

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. 8,594,698

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,594,698**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	MANDATORY NOTICES	1
III.	PAYMENT OF FEES	2
IV.	GROUND FOR STANDING.....	2
V.	PRECISE RELIEF REQUESTED AND GROUNDS	2
VI.	LEVEL OF ORDINARY SKILL	3
VII.	THE '698 PATENT.....	4
VIII.	CLAIM CONSTRUCTION	5
IX.	DETAILED EXPLANATION OF GROUNDS.....	6
A.	Ground 1: Claim 23 is obvious over <i>Spain-I</i> in view of <i>Hunzinger</i> and <i>Nanda</i>	6
1.	Claim 23	6
X.	DISCRETIONARY DENIAL IS NOT APPROPRIATE	46
A.	35 U.S.C. § 325(d).....	47
B.	35 U.S.C. § 314(a).....	48
1.	whether the same petitioner previously filed a petition directed to the same claims of the same patent.....	48
2.	whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it	49
3.	whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition	50
4.	the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition	50
5.	whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent.....	51

6.	the finite resources of the Board	51
7.	the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.....	51
C.	<i>Fintiv</i>	52
XI.	CONCLUSION.....	54

LIST OF EXHIBITS

Ex-1001	U.S. Patent No. 8,594,698
Ex-1002	RESERVED
Ex-1003	Curriculum Vitae of Kevin Almeroth, Ph.D.
Ex-1004	Prosecution History of U.S. Patent No. 8,594,698
Ex-1005	U.S. Patent No. 6,269,246 (“ <i>Rao-I</i> ”)
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> ”)

Petition for *Inter Partes* Review
Patent No. 8,594,698

Ex-1018	U.S. Patent Application Publication No. 2004/0203768 (“ <i>Ylitalo</i> ”)
Ex-1019	U.S. Patent Application Publication No. 2009/0075651 (“ <i>MacNaughton</i> ”)
Ex-1020	U.S. Patent Application Publication No. 2005/0185618 (“ <i>Friday</i> ”)
Ex-1021	Plaintiff Broadphone LLC’s Disclosure of Asserted Claims and Infringement Contentions, <i>Broadphone LLC v. Samsung Elecs. Co.</i> , No. 23-cv-00001 (E.D. Tex. Oct. 5, 2023)
Ex-1022	Memorandum from Director Vidal (June 21, 2022)
Ex-1023	Federal Court Management Statistics (June 2023)
Ex-1024	Docket Control Order, <i>Broadphone LLC v. Samsung Elecs. Co., Ltd.</i> , No. 23-cv-00001 (E.D. Tex. Oct. 13, 2023) and Order (Sept. 27, 2023) (granting extension for serving infringement contentions)
Ex-1025	Broadphone’s Infringement Chart for U.S. Patent No. 8,594,698, <i>Broadphone LLC v. Samsung Elecs. Co.</i> , No. 23-cv-00001 (E.D. Tex. Oct. 5, 2023)
Ex-1026	U.S. Patent No. 6,167,274 (“ <i>Smith-I</i> ”)
Ex-1027	U.S. Patent Application Publication No. 2004/0152471 (“ <i>MacDonald</i> ”)
Ex-1028	U.S. Patent No. 7,346,359 (“ <i>Damarla</i> ”)
Ex-1029	U.S. Patent No. 6,052,598 (“ <i>Rudrapatna</i> ”)
Ex-1030	U.S. Patent Application Publication No. 2004/0236850 (“ <i>Krumm</i> ”)
Ex-1031	RESERVED
Ex-1032	U.S. Patent No. 7,397,424 (“ <i>Houri</i> ”)
Ex-1033	U.S. Patent No. 7,305,244 (“ <i>Blomqvist</i> ”)
Ex-1034	IPR2024-00154 Patent Owner Preliminary Response
Ex-1035	Federal Court Management Statistics (December 2023)

Petition for *Inter Partes* Review
Patent No. 8,594,698

Ex-1036	Declaration of Kevin Almeroth, Ph.D.
Exs-1037-1046	RESERVED
Ex-1047	U.S. Patent No. 7,312,752 (“ <i>Smith-IP</i> ”)
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> ”)

Petition for *Inter Partes* Review
Patent No. 8,594,698

Ex-1066	U.S. Patent Application Publication No. 2006/0095349 (“ <i>Morgan-IP</i> ”)
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-IP</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- 1099	RESERVED
Ex-1100	Prosecution History of U.S. Patent No. 8,170,583
Ex-1101	U.S. Patent No. 7,792,547 (“ <i>Smith-III</i> ”)
Ex-1102	U.S. Patent No. 6,937,869 (“ <i>Rayburn</i> ”)
Ex-1103	U.S. Patent Application Publication No. 2002/0142773 (“ <i>Rudrapatna IP</i> ”)
Ex-1104	U.S. Patent No. 6,140,964 (“ <i>Sugiura</i> ”)
Ex-1105	U.S. Patent Application Publication No. 2005/0272447 (“ <i>Eckel</i> ”)

Petition for *Inter Partes* Review
Patent No. 8,594,698

Ex-1106-1107	RESERVED
Ex-1108	U.S. Patent No. 6,522,890 (“ <i>Drane</i> ”)
Ex-1109	U.S. Patent Application Publication No. 2007/0087763 (“ <i>Budampati</i> ”)
Ex-1110	U.S. Patent No. 6,195,556 (“ <i>Reudink</i> ”)
Ex-1111	Request for <i>Ex Parte</i> Reexamination of U.S. Patent 8,594,698, 90/019,209 (May 12, 2023)

I. INTRODUCTION

Samsung Electronics Co., Ltd. (“Petitioner”) requests *inter partes* review of claim 23 (“challenged claim”) of U.S. Patent No. 8,594,698 (“the ’698 patent”) (Ex-1001) assigned to Broadphone LLC (“PO”). As explained below, the 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 ’698 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 ’698 patent and also U.S Patent Nos. 8,170,583 and 10,341,811) (“Texas Litigation”).

Petitioner has submitted petitions for *inter partes* review for challenging claims of U.S Patent Nos. 8,179,583 and 10,341,811. Additionally, Petitioner has previously submitted a petition challenging different claims of the ’698 patent (IPR2024-00154). For the reasons discussed below, institution of the instant petition is appropriate. (*See supra* §§IX-X.)

The ’698 patent was also the subject of an ex parte reexamination (“EPR”) (Control No. 90/019,209), filed by third party Unified Patents, LLC (“Unified”).

(Ex-1111), presenting SNQs based on different combinations of prior art as the grounds here (*id.*, 41; *infra* §§IV, IX.) Petitioner had no involvement in the preparation or filing of the Unified EPR. On March 12, 2024, the Office issued a Reexamination Certificate, which confirmed the patentability of claims 1-23 and cancelled claims 24-32.

Counsel and Service Information: Lead counsel: Naveen Modi (Reg. No. 46,224), and Backup counsel are (1) Daniel Zeilberger (Reg. No. 65,349) and (2) Jason Mikus (Reg. No. 71,911). 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 '698 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 claim should be canceled as unpatentable based on the following grounds under pre-AIA 35 U.S.C. § 103:

Ground	Claim	References
1	23	<i>Spain-I</i> in view of <i>Hunzinger</i> and <i>Nanda</i>

The '698 patent issued from an application filed on 9/19/2006, which Petitioner assumes (without conceding such entitlement) is the effective date of the '698 patent.

Spain-I was filed 11/18/2002,¹ *Hunzinger* was filed 11/15/2001, *Nanda* was filed 2/15/2006, and thus each qualifies as prior art at least under 35 U.S.C. § 102(e).

These references were not substantively considered during prosecution of the '698 patent. (Ex-1004; §X.)

VI. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art as of the effective date of the '698 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

¹ *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).

for determining mobile device location(s). (Ex-1036, ¶¶31-32.)² More education can supplement practical experience and vice versa. (*Id.*)

VII. THE '698 PATENT

The '698 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, Abstract, 5:57-6:32, 11:18-12:39, 17:35-50, 18:3-19:27, 21:18-46.) If the signal strengths match, the “cell phone is determined to have returned to the desired location (i.e., current location=desired location).” (*Id.*, 19:4-15.)

During prosecution, the applicant indicated the claims focus on “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-1004, 167), and that

² Petitioner submits the declaration of Kevin Almeroth, Ph.D (Ex-1036), an expert in the field of the '698 patent. (Ex-1036, ¶¶1-30; Ex-1003.)

the “subject matter of this application [’698 patent] is a *modest broadening* of the subject matter allowed in...U.S. Patent 8,170,583[.]” (*id.*, 126).³ (*Supra* §II.)⁴

However, the use of fingerprints/signal characteristics to determine whether a device is “at a particular location or not” (*e.g.*, “am I there”) and other related features was known. (Ex-1036, ¶33-58; Ex-1011, 4:23-25; Exs-1008, 1018, 1057-1060, 1064-1076; §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—including in context of

³ Such broadening highlights obviousness of the challenged claims here given the examiner allowed the now-issued claims in the ’583 patent only after amendments added “threshold” features, which were removed from the ’698 claims. (*Compare* Ex-1100, 20-27, 42, 45 *with* Ex-1004, 165-167 (removing “threshold”).)

⁴ Emphasis added unless stated otherwise.

specification and file history.⁵ *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper No. 11 at 16 (Aug. 14, 2015). (Ex-1036, ¶¶59-60; *infra* §IX.)

For example, Petitioner demonstrates how the claimed “at least one number based on” (limitation 23(b)(ii)) is met under its plain meaning in context of representations during prosecution. (Ex-1004, 165-166 (“the ‘number based on...’ is intended to refer to the output of any ‘formula,’” such as “difference formula,...or ‘determinations...based on derivatives, integrals, statistical metrics, mathematical normalizations, correction functions, [or] heuristic convolution functions.’”).) (Ex-1036, ¶¶60.)

IX. DETAILED EXPLANATION OF GROUNDS⁶

A. Ground 1: Claim 23 is obvious over *Spain-I* in view of *Hunzinger* and *Nanda*

1. Claim 23

(pre) **A portable RF communications device comprising an antenna, a user interface, and a storage device, wherein the storage device contains computer program code**

⁵ Petitioner reserves all rights to raise claim construction and other arguments (§112, etc.) in other proceedings. *See, e.g., Target Corp. v. Proxicom Wireless, LLC*, IPR2020-00904, Paper 11 at 11-13 (Nov. 10, 2020).

⁶ References to prior art other than asserted in each ground demonstrate the state of art.

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:

To the extent limiting, *Spain-I*⁷ in view of *Hunzinger* and *Nanda* (including as modified below) discloses/suggests these limitations. (Ex-1036, ¶¶81-95; §§IX.A.1(a)-(b).)

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, 1:10-60, 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-1036, ¶¶61-67, 84-86, 92-95.)

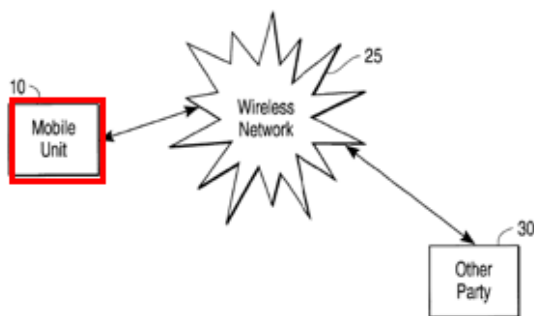


FIG. 1

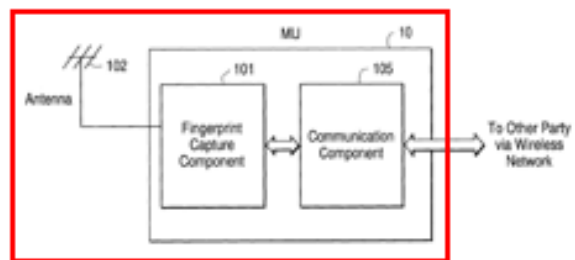


FIG. 2

⁷ See *supra* n.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).)

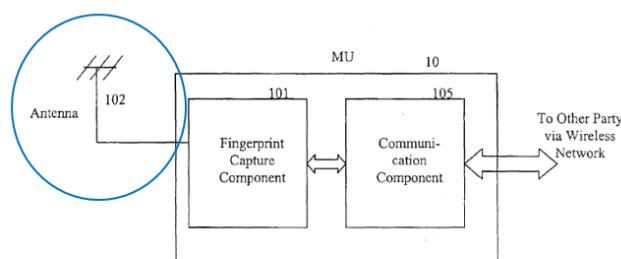


Fig. 2

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*. (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”).) (Ex-1011, FIG. 3, 6:9-30.) (Ex-1036, ¶¶81-95.)

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-1036, ¶87.) 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. (Ex-1036, ¶87.)

Further, the analysis below in §IX.A.1(b) 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(b)(2)-(4).) This analysis 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 a 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, 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-1036, ¶88.)

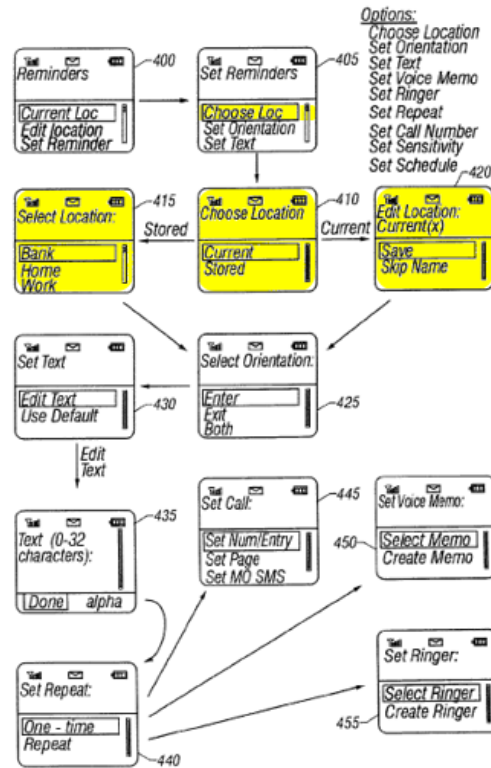


FIG. 4

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-1036, ¶89.)

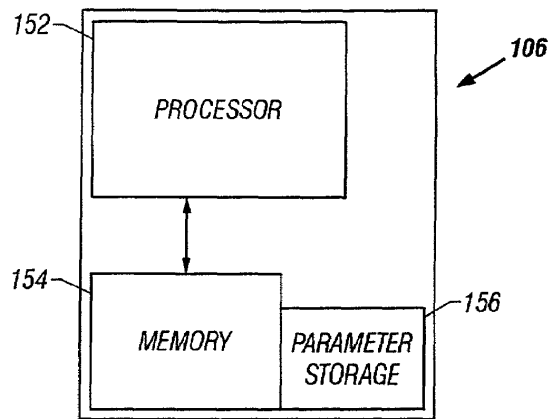


FIG. 1B

(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).)

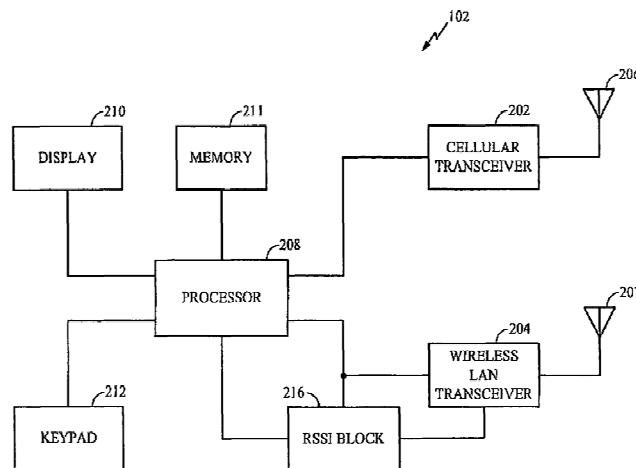


FIG. 2

Thus, in addition to the reasons discussed below for modifying *Spain-I* (§§IX.A.1(b)(1)-(4)), 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 below) to include a user interface, processor, and memory storing program code executed by the processor to perform the location determining processes. (Ex-1036, ¶90.) Indeed, the teachings/suggestions of *Hunzinger-Nanda* in context of those from *Spain-I* (including those regarding algorithms/software, etc.) would have led a POSITA to configure the MU with features like those claimed in limitation 23(pre). (Ex-1036, ¶¶90-91.)

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-1036, ¶¶91-92.) Thus, *Spain-I* (including as modified in view of *Hunzinger-Nanda*) discloses/suggests features recited in limitation 23(pre) for the reasons above. (Ex-1036, ¶¶91-92.)

Spain-I further discloses that at selected location(s), the MU collects/measures information (e.g., station ID/signal strengths) for signals received from surrounding antenna stations and generates/stores fingerprint(s) based on that information. (Ex-1011, FIG. 9, 1:25-28, 3:42-4:63, 5:20-6:8, 7:58-8:8, 10:35-65, 13:16-14:37; Ex-1005, FIG. 4, 3:29-61, 4:16-5:9, 5:40-6:12, 6:34-51.) (Ex-1036, ¶93.)

Likewise, “[w]hen a location estimate of the MU is desired” at a current location, the MU captures information from signals from surrounding antenna

stations and creates a fingerprint. (Ex-1011, 4:42-46, 5:20-6:8, 7:64-8:44, 9:25-10:27; Ex-1005, 3:29-4:24.) The fingerprint may use “*many different parameters, either individually or in combination,*” including signal strength and station ID. (Ex-1011, FIG. 9, 4:55-63, 3:55-58 (MU equipped to determine signal strength), 5:20-32, FIG. 9; Ex-1005, 3:40-4:18; Ex-1036, ¶94.)

Spain-I further suggests that the MU compares the monitored 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 in proximity of 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-1036, ¶95.)

- a) **(a) monitoring the location of the portable device by**
 - (i) receiving with the antenna communications signals from a first plurality of fixed-location service-area antenna stations capable of RF communication with the portable device wherein the antenna stations are substantially continuously operating,**
 - (ii) identifying at least one ID within at least one of the received communications signals, and**
 - (iii) measuring a varying signal characteristic other than ID, which signal characteristic is associated with a received**

**communications signal from each of the
first plurality of antenna stations; and**

Spain-I (including as modified herein) discloses/suggests these limitations. (Ex-1036, ¶¶96-107.) The MU monitors its location by receiving signals from antenna stations, identifying at least one ID within at least one received signal (*e.g.*, station ID), and measuring signal strengths (varying signal characteristic) associated with a received signal from each of a first plurality of stations (*e.g.*, stations in communication range with the MU when the current location fingerprint information is collected/generated). (§IX.A.1(pre); §IX.A.1(b)⁸; Ex-1036, ¶¶96, 102.)

When at a current/monitored location, the MU “capture[s]” information from the received antenna station signals and determines “the strength of the received signal” and collects/extracts station identifier information. (Ex-1011, 3:5-16, 3:55-4:6, 4:42-54, 5:20-32, 6:9-30 (MU capturing fingerprint of “current location”); Ex-1005, FIGS. 1-3, 1:40-54, 2:5-3:39, 3:57-61, 4:16-18, 4:38-6:11; Ex-1010, 3:4-21, 4:32-44.) The MU creates a fingerprint using that information (station IDs and signal strengths). (*Id.*; §IX.A.1(pre); Ex-1011, 4:55-63 (fingerprint may use different parameters (“individually or in combination”) (*e.g.*, signal strengths and

⁸ To the extent PO argues, or it is determined, *Spain-I* does not disclose limitation 23(a), such features would have been obvious for reasons discussed in §IX.A.1(b).

station ID)), 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-1036, ¶¶97-101.)

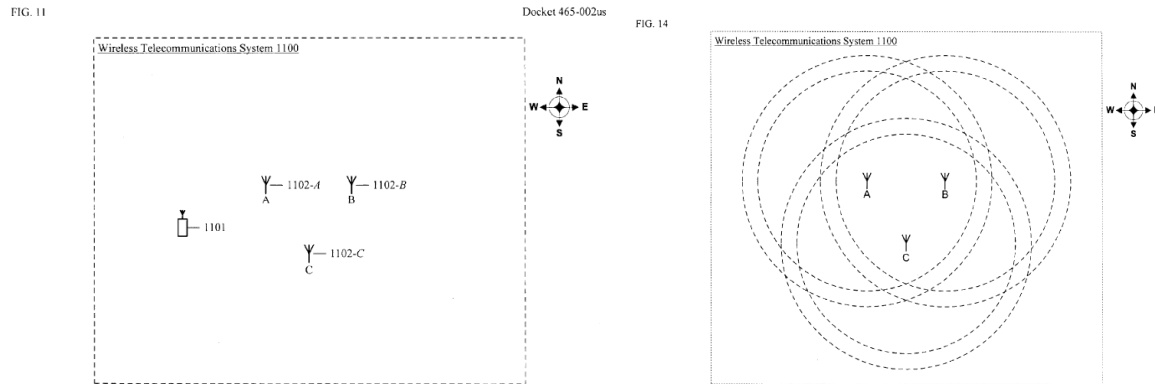
400	Fingerprint Structure					
401	Time of Capture:					
403	Station ID:	I1	I2	I3	...	In
405	Frequency:	F1	F2	F3	...	Fn
407	Tuning Parameters:	P1	P2	P3	...	Pn
409	Transmitter Location:	L1	L2	L3	...	Ln
411	Signal Strength 1:	S11	S12	S13	...	S1n
413	Signal Strength 2:	S21	S22	S23	...	S2n
415	...	...	...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

Fig. 9

(Ex-1011, FIG. 9 (station ID (blue) and measured signal strengths (yellow)); *id.*, 3:42-54, 4:33-36, 7:58-8:8, 13:51-44 (sampling multiple times), FIG. 10; Ex-1005, 2:40-52, 3:57-61, 4:59-5:9.) (Ex-1036, ¶¶99-101.)

The “station(s)” communicating with the MU are substantially continuously operating fixed-location service-area antenna stations, given they communicate RF communication signals within respective service areas with the MU having an antenna, consistent with known wireless network infrastructures. (Ex-1036, ¶103; 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 (“base station signal strengths”); Ex-1005, 1:10-34, 2:40-3:9, 3:50-61, FIGS. 2, 4, 4:59-63, 5:51-56; 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, 1:49-5:13.) *Spain-I* discusses coverages areas served by identified antenna stations. (Ex-1011, FIG. 14 (below), 10:29-13:15.) (Ex-1036, ¶103; §§IX.A.1(a)-(b).)



Thus, a POSITA would have understood that *Spain-I*'s antenna stations are **substantially continuously operating** stations as claimed. (Ex-1036, ¶¶104-105; 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, consistent with known wireless infrastructures as contemplated by *Spain-I*. (Ex-1036, ¶106; 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-

1036, ¶106.) Such features would have been further obvious for reasons in §IX.A.1(b)(ii)(4).

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

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

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

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

(Ex-1036, ¶¶108-180.)

Spain-I's MU determines whether it is currently "at a particular location or not." (Ex-1011, 4:23-25, 4:43-47⁹; Ex-1005, 3:10-18; §§IX.A.1(pre)-1(a).) This determination can be based, in part, on the user's request to generate a position of the MU. (Ex-1011, 6:15-20, FIG. 3.) As detailed above, a POSITA would

⁹ The MU can initiate the location estimate processes. (Ex-1011, 4:43-47.)

understand that the combination of *Spain-I/Hunzinger/Nanda* suggests that a cellular phone would necessarily be equipped with a user interface and software and a storage device for storing such code, so that a user may enter information as intended. (See §IX.A.1(pre)) The MU electronically compares fingerprint information (including signal strengths (*e.g.*, number(s)) and station ID(s)) for the MU's current location with stored fingerprint information (similar parameters) for particular location(s) to determine a "closest" match. (§IX.A.1(a); §IX.A.1(b)(ii)(2).) Upon a "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-1036, ¶109.) *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, 14:10-31, 17:15-19; Ex-1005, 3:29-4:37, 4:65-6:51, FIGS. 4-5; Exs-1009-1010; Ex-1036, ¶¶109-110.)

Spain-I discloses and/or suggests features/functionalities attributable to claim 23, but lacks certain details for particular claimed features. Petitioner demonstrates below how such features would have been obvious in view of the

teachings/suggestions of *Hunzinger-Nanda*.¹⁰ (§§IX.A.1(b)(ii)(1)-(4); Ex-1036, ¶112.)

(1) Determining if a First Monitored Location is Within Proximity of a Location Entered by a User

Spain-I in view of *Hunzinger* and *Nanda* discloses and/or suggests the above-claimed proximity and user entered location determining features of limitation 23(b) in context of the plain claim language, specification, and file history. (See §§VII-VIII; Ex-1036, ¶¶113-114; Ex-1001, 18:56-19:60; Ex-1004, 167.)

Spain-I describes generating/storing in a database fingerprints corresponding to selected location(s) that is compared to monitored fingerprint information to determine whether the MU's monitored 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)(ii).) *Spain-I* also discloses configurations

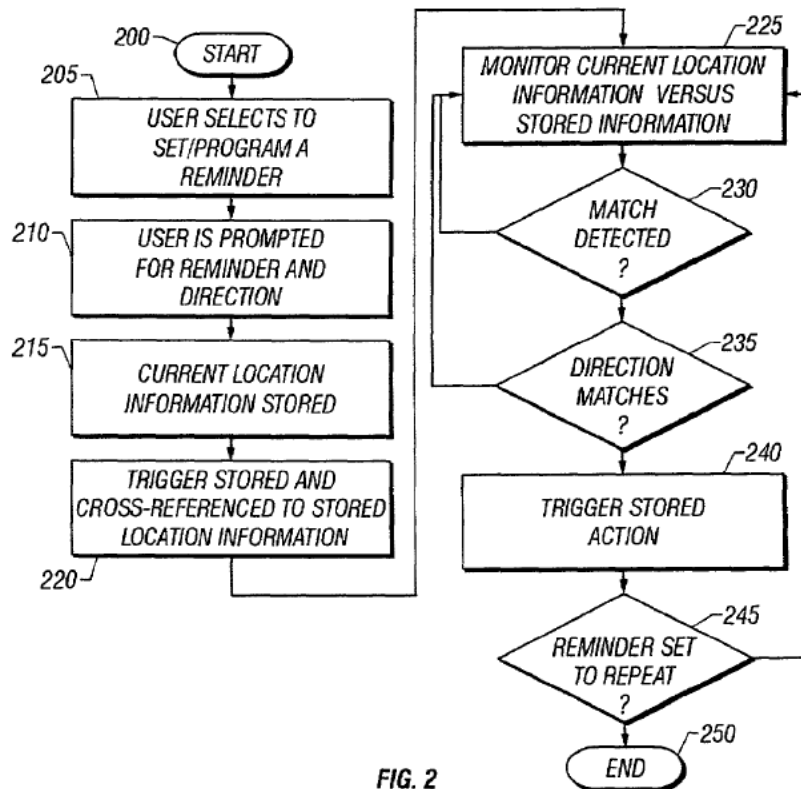
¹⁰ The obviousness positions do not rely on bodily-incorporation of components/processes from one reference to another, but rather references to "combined" prior art or the like is short-hand for the resulting modified/configured system/process in light of the teachings/suggestions in the prior art. (Ex-1036, ¶112.) *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).

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.) As detailed above, a POSITA would understand that the combination of *Spain-I/Hunzinger/Nanda* suggests that a cellular phone would necessarily be equipped with a user interface and software and a storage device for storing such code, so that a user may enter information as intended. (See §IX.A.1(pre).) While such teachings relate to location server 30 maintaining/using the fingerprint database, they also suggested to a POSITA that the MU is configurable to receive user requests to measure/collect other fingerprint locations. (Ex-1036, ¶¶115-118.) Such suggestions, with the understanding that there were various ways and reasons for implementing user entered location features including for building a database, would have motivated a POSITA to consider teachings in the art when considering *Spain-I*. 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 determine if the MU’s current location was in proximity of a user entered location, consistent with that claimed (and discussed in the ’698 patent and during prosecution (*e.g.*, “am I there”)). (Ex-1036, ¶119; §IX.A.1(b)(ii)(2).)

Like *Spain-I*, *Hunzinger* is in the same technical field as the ’698 patent and discloses features reasonably pertinent to particular problem(s) the ’698 patent (and a POSITA) looked to solve, and thus would have been consulted by a POSITA. (Ex-

1054, 1:13-2:49, 3:44-4:59, 6:37-8:44 (and below); §IX.A.1(pre)-(a); Ex-1001, Abstract, 1:23-10:25, 3:26-35, 5:14-56; Ex-1036, ¶¶75-80, 125.)

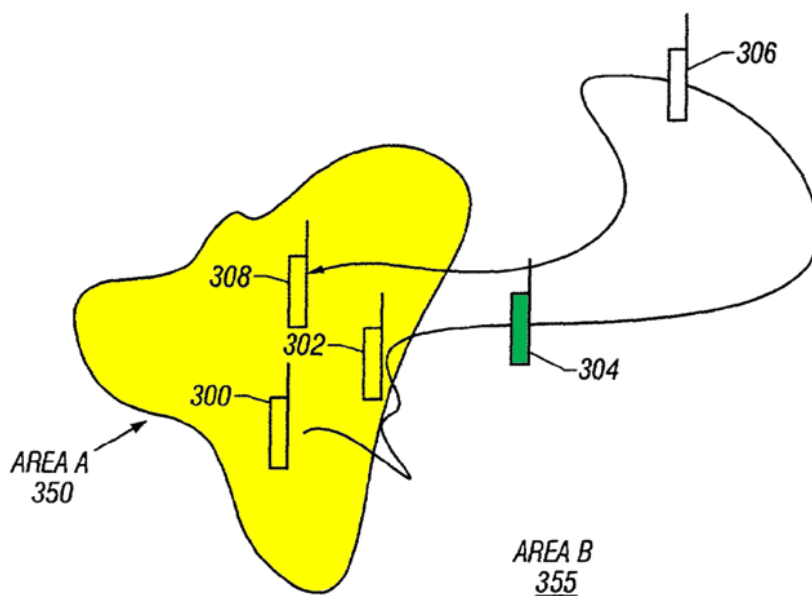
Hunzinger discloses a location determining system/process where a mobile device (with “position location technology”) is configured to allow a user to enter locations and related actions that are performed when the device is determined to be at such entered locations. (Ex-1054, Abstract, FIGS. 1A-4, 1:38-2:6, 2:10-44, 3:4-67, FIG. 2 (below).) (Ex-1036, ¶120.)



Position-monitoring functions “compare[] one or more ‘remembered’ locations with current location information.” (Ex-1054, 3:56-60.) Location information (e.g., “station ID,” “signal conditions,” “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)(ii)(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-1036, ¶121.)

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 (monitoring until location information matches), 4:44-5:22, FIG. 3 (below).) (Ex-1036, ¶122.)



The device is configured to allow the user to easily enter locations and corresponding actions/reminders to be executed based on entered location(s). (Ex-1054, 5:22-40, 5:51-52 (“user may select the current location...”), FIG. 4 (below).) (Ex-1036, ¶¶123-124.)

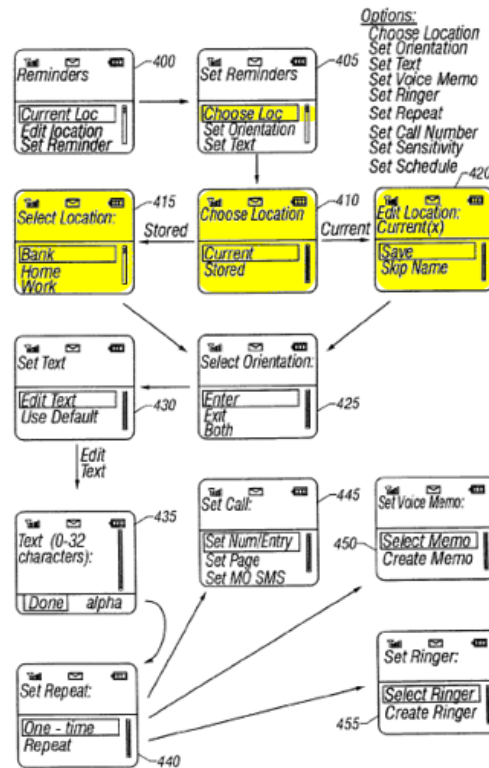


FIG. 4

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; *id.*, 6:8-22; Ex-1036, ¶¶123-124.)

Hunzinger's teachings were consistent with technologies/techniques known at the time. (Ex-1036, ¶126; 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 in considering ways to allow a user to enter locations from which fingerprint data is collected.¹¹ (Ex-1036, ¶126.)

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.)

¹¹ A POSITA would have been motivated to consider *Nanda* for reasons explained below (§§IX.A.1(b)(ii)(2)-(4)). (Ex-1036, ¶¶127-144.) 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.*, user entered location, ID/signal strength comparisons, etc., *see* §IX.A.1(b)(ii)(2)) 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).

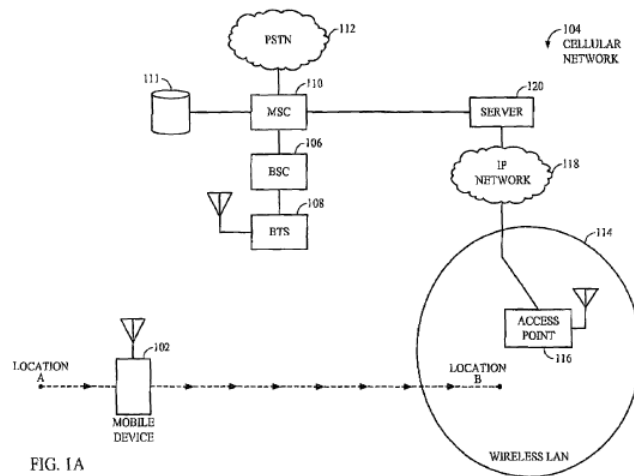


FIG. 1A

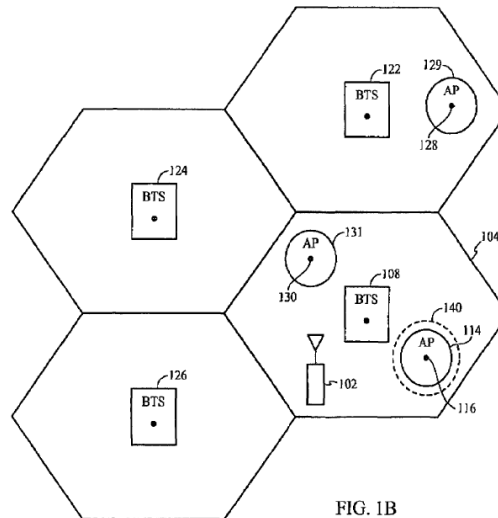


FIG. 1B

(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-1036, ¶¶68-74, 129-131.)

Thus, like *Hunzinger-Spain-I*, *Nanda* discloses features in the same technical field and addresses problems similar to that as the '698 patent, and thus would have been consulted by a POSITA for reasons above and those below (§§IX.A.1(b)(ii)(2)-(4)). (Ex-1036, ¶128.) Relevant here, and consistent with the state of art (Ex-1053, ¶¶0007-0013) *Nanda* describes features that allow a mobile device user to select when to create a fingerprint (resulting in strength/ID data collection/measurement). (Ex-1006, 8:29-36 (keypad 212 used “to create a current fingerprint and store that fingerprint in memory 211”), FIG. 2 (below).) (Ex-1036, ¶¶132-133.)

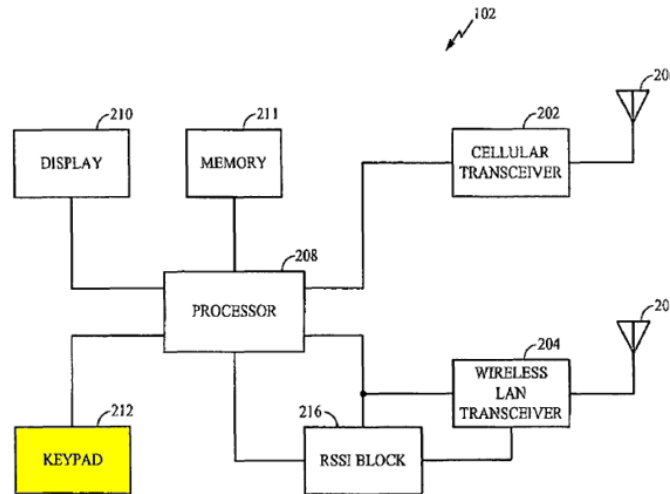


FIG. 2

“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 because the user may want only certain* wireless LANs

to be stored in the fingerprint database....” (Ex-1006, 9:61-10:7, FIG. 3A (below).)
(Ex-1036, ¶132.)

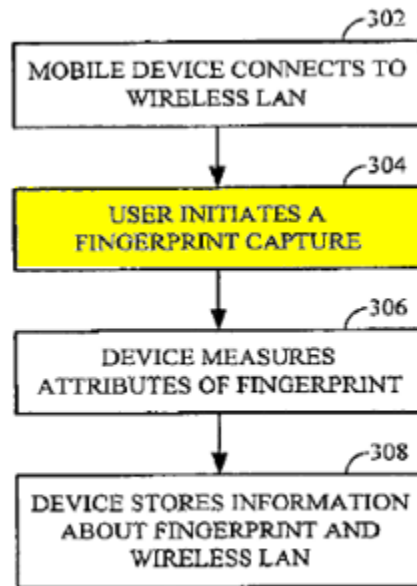


FIG. 3A

In light of *Hunzinger* and *Nanda*¹² a POSITA would have been motivated, and found obvious, to configure the MU in the *Spain-I* system/process with mechanisms/features consistent with user entered location and location-based action features like that taught/suggested by *Hunzinger* (and *Nanda*). (Ex-1036, ¶¶133-142.) A POSITA would have appreciated *Spain-I*'s above-noted teachings (Ex-1011, 5:61-6:30) and the advantages/benefits/teachings associated with *Hunzinger*'s

¹² While *Hunzinger* alone supports obviousness here, *Nanda* further bolsters the motivation/reasons for configuring *Spain-I* as explained. (See n.11.)

mechanisms for enabling a MU user to enter location(s) from which location information is collected/compared with current location information to determine whether the MU is at, entered, or left the entered location in order to trigger corresponding selected actions. (Ex-1036, ¶¶138-140.)

Configuring the MU with user-friendly interface mechanisms (*e.g.*, menus (*Hunzinger*), key-based (*Nanda*)) and related functionalities that enabled a user to easily enter locations/actions would have enhanced *Spain-I*'s features, thus expanding its potential applications. (*Id.*, ¶¶135-142.) For instance, a POSITA would have discovered from *Hunzinger* benefits in allowing the user to both enter locations and corresponding action(s) to be performed upon determining the MU is within proximity of an entered location (*e.g.*, “am I there”). (*Id.*; 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-Nanda* (*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-1036, ¶¶133, 138-142.)

Thus, in some applications, such modification(s) would have predictably resulted in the *Spain-I* database maintaining fingerprints corresponding to locations of interest to the user so that later, depending on how programmed/user-configured, when the MU is determined to be in proximity of such a location (*e.g.*, retailer, service provider/vendor, etc.), relevant personalized services can be provided 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-1036, ¶¶138-139; 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* (and *Nanda*) (*see supra*), and state of art (*e.g.*, Ex-1011, 3:34-40, 15:19-35; Ex-1062, 1:26-33; Ex-1028, 12:55-13:18), a POSITA would had the skills/knowledge/rationale to consider/implement such modifications with a reasonable expectation of success. (Ex-1036, ¶¶142-144.)

There were various ways to configure/implement such features. For example, it would have been obvious to configure the modified *Spain-I* system/processes such that the MU included interface mechanisms/features and related functionalities (similar to those described by *Hunzinger*) to allow the MU user to enter location(s) (where ID/signal strength data was collected/measured for building the fingerprint

database as discussed in §IX.A.1(b)). (Ex-1036, ¶¶142-144.) 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 entered location. (Ex-1054, 4:1-5:22; Ex-1011, 4:23-26; Ex-1006, 2:16-59; *infra* §IX.A.1(b)(ii)(2); Ex-1036, ¶¶142-144.)

(2) Comparing ID and Signal Characteristic Number(s) Features

The claimed “varying signal characteristic” encompasses at least signal strength. (Ex-1001, 26:33-35 (claim 2).) Also under the plain language of claim 23, the “at least one *number*...” encompasses signal strength measurement(s), which is a number (*e.g.*, value), consistent with that described in the ’698 patent (Ex-1001, 6:37-40 (“the majority of the description relates to direct measurements of signal strengths and direct comparisons of those measurements”), 7:1-4 (“device simply performs such reception measurements and compares these measurements with the remembered signal strength combinations”)) and known in the art.¹³ (Ex-1036, ¶¶145-146.)

¹³ The prior art discloses/suggests these features in context of the file history statements regarding the claimed “number(s)” for reason below. (§§VIII, IX.A.1(b)(ii)(3).)

Spain-I describes measuring signal strengths represented by strength value(s) (dBm), which are “number(s)” based on the “varying characteristic of the” signals received from the antenna stations like that claimed. (§IX.A.1(pre)-IX.A.1(a); Ex-1011, 12:11-14 (“-11 dBm”), FIG. 9 (SS values).) Thus, the signal strengths (SS) in each fingerprint (for monitored and stored/entered location(s)) includes “at least one number” (value(s) based on the varying signal characteristic of the communications signals (signal strength) from each of the first plurality of antenna stations). (§§IX.A.1(a)-1(b)(ii)(1); §IX.A.1(b)(ii)(3); Ex-1036, ¶147.)

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 (station ID/signal strength); Ex-1005, 4:22-36.) “There are many choices...to determine the closest matching fingerprint, as can be appreciated by one skilled in the art,” including “smallest mathematical distance between itself and the captured fingerprint.” (Ex-1011, 8:8-21; Ex-1005, 5:10-33.) (Ex-1036, ¶¶148-149.)

While *Spain-I* discloses such fingerprint comparison features, *Spain-I* lacks details as to how such comparisons are performed, including in context of underlying parameters (comparing monitored and user entered location station ID/signal strength number(s) (**limitation 23(b)**)). (Ex-1036, ¶150.) 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 teachings in the art. (*Id.*, ¶151; 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 above (§IX.A.1(b)(ii)(1)), a POSITA would have been motivated by the collective teachings of *Hunzinger* and *Nanda* (*see* n.11), and found it obvious, to configure the MU in the above modified *Spain-I* system/processes to determine if the MU's first monitored location (monitored in accordance with §IX.A.1(a)) is in proximity of a user entered location (**limitation 23(b)**) by electronically comparing at least one station ID and at least one number based on the varying signal strengths of the communication signals (*e.g.*, signal strength values) from each of the first plurality of antenna stations at the first monitored location with the at least one ID and the at least one number based on signal strengths of the communication signals from each of the first plurality of antenna stations at the location entered by the user, as claimed in **limitation 23(b)**. (Ex-1036, ¶151.)

Hunzinger further discloses the mobile device monitors its current location, and “compares” remembered location information with current location information to determine whether the device has left or entered a remembered location to execute

particular actions. (Ex-1054, 3:49-60, 4:21-57; §IX.A.1(b)(ii)(1).) Location information can include “station ID” and “signal conditions” (Ex-1054, 4:3-8), such as base station IDs and signal strength values that are compared to determine whether the device is at, entered, or left a remembered location (*id.*, 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...*base station identifier, pilot signal strength...*”)), 7:29-42, 8:25-38; §IX.A.1(b)(ii)(1) (*Hunzinger*).) (Ex-1036, ¶¶152-153.)

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 (reminder triggered when device is at location 300; transitions based on base station ID, pilot.), 4:1-12, 6:37-49, 7:9-22, 7:29-42, 8:25-38; Ex-1036, ¶154.)

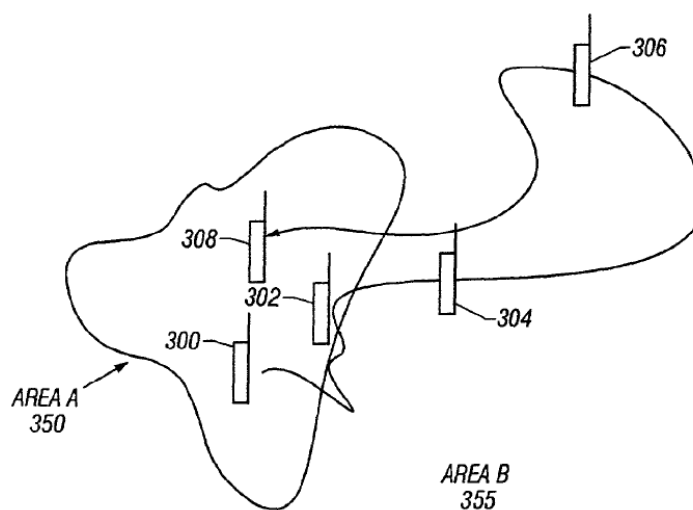


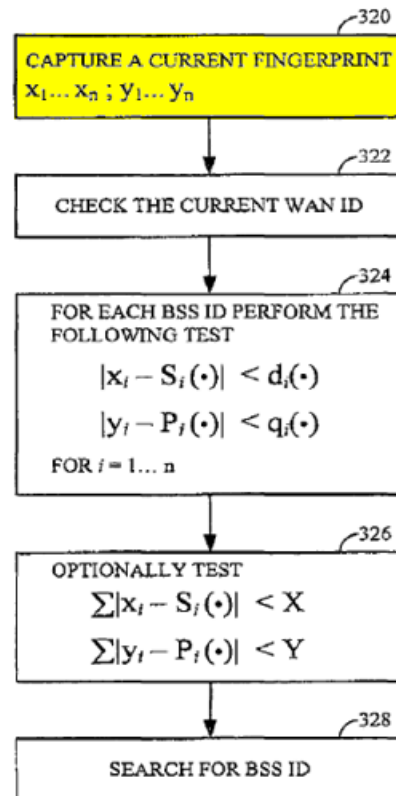
FIG. 3

Hunzinger's teachings were consistent with known technologies/techniques. (*Supra* (state-of-art); Ex-1036, ¶155.) For example, in consulting *Nanda* for reasons above (and below) (§IX.A.1(b)(ii)(1), (3)-(4)) a POSITA would have discovered teachings of comparing signal strength and station ID data for current and stored fingerprints when determining if a device is in proximity of a location. (Ex-1006, FIGS. 3A-3B, 2:43-51, 6:12-66, 7:6-13, 8:29-55; Ex-1036, ¶156.) Previously monitored location information (IDs/signal strength) may be stored like in the table below.

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

(Ex-1006, 8:29-55, 9:31-10:13; 8:56-9:13; Ex-1036, ¶156.) 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; *id.* 10:36-51 (“deviation amount” to “help control the [matching] determination”); Ex-1036, ¶¶156-157.)

Nanda describes capturing a current location fingerprint (including signal strengths). (Ex-1006, FIG. 3B (below), 3:18-19, 10:51-56.) (Ex-1036, ¶¶158-161.)



The current WAN ID is checked and identified access point information is determined for the current location. (Ex-1006, 10:58-60, 9:31-52 (BSS ID is access point), 10:60-61.) (Ex-1036, ¶159.)

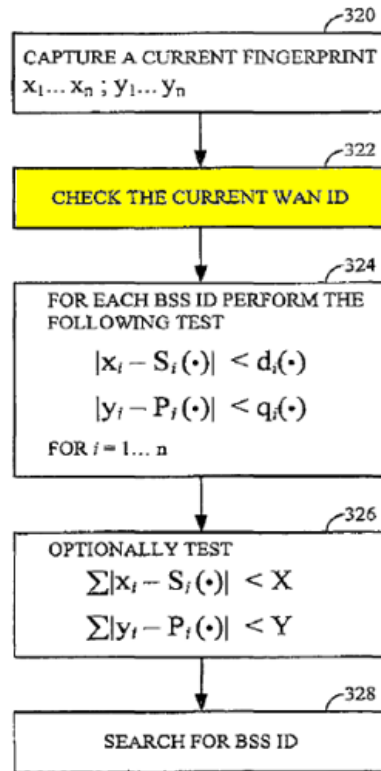
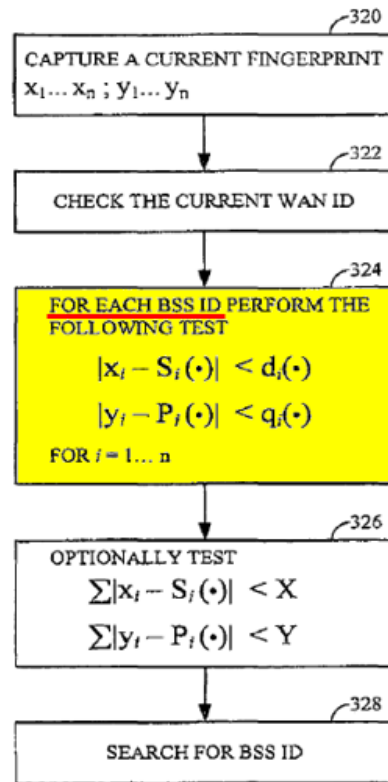


FIG. 3B

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-1036, ¶160.)



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.*)

Nanda’s comparisons performed for each WAN ID (322) and “each BSS ID” (324) indicates a comparison of respective station IDs since the stored number(s) (“ S_i ”) and current number(s) (“ X_i ”) are compared for the same BSS ID and associated WAN ID. (Ex-1036, ¶161; Ex-1006, 10:60-61 (“[f]urther search

refinements are possible by **searching the database for identifiers of the observable pilots**”).) Thus, before signal strength comparisons (step 324), the system compares monitored station identifiers to identifiers stored in the database (Ex-1036, ¶¶161-164; Ex-1006, 10:58-66, 11:33-12:13.)

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(a)-(b)(ii)(1)) such that the MU’s location determining processes include comparing at least one station ID and at least one number based on the signal strengths (*e.g.*, SS value(s)) for the monitored location with at least one station ID and at least one number based on the signal strengths (*e.g.*, SS value(s)) for the user entered location in the database (§IX.A.1(b)(ii)(1)). (Ex-1036, ¶165.) Comparing IDs would have predictable resulted in the MU using signal strengths (characteristics) corresponding to signals received from the same antenna stations when performing location determining processes. (*Id.*)

A POSITA would have appreciated *Spain-I*’s teachings/suggestions (§§IX.A.1(pre)-1(b)(ii)(2)) in context of *Hunzinger-Nanda* and thus been motivated to employ similar features in the above-discussed *Spain-I* system/processes (§IX.A.1(b)(ii)(1)). Such modifications 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 in *Spain-I-Hunzinger-Nanda*. (Ex-1006, FIG. 3B, 8:43-30, 10:49-11:19; §§IX.A.1(pre)-IX.A.1(b)(ii)(1); Ex-1036, ¶166; Ex-1054, 3:49-60, 4:3-5:22, 6:37-49, 7:9-22.) For example, ID comparisons (like that taught by *Hunzinger/Nanda*) would have beneficially reduced possible locations being assessed, as contemplated by *Spain-I*. (Ex-1011, 10:20-27; Ex-1036, ¶¶166-168.)

Consequently, in light of *Hunzinger* and *Nanda* (and a POSITA's knowledge) in context of *Spain-I*, a POSITA would have appreciated the benefits of comparing monitored/user entered location ID and number(s) based on signal characteristic data (e.g., signal strength) in determining whether the MU's monitored location (§IX.A.1(a)) is proximate to a user entered location (§IX.A.1(b)(ii)(1)) to ensure relevant fingerprints are available for comparison (e.g., via ID comparisons) to allow appropriate actions to be performed by the *Spain-I* modified system in view of *Hunzinger* and *Nanda* as explained above. (Ex-1036, ¶¶166-168; §IX.A.1(b)(ii)(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/skills, and teachings of *Spain-I/Hunzinger/Nanda* to, for example, program/configure the MU to implement the above-discussed ID/signal characteristic number(s) comparison 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 station IDs matched. (Ex-1036, ¶¶166-168.) A POSITA would have considered known tradeoffs—balancing costs, processing resources, benefits resulting from such modification, and the like—to ultimately design/configure the modified *Spain-I* system/processes with such comparison features in a successful manner relevant for a given application, consistent with *Spain-I* (Ex-1011, 1:50-2:20, 3:5-16, 3:34-40, 6:31-7:57, 8:27-13:35; Ex-1036, ¶¶142, 166-168.)

Given the modifications would have involved use of known technologies/techniques (as demonstrated by *Spain-I-Hunzinger-Nanda*), a POSITA would have had a reasonable expectation of success in implementing such modifications. (Ex-1036, ¶169.)

(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 file history representations (*supra* §VIII), it would have been obvious to configure the *Spain-I-Hunzinger-Nanda* system/processes to execute a formula or similar mathematical algorithm/function to the signal characteristic data (*e.g.*, signal strengths) measured for each identified station for the monitored location and also correspondingly for the user selected location(s), from which the comparison is

made to determine whether the MU is in proximity of the user selected location (*e.g.*, “am I there”), as discussed above. (Ex-1036, ¶170; §IX.A.1(b)(ii)(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 to process and/or generate fingerprint signal strength value(s). (Ex-1011, 13:51-55; §§IX.A.1(a)-(b); Ex-1036, ¶171.) *Nanda* further discloses generating a fingerprint based on calculated average strength values. (Ex-1006, FIG. 3B (324-326), 8:29-36, 7:19-28 (measurements “averaged together or otherwise combined in some statistically significant manner in order to generate the fingerprint”), 11:11-18, 6:19-25; Ex-1036, ¶171.) *Hunzinger* also teaches/suggests “averaging multiple measurements...is well known in the art.” (Ex-1054, 6:17-19). Such an averaging techniques were applicable to fingerprints for stored/entered and monitored locations. (Ex-1054, FIG. 4, 1:13-2:49, 3:44-4:59, 6:37-8:44; Ex-1006, FIG. 3B, 8:29-36, 7:19-28, 11:11-18, 6:19-25; Ex-1036, ¶171.) Moreover, a POSITA was aware of techniques for performing calculations via a formula or similar mathematical operation to measured signal characteristic data. (Ex-1036, ¶172; *e.g.*, Ex-1029, 2:18-29 (“Power averaged over a certain duration can be estimated to smooth temporary localized fading and other types of multipath fading caused by obstructions, such as buildings and mountains....[P]ower averaging can be achieved by using a ‘rolling window’ of signal strength values to determine the averaged

signal strength values.”); Ex-1030, ¶0087 (“signal strengths, preferably smoothed (*e.g.*, averaged)”).)

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 the signal characteristic data (*e.g.*, signal strengths) to provide adjusted values that compensate for, *e.g.*, outlier data (*e.g.*, extreme high or low readings/measurements), adjust for “environment variability” (Ex-1006, 7:19-28), etc. to increase the accuracy or confidence in the location proximity determinations performed by the modified system/process, consistent with that discussed above (§IX.A.1(b)(1)). (Ex-1036, ¶173.) A POSITA would have appreciated that using such formula-based calculations to smooth or average the collected signal characteristic data (*e.g.*, 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 using derived/refined signal characteristic number(s) for the above-discussed comparison technique/features used to determine whether the MU monitored location is within proximity of an entered location, like that claimed. (Ex-1036, ¶173.) *See KSR*, 550 U.S. at 416. Accordingly, 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 teachings above), that would have led a POSITA to have a reasonable expectation of success in implementing them. (Ex-1036, ¶173.)

(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) *substantially 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-1036, ¶¶174-175.)

Upon considering *Nanda-Hunzinger* for reasons above (§§IX.A.1(b)(ii)(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-1036, ¶¶175-176.)

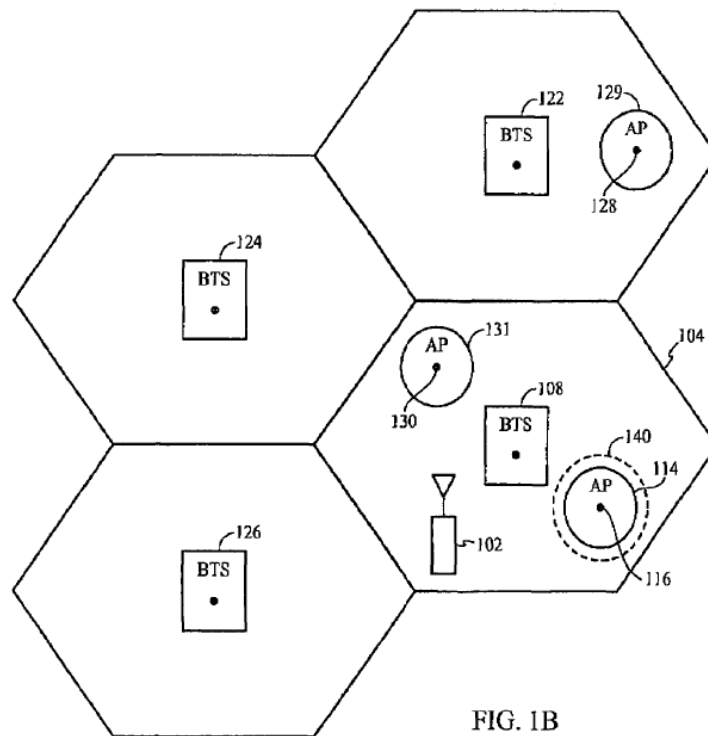
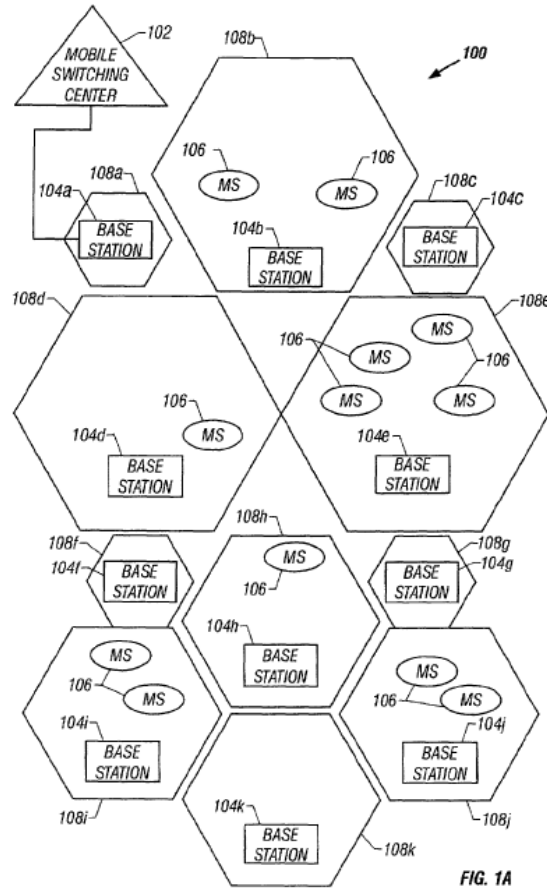


FIG. 1B

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 communications with mobile device 102 within a coverage area. (Ex-1036, ¶¶176-178.) *Hunzinger* also discloses use of known base stations (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 *Hunzinger* and *Nanda*. (§IX.A.1(b); Ex-1036, ¶179.) Such disclosures/suggestions would have motivated a POSITA to configure/implement the MU in the above modified *Spain-I-Hunzinger-Nanda* 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 can be performed. (§§IX.A.1(pre)-IX.A.1(b)(ii)(1)-(3).) (Ex-1036, ¶179.) 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. (Ex-1036, ¶180.)

X. DISCRETIONARY DENIAL IS NOT APPROPRIATE

As detailed above, PO and Petitioner are parties to the Texas Litigation. (*See infra* §II.) On October 5, 2023, PO served its Patent Local Rule 3-1 and 3-2 disclosures, asserting infringement of claims 1-7, 11-13, and 15-16 of the '698 patent in the Texas Litigation. (Ex-1024.) On November 9, 2023, Petitioner filed a petition for *inter partes* review of the '698 patent, IPR2024-00154 (“the -00154 Petition”), asserting that each of the claims of the '698 patent that was identified in PO’s Patent Local Rule 3-1 and 3-2 disclosures was invalid.¹⁴

On January 12, 2024, PO provided to Petitioner proposed supplemental infringement contentions including independent Claim 23 of the '698 patent for the

¹⁴ PO’s Patent Local Rule 3-1 and 3-2 disclosures did not identify or assert Claim 23 of the '698 patent, and, as a consequence, the -00154 Petition did not address Claim 23 of the '698 patent.

first time in the Texas Litigation. Because of the addition of Claim 23 to the Texas Litigation, not all asserted claims of the '698 patent currently stand challenged before the Board. Claim 23, however, is substantively nearly identical to claim 1, and presents the same questions of patentability.

A. 35 U.S.C. § 325(d)

35 U.S.C. § 325(d) provides the Board discretionary power to deny institution of an IPR petition where “the same or substantially the same prior art or arguments previously were presented to the Office.” *See* 35 U.S.C. § 325(d). Here, discretionary denial under § 325(d) is not appropriate. There is one pending IPR petition filed against the '698 patent: IPR2024-00154. However, the -00154 Petition does not address claim 23, which is challenged in this petition. As such, the previously-filed petition does not address the arguments presented in this petition's challenge of the limitations recited in claim 23.

Claim 23 was not yet asserted by PO at the time the -00154 Petition was filed. The present petition puts forth arguments necessary to address the additional limitations recited in the newly asserted claim 23. Therefore, this is not a case where the same claims are being challenged by a serial, follow-on petition. *See infra* §X.B.

Additionally, Petitioner intends to move to consolidate this proceeding with the -00154 proceeding, which would allow the Board to efficiently resolve the validity of the '698 patent in a single proceeding.

B. 35 U.S.C. § 314(a)

Section 314(a) provides the Director with discretion to deny a petition. *See* 35 U.S.C. § 314(a) (stating “[t]he Director may not authorize an inter partes review to be instituted unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”). In *General Plastic Co., Ltd. v. Canon Kabushiki Kaisha*, the Board enumerated a number of non-exclusive factors that it will consider in exercising discretion on instituting IPR, especially as to “follow-on” petitions challenging the same patent as challenged previously in an IPR, PGR, or CBM proceeding. IPR2016-01357, Paper 19 at 18 (P.T.A.B. Sept. 6, 2017) (precedential). Here, the weight of these factors strongly favors institution:

1. whether the same petitioner previously filed a petition directed to the same claims of the same patent

This factor favors institution. The present petition and the -00154 Petition challenge a completely different set of claims. Specifically, the present petition challenges a new claim (claim 23) that was not challenged in the -00154 Petition (claims 1-7, 9-13, 15, 16, and 21).

In *Mercedes-Benz USA, LLC v. Carucel Investments, L.P.*, the petitioner filed a second IPR petition challenging claims of a patent that were newly asserted in the co-pending district court litigation, but were not asserted at the time that the original IPR petition was filed. *See* IPR2019-01644, Paper 9 (P.T.A.B. Mar. 26, 2020).

There, the Board stated that the second petition was not “truly a ‘follow-on petition,’ as that term is used in *General Plastic*, because there was no prior petition challenging [the newly asserted claims] of the [challenged] patent.” (*Id.*, 11-12.) The facts here mirror those of *Mercedes-Benz*. The -00154 Petition did not challenge claim 23 of the ’698 patent because that claim was not yet asserted. Accordingly, this petition should not be considered a “follow-on petition,” for the reasons analyzed by the Board in *Mercedes-Benz*. (*Id.*, 11-15.) That is, the same claims are not being challenged in this petition.

Thus, this factor weighs in favor of institution.

2. whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it

When factor 1 weighs in favor of institution, “factors 2-5 bear little relevance unless there is evidence in the record of extenuating circumstances.” *Alcatel-Lucent USA Inc. v. Oyster Optics, LLC*, IPR2017-02146, (Paper 12, at 11 (P.T.A.B. Feb. 28, 2018)). There are no extenuating circumstances present here. While this petition asserts the same prior art that is asserted in the -00154 Petition, that prior art is applied to a claim that was not challenged in the -00154 Petition. Therefore, this is not a case in which Petitioner is serially attacking the same claims with prior art it should have raised in the first petition.

Accordingly, this factor weighs in favor of institution.

3. whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition

At the time of filing this petition, PO has filed its Patent Owner Preliminary Response (-00154 POPR) (Ex-1034) to the -00154 Petition, but the Board has not issued a decision on whether to institute review of the -00154 Petition. Although the -00154 POPR has been filed, Petitioner did not adjust its invalidity grounds based on that filing. Specifically, the prior art combination and mapping relied upon for claim 1 of the '698 patent is the same for claim 23 of the '698 patent. The only difference is that the prior art combination here merely addresses additional limitations present in claim 23. (*See supra* §IX.)

Further, Petitioner prepared and filed this petition promptly upon learning that PO asserts presently challenged claim 23 in the Texas Litigation. It is evident from viewing the -00154 Petition and the instant petition that Petitioner has not used PO's -00154 POPR as a roadmap in preparing this petition.

Accordingly, this factor weighs in favor of institution.

4. the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition

See Factors 1-3.

5. whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent

As explained above, Petitioner now files this petition because PO newly asserted claim 23 in the Texas Litigation after the filing of the -00154 Petition. This petition is not directed to the same claims challenged in the -00154 Petition. As the Board noted in *Mercedes-Benz*, this explanation is adequate to justify the filing of a second petition challenging claims that were not previously asserted against Petitioner. *Mercedes-Benz*, Paper 9, at 15.

Accordingly, this factor weighs in favor of institution.

6. the finite resources of the Board

7. the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review

Factors 6 and 7 weigh in favor of institution. As detailed above, the present petition is not a follow-on petition like those discussed in *General Plastic*. *Mercedes-Benz*, Paper 9, at 11-12. Further, this petition is not a serial attack—it was filed as a direct response to PO’s amended infringement contentions in the Texas Litigation after the filing of the -00154 Petition.

Moreover, as noted above, Petitioner intends to move to consolidate this proceeding with the -00154 proceeding. Should the Board grant institution of these petitions and consolidate the proceedings, Petitioner will not request additional

briefing for the issues presented in this petition. Additionally, Petitioner will stipulate to a single deposition of PO's declarant(s), and will not seek additional time beyond what it would have been entitled to in the -00154 Petition. The Board has stated that stipulations like these obviate concerns related to Factors 6 and 7. *See Mercedes-Benz*, Paper 9, at 15 (stating that "the same prior art will be considered in both proceedings, and Petitioner's proposed stipulations on briefing and depositions . . . will minimize any impact on Board resources (Factor 6) and the ability of the Board to meet its deadline (Factor 7).").

Accordingly, factors 6 and 7 weigh in favor of institution.

C. *Fintiv*

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

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) weighs in favor of institution. The median time from filing to trial in the Eastern District of Texas last year was 21.4 months (Ex-1035, 35.) Here, the Court has scheduled jury selection for February 10, 2025 (Ex-1024, 1.) With this petition filed in April 2024, a FWD may be expected by November/December 2025. However, as noted above, Petitioner intends to move to

consolidate this proceeding with the -00154 proceeding. If instituted and consolidated, this petition will proceed on the same timeline as the -00154 Petition.

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 upon learning of the proposal to assert claim 23 in the Texas Litigation. Fact discovery is not anticipated to close until September 2024, expert discovery has not begun (Ex-1024, 3), and the *Markman* hearing will not occur until August 2024 (*id.*).

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

The **fourth factor** (overlap) also weighs against denial. Like it did in the -00154 proceeding, 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).

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, this petition presents compelling merits as to unpatentability, which 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).

XI. CONCLUSION

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

Respectfully submitted,

Dated: April 19, 2024

By: /Naveen Modi/
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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. 8,594,698 contains, as measured by the word-processing system used to prepare this paper, 8,541 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: April 19, 2024

By: /Naveen Modi/
Naveen Modi (Reg. No. 46,224)
Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on April 19, 2024, I caused a true and correct copy of the foregoing petition for *Inter Partes* Review of U.S. Patent No. 8,594,698 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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