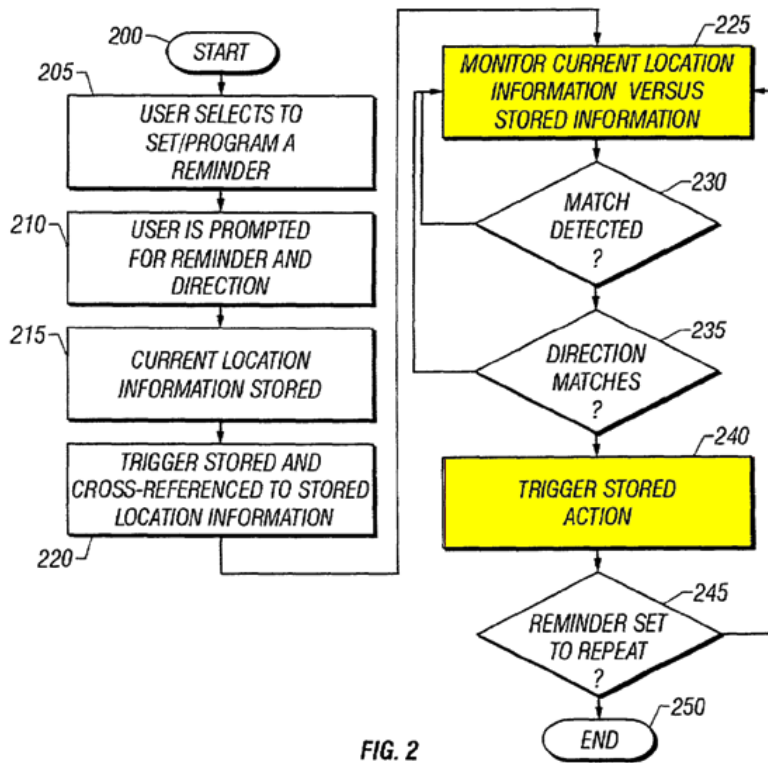
D. Ground 4: Claim 24 is obvious over *Spain-I* in view of *Hunzinger*, *Nanda*, and *Othmer*

1. Claim 24

- a) The portable RF communications device of claim 15 wherein the device-specific target location is a shop and the location-based action relates to a coupon redeemable at the shop.**

Spain-I in view of *Hunzinger*, *Nanda*, and *Othmer* discloses/suggests these limitations. (Ex-1002, ¶¶249-257; §IX.A.4.) As discussed, the *Spain-I-Hunzinger-*

Nanda combination discloses/suggests determining if the MU is within proximity of a device-specific target location. (§§IX.A.4(b)-(c).) Furthermore, the MU in the modified system/process would have been configured to take a location-based action when such proximity is determined, consistent with that taught by *Hunzinger* and that discussed for limitation 1(c). (§IX.A.1(c); *see also* §IX.A.1(b); Ex-1054, FIGS. 2 (below), 3-4, 3:61-66, 4:60-5:40.) And *Spain-I* does not limit the type of locations that the MU may be positioned or monitored. (Ex-1011; Ex-1002, ¶249.) *Hunzinger* discloses various applications, including where the device-specific target location may be a grocery store (“**shop**”). (§IX.A.1(b); Ex-1054, 2:11-19 (actions triggered based on locations, such as when “pass[ing] a grocery store on the way to work”), FIGS. 2 (below), 3, 3:61-66, 4:60-5:40; Ex-1002, ¶249; §§IX.A.1(c), IX.A.4(a).)



(Ex-1054, FIG. 2 (annotated).)

Thus, the *Spain-I-Hunzinger-Nanda* combination discloses/suggests triggering user selectable location-based actions based on determined locations (§IX.A.1(c)). When considering such location-based applications (e.g., store actions), a POSITA would have been aware of (and appreciated the benefits of) location-based promotions/advertisements in wireless network environments. (See, e.g., Ex-1002, ¶250; Ex-1205, 1:13-26 (“now possible for merchants to deliver advertisements to portable devices that happen to be located in a particular geographic area”); Ex-1206, Abstract (location-based advertising delivery), ¶¶0005, 0050; Ex-1207, 2:11-29 (sending “coupon” upon knowing device “is operating in a

particular location”).) Thus, and as an advantageous application of such well-known technologies, a POSITA would have been motivated and found obvious to implement such features in light of *Othmer*, including where the location-based action relates to a coupon redeemable at shop like that claimed. (Ex-1002, ¶250.)

Similar to *Spain-I-Hunzinger-Nanda*, *Othmer* discloses systems/processes relating to location services for mobile devices, where a device can detect its location based on cell site signals or other well understood methods. (Ex-1208, Abstract, FIG. 1 (below), 1:16-22; 2:37-51, 3:8-32, 3:32-45 (“Determining a mobile device’s location is well understood...and can be done through a number of means....”), 7:54-8:15; Ex-1002, ¶¶80-83, 251.)

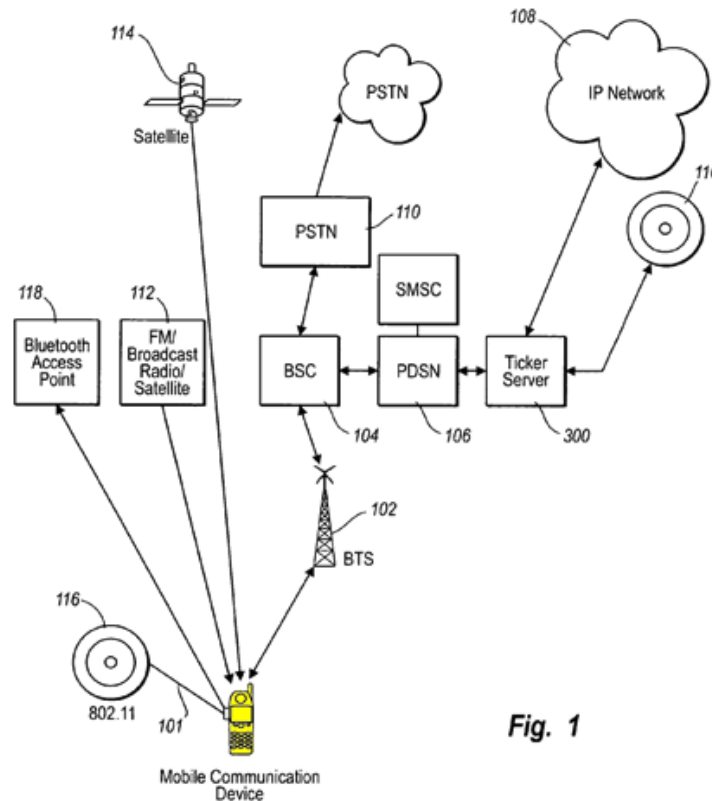
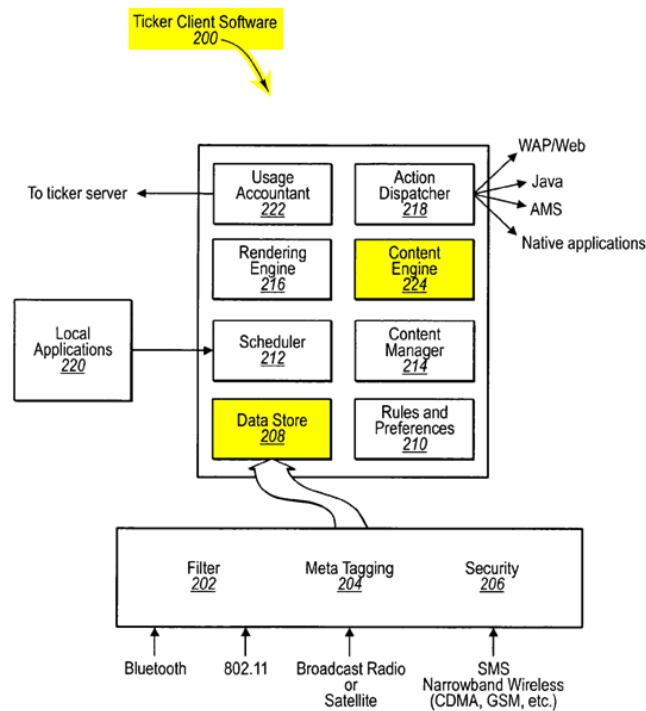


Fig. 1

Additionally, *Othmer* discloses techniques to display coupons on mobile devices based on location, such as “promotional coupon[s]” on a “ticker”/scrolling information display of a user’s mobile phone. (Ex-1208, 1:24-65, 2:36-51, 3:46-63, 8:19-44, FIGS. 1-2; Ex-1002, ¶252.) Such a “*promotional coupon*” is associated with metadata that includes a proximity rule stating that *if a user arrives at a location within a specified distance of a Peet’s retail store*, the information is to be *displayed on the ticker of the user’s device.*” (Ex-1208, 3:46-63.) (See also *id.*, 10:15-34, FIG. 2 (below), 2:36-65, 4:21-35, 8:29-9:21.)



When mobile device determines that its current location (retail store) is a match for stored content (coupon), it is displayed to the user. (*Id.*, 14:50-15:26, 2:36-65, 3:46-63, 8:29-9:21, 10:15-34.) Thus, a promotional coupon for Peet’s retail store, etc.

“may be...stored on the device pending display when the user reaches the location specified in the proximity rule.” (*Id.*, 3:46-63.) (Ex-1002, ¶¶252-253.)

Othmer thus discloses technologies/techniques that were reasonably pertinent to particular problem(s) addressed by the '811 patent (and a POSITA) and in the same technical field as the '811 patent. (Ex-1001, Abstract, 1:23-10:40; §IX.A.1; Ex-1208, 3:46-4:21, 10:15-34, 14:50-15:26, FIG. 5.) (Ex-1002, ¶254.) A POSITA would have thus considered/consulted *Othmer* in context of *Spain-I-Hunzinger-Nanda*. (*Id.*)

Upon doing so, a POSITA would have been motivated and found obvious to configure the MU in the modified *Spain-I-Hunzinger-Nanda* system/processes such that it performed the above-location monitoring/determining features (§IX.A.1(a)-(c)) in applications where the device-specific target location was a retail shop and the location-based action (§IX.A.1(c)) related to providing/displaying/etc. a coupon that the MU user could redeem at the retail shop. (Ex-1002, ¶255.) A POSITA would have appreciated such modifications would have predictably resulted in the *Spain-I-Hunzinger-Nanda* system/process in advantageously providing/implementing known business/marketing/retail concepts/features known in the art, like that demonstrated by *Othmer*. (*Id.*) Thus, providing such coupons to the MU when it is close to/at a store (device-specific target location like that discussed previously) would have been an obvious implementation of known

features, given mobile devices were being designed to perform a variety of actions based on location, as described by *Hunzinger* and *Othmer*. (*Id.*)

A POSITA would have appreciated such a modification would have also increased MU user convenience (*e.g.*, receiving coupons for desired retail stores), improved advertisement/business reach (*e.g.*, “maximize effectiveness of advertising campaigns”) and achieved other desired benefits associated with providing promotional products (coupons) based on the MU/user location, as taught/suggested by *Othmer* and understood in the art. (Ex-1002, ¶256; Ex-1208, 1:60-2:32, 12:33-45; Ex-1205, 1:34-38, Ex-1212, 1:60-2:32.) Indeed, providing location-based coupons as discussed above would have complemented the service-based features contemplated by *Spain-I*. (Ex-1002, ¶256; Ex-1011, 3:8-16.)

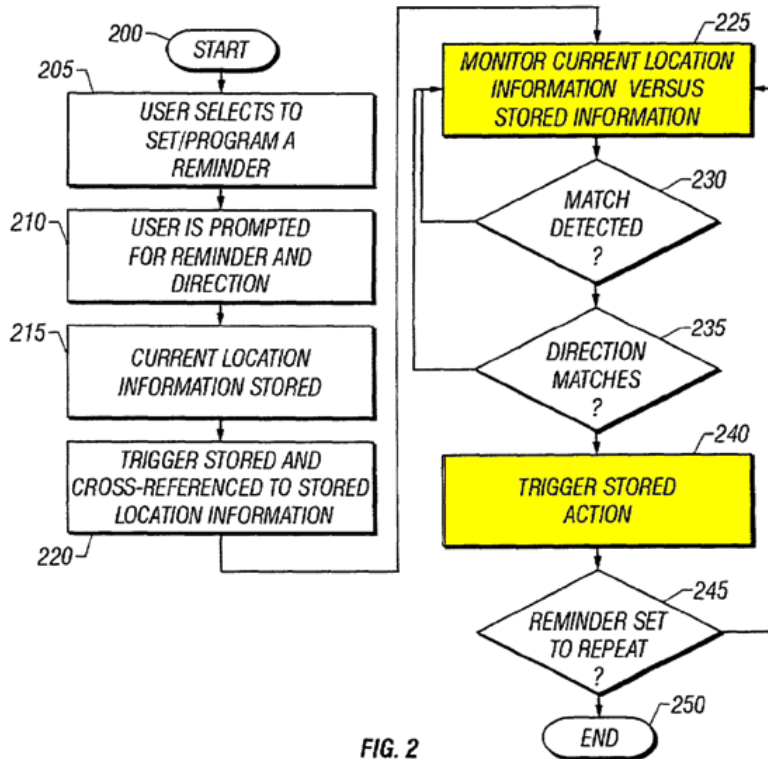
A POSITA would have had the skills/knowledge/rationale to configure/implement the above modifications, with a reasonable expectation of success in achieving them, especially given it would have involved use of known coupon/advertisement techniques/technologies like those described by *Spain-I-Hunzinger-Othmer*. (Ex-1002, ¶257; Ex-1011, 15:19-29; Ex-1208, 14:50-15:26.) Thus, the resulting *Spain-I-Hunzinger-Nanda-Othmer* system/processes would have predictably included features/applications where the device-specific target location was a shop and the location-based action relates to a coupon redeemable at the shop, as claimed. (Ex-1002, ¶257.) *See KSR*, 550 U.S. at 416.

E. Ground 5: Claim 25 is obvious over *Spain-I* in view of *Hunzinger*, *Nanda*, and *Bates*

1. Claim 25

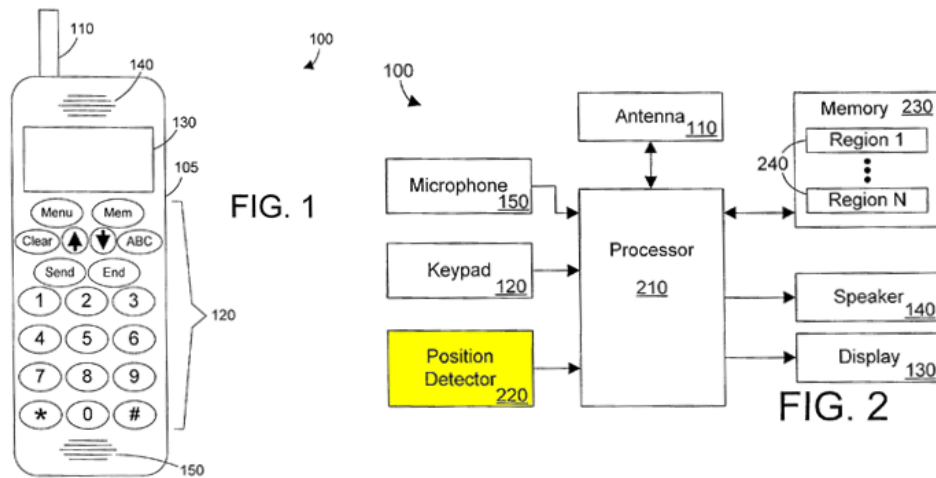
- a) The portable RF communications device of claim 15 wherein the location-based action causes incoming calls on the portable RF communications device to be directed to a landline telephone within proximity of the device-specific target location.**

Spain-I in view of *Hunzinger*, *Nanda*, and *Bates* discloses/suggests these limitations. (Ex-1002, ¶¶258-268; §IX.A.4.) As discussed, the *Spain-I-Hunzinger-Nanda* combination discloses/suggests determining if the MU is within proximity of a device-specific target location. (§IX.A.4(a).) Also explained, modified system/processes would have configured the MU to initiate/perform a location-based action when such proximity was determined. (§§IX.A.1(c), IX.A.4(a); Ex-1054, FIG. 2 (below), 3, 3:61-66, 5:29-34, 4:60-5:40.)

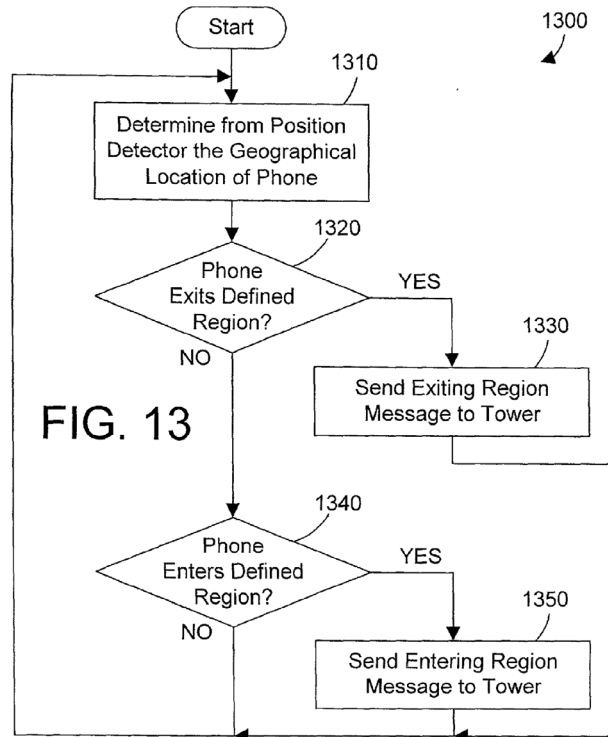


Thus, the *Spain-I-Hunzinger-Nanda* combination discloses/suggests triggering user selectable location-based actions based location (§IX.A.1(c)). When considering such location-based applications, a POSITA would have been aware of (and appreciated the benefits of) location-based call-forwarding actions. (Ex-1002, ¶259; Ex-1209; *id.*, Abstract; Ex-1210; *id.*, Title; Ex-1211; *id.*, Abstract.) Thus, and as an advantageous application of such technologies, a POSITA would have been motivated and found obvious to implement such features in light of *Bates*, including where the location-based action causes incoming calls on the portable RF communications device to be directed to a landline telephone within proximity of the device-specific target location. (Ex-1002, ¶259.)

Similar to *Spain-I-Hunzinger-Nanda*, *Bates* discloses systems/processes relating to location services for mobile devices. (Ex-1212, Abstract, FIGS. 1-2, 13, ¶¶0003-0007; Ex-1002, ¶¶94-99, 260.) Specifically, *Bates* discloses features where a mobile device may determine its location via a position detector 220. (Ex-1212, FIGS. 1-2 (below), ¶0034.)



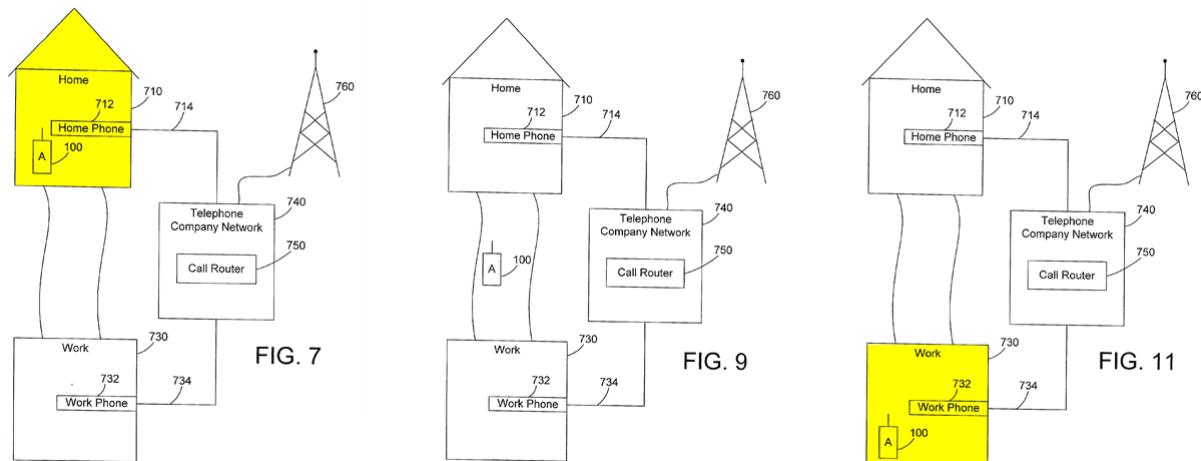
Bates noted that “[m]odern life” made it “*desirable for a call to the portable phone to ring the user’s home phone instead*, thereby avoiding wireless charges during the call.” (*Id.*, ¶¶0005-0006.) To realize such a desired configuration, *Bates* describes features where a mobile device is configured determine its location and send information to a remote location as it enters/exits defined locations/regions. (*Id.*, FIG. 13 (below), ¶¶0022, 0048.) (Ex-1002, ¶¶261-262.)



Upon receiving location information from a mobile device, a remote location (call tower) determines how to forward phone calls based on the received location information and maintained phone parameters. (Ex-1212, ¶0049.) “For example, when the portable phone 100 is at home 710, the call router 750 could **route calls to the portable phone 100 to the home phone 712 without the portable phone 100 ringing, ...**” etc. (*Id.*, ¶0044; *id.*, ¶0043 (“home phone 712 that is a land-based phone...as is known in the art”).) “Other variations” (*e.g.*, forwarding portable phone calls to a “land-based” work phone) were also envisioned and could be “easily programmed.” (*Id.*, ¶¶0042-0044, FIGS. 7, 9, 11; Ex-1002, ¶263.)

Bates further discloses/suggests features where the landline telephone would be within proximity of a device-specific target location because portable phone 100

is close to the location of the landline (e.g., home 710 or work 730) when call forwarding is activated in order to allow the user to pick up calls on the local landline. (Ex-1212, FIGS. 7, 9, 13, ¶¶0042 (“ring a single phone...when a portable phone is within or outside of a defined region”), ¶¶0043-0044; *id.*, FIGS. 4-6, 13, ¶¶0036-0042.) Figures 7, 9, and 11 (below) illustrate such configurations where a portable phone may be within proximity of a device-specific target location and forward calls to a home/work landline in the same location. (*Id.*, FIGS. 7, 9, 13, ¶¶0042-44.) (Ex-1002, ¶264.)



Accordingly, *Bates* discloses technologies/techniques that were reasonably pertinent to problem(s) addressed by the '811 patent (and a POSITA) and is in the same technical field as the '811 patent. (Ex-1001, Abstract, 1:23-10:40; §IX.A.1; Ex-1212, FIGS. 7-13, ¶¶0044-47.) (Ex-1002, ¶265.) A POSITA would have thus consulted/considered *Bates* in context of *Spain-I-Hunzinger-Nanda*. (Ex-1002, ¶265.)

Upon doing so, a POSITA would have been motivated and found obvious to configure the MU in the modified *Spain-I-Hunzinger-Nanda* system/processes such that a location-based action (§IX.A.1(c); IX.A.4) caused incoming calls on the MU to be directed to a landline telephone within proximity of the device-specific target location like that claimed. (Ex-1002, ¶266.) A POSITA would have appreciated such modifications would have predictably resulted in the *Spain-I-Hunzinger-Nanda* system/process in advantageously providing/implementing call forwarding features known in the art, like that demonstrated by *Bates*. Thus, implementing features like those suggested by *Bates* would have been an obvious application of known features, as mobile devices were being designed to perform a variety of actions based on location. (Ex-1002, ¶266, §V.)

A POSITA would have been motivated to include such features in the *Spain-I-Hunzinger-Nanda* system given the desire to forward mobile calls to landlines based on position, increase user convenience, better realize the power of using portable phones, make the telephone system much more user-friendly, save wireless call costs, conserve mobile device power, and achieve other desired benefits, similar to the teachings/guidance offered by *Bates* and understood in the art. (Ex-1212, ¶¶0006-0007, 0057; Ex-1002, ¶268; Ex-1209, ¶¶0009-13; Ex-1210, 1:55-64; Ex-1211, 2:23-34.) (Ex-1002, ¶267.) Such a modification would have enhanced/complemented the features offered by the MU in the *Spain-I-Hunzinger-*

Nanda system/processes and related service-based features contemplated by *Spain-I*. (Ex-1002, ¶267; Ex-1011, 3:8-16.)

A POSITA would have had the skills, knowledge, and rationale to configure/implement the above modifications, with a reasonable expectation of success in achieving them, especially where they would have involved use of known location-based function techniques/technologies (Ex-1002, ¶268, §V; Ex-1011, 15:19-29; Ex-1212, ¶0057, FIG. 13.) The collective teachings/suggestions of *Spain-I-Hunzinger-Nanda-Bates* would have predictably led a POSITA to configure the MU to forward incoming calls on the portable RF communications device to a landline telephone within proximity of a target location consistent with features taught by *Bates*. (Ex-1002, ¶268.) *See KSR*, 550 U.S. at 416.

X. DISCRETIONARY DENIAL IS NOT APPROPRIATE

Discretionary denial under §325(d) is not appropriate here given this petition does not present the same or substantially the same prior art or arguments previously presented to the Office during prosecution. (Ex-1004; Ex-1001, Cover.) *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential). Moreover, there are material differences between the art/arguments here with those during prosecution (Ex-1004, 93-124, 205-219, 276-292), including features believed to be missing (*id.*, 126-130, 135-155, 193-201, 267-270, 440). (*Supra* §IX.)¹⁴ *Becton, Dickinson & Co., v. Braun Melsungen AG*, IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017) (precedential as to § III.C.5, first paragraph). And even if PO argues to the contrary, the Office erred in a material manner by allowing the claims despite such features being known. *Advanced Bionics*, Paper 6 at 10-11; *Becton, Dickinson*, Paper 8. (§IX.)

The *Fintiv* factors do not justify denying institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (precedential).

¹⁴ Petitioner reserves the right to respond to any discretionary denial arguments that PO may later raise to avoid institution.

The **first factor** (stay) is neutral because Samsung has not yet moved for a stay. *See Hulu LLC v. SITO Mobile R&D IP, LLC et al.*, IPR2021-00298, Paper 11 at 10-11 (P.T.A.B. May 19, 2021).

The **second factor** (proximity) is weighs in favor of institution. The median time from filing to trial in the Eastern District of Texas last year was 24.5 months (Ex-1023, 35),¹⁵ where the court has scheduled jury selection for February 10, 2025 (Ex-1024, 1.) With this petition filed in early November 2023, a FWD may be expected by May/June 2025, not long after the trial date (assuming no delays in the EDTX schedule). (Ex-1022, 9.)

Moreover, the Board has relied on various justifications, such as diligence, a stipulation, minimal investment in litigation, and strong merits of invalidity, which are present here. *Verizon Business Network Services, Inc. v. Huawei Techs. Co.*, IPR2020-01141, Paper 12 (Jan. 14, 2021). This petition was diligently filed in advance of the one-year bar date and just over one month after PO served its infringement contentions. (Exs-1021; 1024, 5; 1025.) Fact discovery is not anticipated to close until September 2024 and expert discovery has not begun (Ex-1024, 3), and the *Markman* hearing will occur August 1, 2024 (*id.*).

¹⁵ 2023 statistics (16.7 mos.) is only to June 30, 2023.

The **third factor** (investment) also weighs against denial. The district court case is in early stages—claim construction does not begin until mid-2024 (*see second factor*; Ex-1024, 3-4) and there have been no substantive orders.

The **fourth factor** (overlap) also weighs against denial. Petitioner hereby stipulates that, if IPR is instituted, Petitioner will not pursue the IPR grounds in the district court litigation. Thus, “[i]nstituting trial here serves overall system efficiency and integrity goals by not duplicating efforts and by resolving materially different patentability issues.” *Apple, Inc. v. SEVEN Networks, LLC*, IPR2020-00156, Paper 10 at 19 (P.T.A.B. June 15, 2020); *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 12 (P.T.A.B. June 16, 2020). Moreover, this petition challenges claims 8 and 22, which are not asserted against Petitioner. So the Texas Litigation will not resolve all disputed validity issues. (§IX.A.2, 5.)

Petitioner and PO are the same parties as in district court (**fifth factor**), but based on a “holistic view,” the factors favor institution. *Samsung Elecs. Co. Ltd. v. Dynamics Inc.*, IPR2020-00505, Paper 11 at 15 (P.T.A.B. Aug. 12, 2020). Likewise, the compelling merits presented in this petition outweigh any factors that may be determined to lean against institution (**sixth factor**). *See Commscope Tech. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 at 4-5 (P.T.A.B. Feb. 27, 2023) (precedential). Especially where the grounds demonstrate/disclose the very features

the Office believed were missing during prosecution. (§§VII, IX.A.1(b).). Moreover, this petition is the *sole* challenge to the claims before the Board—a “crucial fact” favoring institution. *Google LLC v. Uniloc 2017 LLC*, IPR2020-00115, Paper 10 at 6 (May 12, 2020).

XI. CONCLUSION

Accordingly, Petitioner requests institution of IPR for the challenged claims.

Respectfully submitted,

Dated: November 9, 2023

By: /Joseph E. Palys/
Joseph E. Palys (Reg. No. 46,508)
Counsel for Petitioner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing petition for *Inter Partes* Review of U.S. Patent No. 10,341,811 contains, as measured by the word-processing system used to prepare this paper, 13,976 words. This word count does not include the items excluded by 37 C.F.R. § 42.24 as not counting towards the word limit.

Respectfully submitted,

Dated: November 9, 2023

By: /Joseph E. Palys/
Joseph E. Palys (Reg. No. 46,508)
Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on November 9, 2023, I caused a true and correct copy of the foregoing petition for *Inter Partes* Review of U.S. Patent No. 10,341,811 and supporting exhibits to be served via express mail on the Patent Owner at the following correspondence address of record as listed on Patent Center:

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