UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

BROADPHONE LLC,
Patent Owner

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Case: IPR2024-00153
U.S. Patent No. 8,170,583

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# PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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## LIST OF EXHIBITS

| Ex. No. | Description | Previously Submitted |
|---|---|---|
| Ex-1001 | U.S. Patent No. 8,170,583 ("*Shkedi*") | X |
| Ex-1002 | Declaration of Kevin Almeroth, Ph.D. | X |
| Ex-1003 | Curriculum Vitae of Kevin Almeroth, Ph.D. | X |
| Ex-1004 | Prosecution History of U.S. Patent No. 8,170,583 | X |
| Ex-1005 | U.S. Patent No. 6,269,246 ("*Rao-I*") | X |
| Ex-1006 | U.S. Patent No. 8,477,731("*Nanda*") | X |
| Ex-1007 | U.S. Patent Application Publication 2001/0022558 ("*Karr*") | X |
| Ex-1008 | U.S. Patent No. 7,116,987 ("*Spain-II*") | X |
| Ex-1009 | U.S. Patent No. 6,782,265 ("*Perez-Breva-II*") | X |
| Ex-1010 | U.S. Patent No. 6,393,294 ("*Perez-Breva-I*") | X |
| Ex-1011 | U.S. Patent No. 6,944,465 ("*Spain-I*") | X |
| Ex-1012 | T Suzuki, et al., The Moving-body Position Detection Method; JP Patent Application (shown as 63-195800), August 1988 | X |
| 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 | X |
| 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 | X |
| Ex-1015 | J. Jimenez et al., Mobile Location Using Coverage Information: Theoretical Analysis and Results, COST 259 TD (98), April 1999 | X |

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| Ex-1017 | U.S. Patent No. 7,213,057 ("*Trethewey*") | X |
| Ex-1018 | U.S. Patent Application Publication No. 2004/0203768 ("*Ylitalo*") | X |
| Ex-1019 | U.S. Patent Application Publication No. 2009/0075651 ("*MacNaughton*") | X |
| Ex-1020 | U.S. Patent Application Publication No. 2005/0185618 ("*Friday*") | X |
| Ex-1021 | Plaintiff Broadphone LLC's Disclosure of Asserted Claims and Infringement Contentions, *Broadphone LLC v. Samsung Elecs. Co.*, No. 23-cv-00001 (E.D. Tex. Oct. 5, 2023) | X |
| Ex-1022 | Memorandum from Director Vidal (June 21, 2022) | X |
| Ex-1023 | Federal Court Management Statistics (June 2023) | X |
| Ex-1024 | Docket Control Order, *Broadphone LLC v. Samsung Elecs. Co.*, No. 23-cv-00001 (E.D. Tex. Oct. 13, 2023) | X |
| Ex-1025 | Broadphone's Infringement Chart for U.S. Patent No. 8,170,583, *Broadphone LLC v. Samsung Elecs. Co.*, No. 23-cv-00001 (E.D. Tex. Oct. 5, 2023) | X |
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| Ex-1027 | U.S. Patent Application Publication No. 2004/0152471 ("*MacDonald*") | X |
| Ex-1028 | U.S. Patent No. 7,346,359 ("*Damarla*") | X |
| Ex-1029 | U.S. Patent No. 6,052,598 ("*Rudrapatna*") | X |
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| Ex-1032 | U.S. Patent No. 7,397,424 ("*Houri*") | X |
| Ex-1033 | U.S. Patent No. 7,305,244 ("*Blomqvist*") | X |

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| Ex-1057 | U.S. Patent Application Publication No. 2004/0198386 ("*Dupray*") | X |
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| Ex-1059 | U.S. Patent No. 7,474,897 ("*Morgan-I*") | X |
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| Ex-1069 | U.S. Patent Application Publication No. 2005/0195761 ("*Alicherry*") | X |
| Ex-1070 | U.S. Patent Application Publication No. 2007/0133487 ("*Wang*") | X |

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| Ex-1072 | U.S. Patent Application Publication No. 2007/0249365 ("*Jendbro*") | X |
| Ex-1073 | U.S. Patent No. 7,941,656 ("*Hans*") | X |
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| Ex-1076 | U.S. Patent No. 8,725,406 ("*Kitajima*") | X |
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# I. INTRODUCTION

Petitioner Samsung Electronics, Co., Ltd. ("Samsung") replies to Patent Owner's Response (Paper No. 15, "Response" or "POR") filed by Broadphone LLC ("Broadphone"). Broadphone's Response does not substantively dispute the unpatentability of challenged claims 1, 2, 4, 6-10, 17-20, and 24-26. As such, those claims are unpatentable for the reasons provided in the Petition and the Board's Institution Decision. Broadphone limits its Response to two dependent claims, Claims 3 and 5, and notably only disputes Claim 3 with respect to Ground 1 but not Ground 2. As discussed in more detail below, Broadphone's Response advances arguments that are divorced from the claim language and inconsistent with the evidence. All of the challenged claims should be found unpatentable and canceled.

# II. ALL OF THE CHALLENGED CLAIMS ARE UNPATENTABLE

## A. Ground 1 Demonstrates That Claims 3 and 5 Are Obvious

As an initial matter, implicit in Broadphone's Ground 1 argument is the tacit concession that the combination of *Spain-I* in view of *Hunzinger* and *Nanda* meets the limitations of Claim 1. Broadphone's Response does not argue that any limitations of Claim 1 are not met by the proposed combination of *Spain-I* in view of *Hunzinger* and *Nanda* (*see generally* POR), but instead argues that the

combination cannot meet the limitations of Claims 3 and 5 (*see* POR at 5-14).[1] Accordingly, Broadphone has waived any argument that Ground 1 does not teach the limitations of Claim 1. Moreover, Broadphone does not dispute that Claim 3 is unpatentable under Ground 2. *See* POR at 14-16; *see also* Pet. at 61-64. Therefore, the Board need not reach Claim 3 under Ground 1 as that issue is moot. In any event, however, all of Broadphone's arguments are without merit.

**1. Broadphone's Argument Is Based on a False Premise**

Broadphone asserts that, in addressing Claim 1, the Petition addressed the "determining" limitation by relying on actions performed by the mobile unit ("MU") and that, as a result, "Petitioner must show that the mobile device itself would be configured to perform the determination by comparing signal strength information with stored fingerprint information" for Claims 3 and 5. POR at 6-7; *see also id.* at 5. Moreover, Broadphone states that "[t]here is no suggestion in the context of Claim 1 that a POSITA would be motivated to configure a remote server, or anything other than the MU, to perform the comparison operation." *Id*. at 7.

Assuming, *arguendo*, that Broadphone was correct that the Petition relied

[1] Similarly, Broadphone's expert, Dr. Cooklev, did not provide any opinions regarding whether the Ground 1 combination teaches the limitations of Claim 1. *See generally* Ex-2003 (Cooklev Declaration).

exclusively on the MU in addressing Claim 1, Broadphone cites nothing in support of its apparent proposition that this somehow binds Samsung to only rely on the MU in addressing claims that depend from Claim 1 (i.e., Claims 3 and 5). It does not. But in any event, there are several problems with Broadphone's argument.

**i. Broadphone Misreads Claim 1's Determining Step**

Claim 1 recites a "first portable RF communication device determining if a monitored location is within proximity of a location chosen by a user of the first portable RF communication device" and specifically making such a determination "as a result of" two sub-steps. Ex-1001 at 26:19-31. The Petition identifies this as limitation 1(b). Pet. at 11. There is no language in Claim 1 restricting the entirety of the location determination to actions performed at the claimed first portable RF communication device (i.e., the mobile unit or MU). Specifically, the language of Claim 1, in part, recites:

> (b) the first portable RF communication device determining if a monitored location is within proximity of a location chosen by a user of the first portable RF communication device, **as a result of** (i) electronically comparing the at least one ID and at least one figure based on the signal strengths of the first plurality of antenna stations at the monitored location with the at least one ID and the at least one figure based on signal strengths of the first plurality of antenna stations at the location chosen by the user, and (ii) determining if the difference between the

> signal strengths measured at the monitored location and the signal strengths at the location chosen by the user is less than a predetermined threshold.

Ex-1001 at 26:19-31 (emphasis added). The claim recites that the location determination is carried out "as a result of" two sub-steps. *Id*. (reciting steps (i) and (ii)). As a plain reading of the claim illustrates, the determination of whether the monitored location of the device is at a location chosen by a user of the device is analyzed "as a result of" (i) an electronic comparison of IDs and signal strengths and (ii) a determination of the difference in signal strengths based on a predetermined threshold. The claim does not recite that sub-step (i) and (ii) are carried out at the first portable RF communication device (MU), but instead states that the overall determination is done "as a result of" the sub-steps which are not required to be performed at the MU. Broadphone's attempt to limit the claim's sub-steps to being performed at the MU is not supported by the language of the claim or the specification of the '583 Patent. *See* Ex-1001 at 11:62-63 ("Storage [of fingerprint data] may be on the device per se or transferred to a remote storage facility."), 12:35-39 ("[O]ne might even reach the case where Registering is done on a first device, Monitoring is done on a second device, Storing is done in an offsite facility, and Determining is done in a different offsite facility."). During cross-examination, Broadphone's expert, Dr. Cooklev, opined that the steps of Claim 1 were limited to

being carried out at the first portable RF communication device. *See* Ex-1079 (Cooklev Dep. Tr.) at 39:10-40:21, 42:10-43:7; *see also id.* at 46:13-50:1. This is similarly incorrect for the reasons stated above.

Additionally, Broadphone's proposed interpretation of Claim 1 would not be consistent with Claim 5 (*see* Ex-1001 at 26:43-45), which requires the database to be stored remotely, and not on the first portable RF communication device. Indeed, Broadphone's construction effectively calls for a construction where Claim 5 can never be met. As the Federal Circuit has recognized, "[a]lthough each claim is an independent invention, dependent claims can aid in interpreting the scope of claims from which they depend." *Laitram Corp. v. NEC Corp.*, 62 F.3d 1388, 1392 (Fed. Cir. 1995)). For this additional reason, Broadphone's argument is not correct.

Accordingly, Broadphone's argument based on a restrictive reading of the claim language should be rejected.

**ii. Broadphone Misreads the Petition**

The Petition explained how the determining step of Claim 1 was met regardless of where fingerprint data is stored. That is, the Petition identified and relied on scenarios where fingerprint data is stored remotely and scenarios where fingerprint data is stored on the MU itself.

For example, the Petition explained how *Spain-I*'s "MU electronically compares fingerprint information (including signal strengths and station ID(s)) for

the MU's current location with stored fingerprint information (having similar parameters) associated with particular location(s) to determine a closest match and discloses various ways to build the database, determine closeness, and refine the analysis." Pet. at 12 (citations omitted). Further, the Petition explained how "*Spain-I* discloses configurations where a user can initiate a request that causes 'the MU [to] capture[] the fingerprint of its current location,'" including "teachings relate[d] to location server 30 maintaining the fingerprint database and performing fingerprint matching processes," but also teachings that "suggested to a POSITA that the MU may be configured to receive user requests to measure/collect other fingerprint locations." Pet. at 14 (citations omitted). The Petition stated that "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*)." Pet. at 23; *see also id.* at 25-26. Thus, while the Petition did discuss actions that may be performed by the MU, the Petition did not limit its analysis to scenarios where the fingerprint database is stored on the MU.

**2. The Petition's Ground 1 Theory Contemplates Location Determination Using a Database Stored on a Remote Server**

In the Response, Broadphone states that the "Petition's Claim 1 theory requires the signal strength comparison between stored fingerprint data and measured signal strengths to happen at the MU, but the Petition's theory for claims

3 and 5 requires the stored fingerprint data be stored remotely from the first MU. The Petition, however, articulates no motivation that a POSITA would have had to arrive at such a combination of elements." POR at 8. Broadphone further contends that "both *Spain-I* and *Nanda* specifically teach that when the database is stored on a remote server, the comparisons are also performed on the remote server." *Id*. at 8; *see also id*. at 10. Broadphone's contentions are not accurate.

The Ground 1 analysis related to Claim 3 explains that *Spain-I*'s "MU communicates with location server 30 through a wireless infrastructure (Ex-1011, 3:8-12, 4:7-22) and describes configurations where the fingerprint database may be stored at server 30. … Likewise, *Nanda* teaches/suggests similar features where a mobile device creates/sends fingerprint(s) to a remote database … and where such a remote database 'receiv[es] fingerprints from multiple mobile[] devices' to allow for a 'much larger database of available access points than would be found in a single mobile device.'" *See* Pet. at 42 (citations omitted). The Petition further explains that "a POSITA would have been motivated, and found obvious, to configure the modified *Spain-I* system/processes such that multiple MUs (including a second different MU) measures/collects signal strengths from signals received when at a user chosen location selected by the user of the first MU … to generate respective fingerprints used for building a robust fingerprint database stored at a remote server, consistent with features contemplated by *Spain-I* and *Nanda*." Pet. at 42-43

(citations omitted). As such, the references of the Petition's proposed combination explain that a fingerprint database may be stored at the MU or at a remote location which receives fingerprints from multiple MUs.

Further, the Petition explains that a POSITA would have recognized "that such features would have allowed the modified *Spain-I* system/processes … to create/maintain a robust database of fingerprint information using measurements from multiple MUs, like that suggested by *Nanda* …, thus beneficially expanding applications of *Spain-I*'s disclosed features." *See* Pet. at 43. The Petition supported this rationale by explaining how multiple MUs operated by different users could measure signal strengths at chosen locations to build a robust database and such features would have "**leveraged use of a remote database** (as contemplated by *Spain-I* and *Nanda*) that receives strength measurements from other MUs, **while still providing for the first MU to perform location determining processes consistent with that discussed for Claim 1**." *See* Pet. at 44-45 (emphasis added).

Regarding Claim 5, the Petition's Ground 1 obviousness theory explains that "*Spain-I* describes configurations where the fingerprint database may be stored at the location server remotely from the MU. . . Likewise, *Nanda* teaches/suggests similar features." Pet. at 47 (internal citations omitted). The Petition therefore accounts for scenarios where the database is stored remotely from the MU. The Petition then explains that a POSITA would have been motivated "to configure the

modified *Spain-I-Hunzinger-Nanda* system/processes **such that the MU operates in conjunction with a remote fingerprint database, where the MU generates/provides fingerprint information (signal strengths and ID information) for respective locations to a remote server for storage in a database for subsequent analysis**, consistent with that contemplated by *Spain-I* and *Nanda*. (Ex-1002, ¶196.)." Pet. at 47 (emphasis added). The Petition also explains that **"[w]hile a POSITA would have contemplated using, *e.g.*, a remote server (*e.g.*, location server) to perform determining processes** as mentioned by *Spain-I* … and *Nanda* …, **a POSITA would have likewise been motivated and found benefit in allowing the MU to perform the determination processes as discussed for claims 1 and 3-4 using signal strength/ID information stored at a remote database**, consistent with that known in the art." Pet. at 48 (emphasis added, citations omitted). Thus, the Petition's proposed combination contemplates system/processes featuring a remote database with location determination performed at either the MU or the remote database. Therefore, Broadphone's argument that the Petition articulates no motivation that a POSITA would have had to arrive at the proposed combination for Claims 3 and 5 is simply not accurate. Indeed, Dr. Cooklev conceded that there are multiple benefits to using a system with a remote database. *See* Ex-1079 at 93:14-18 (explaining benefits related to storage and processing requirements).

Broadphone also contends that "[t]here is no embodiment in *Spain-I*, nor any obviousness theory in the Petition, of an embodiment where the database is stored on the location server but the determination operation is performed by the MU." POR at 8-9. Broadphone further argues that the Petition relies on *Nanda*'s embodiment "where both the database storage and the location determination are situated on a remote server." *Id*. at 9. This is plainly incorrect. As explained above, Ground 1 of the Petition details that the *Spain-I-Nanda-Hunzinger* combination contemplates a configuration where a location determination is performed at the MU while fingerprint data is stored at a remote database. *See* Pet. at 41-45, 46-49 (analysis of Claims 3 and 5 explaining that a POSITA would recognize use of a remote database that receives signal strength measurements, while still providing for an MU to perform location determination). Therefore, Broadphone's lack-of-an-obviousness-theory argument regarding a database stored remotely with a determination operation performed at the MU is wrong and should be rejected.

Additionally, Broadphone argues that "*Spain-I* and *Nanda* thus unambiguously disclose that when the fingerprint database is stored on a remote server, it is the remote server (not the mobile unit) that 'determines the location of the mobile unit' (*Spain-I* at 6:13-14) or 'perform[s] the fingerprint comparison' (*Nanda* at 12:23-24). Ex. 2003 ¶36." POR at 10-11. Ground 1 of the Petition (*Spain-I-Nanda-Hunzinger*) details that a POSITA would be motivated to configure a

system in which an MU performs location determination with the use of reference fingerprints from a remote fingerprint database. *See* Pet. at 41-45, 46-49. Broadphone's argument, based on certain embodiments of Ground 1's prior art references, improperly considers those references in isolation. In assessing obviousness, references are not read in isolation. *See, e.g.*, *In re Merck & Co.*, *Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) ("Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.") (citation omitted); *In re Nicira, Inc.*, No. 2022-1297, 2023 WL 3071641, at *2 (Fed. Cir. Apr. 25, 2023) ("It is the combination of the references that renders the limitation and the claim obvious, not each reference read in isolation.") (citing *In re Merck &Co.*, 800 F.2d at 1097).

For these reasons, Broadphone's arguments related to Ground 1 are incorrect and should be rejected.

### 3. Ground 1 of the Petition Provides the Motivation for a System Where the MU Performs Location Comparison With the Use of a Remote Database

Broadphone contends that the analyses for Claims 3 and 5 do not present any new or alternative theory for the limitations of independent Claim 1. POR at 11. Broadphone states that "the Petition's Claim 1 theory requires that the determination of the location of the mobile unit, specifically including the fingerprint comparison, is performed by the MU (the claimed first portable RF communications device)."

*Id*. Broadphone further alleges that "the Petition's theories for the additional limitations of Claim 3 and 5 exclusively rely on prior art teachings in which the determination of the location of the mobile unit, specifically including the fingerprint comparison, is performed by a remote server, not the MU." *Id*. Broadphone asserts that the Petition does not explain how a POSITA would have been motivated to combine these alleged alternative embodiments. *Id*. at 11-12. Broadphone is incorrect.

Broadphone's contention that a "POSITA considering the teachings of *Spain-I*, *Nanda*, and *Hunzinger* would have avoided storing the fingerprint database on the server while performing the fingerprint comparison on the MU" (POR at 11-12) is contradicted by the Petition, Dr. Almeroth (Samsung's expert), and Dr. Cooklev. Claim 3 of the '583 Patent requires that "the chosen location signal strengths were measured by a second portable RF communication device, different from the first portable RF communication device." *See* Ex-1001 at 26:35-38. Regarding the Claim 3 analysis, the Petition details that:

> *Spain-I* explains that the MU communicates with location server 30 through a wireless infrastructure (Ex-1011, 3:8-12, 4:7-22) and describes configurations where the fingerprint database may be stored at server 30. (§§IX.A.1(a)-(b); Ex-1011, FIG. 3, 6:9-14, 6:15-30; Ex-1005, FIG. 3, 4:28-58; Ex-1009, 5:22-42; Ex-1010, 5:20-41.) Likewise, *Nanda* teaches/suggests similar features

> where a mobile device creates/sends fingerprint(s) to a remote database (Ex-1006, 12:14-31) and where such a remote database "receiv[es] fingerprints from multiple mobiles devices" to allow for a "much larger database of available access points than would be found in a single mobile device." (*Id*.) (Ex-1002, ¶186.)

*See* Pet. at 42. The Petition further explains that:

> A POSITA would have appreciated that such features would have allowed the modified *Spain-I* system/processes (§IX.A.1) to create/maintain a robust database of fingerprint information using measurements from multiple MUs, like that suggested by *Nanda* (Ex-1006, 12:26-29), thus beneficially expanding applications of *Spain-I*'s disclosed features. (Ex-1002, ¶188.)

*See* Pet. at 43. The Petition explained that, based on the teachings of *Spain-I* and *Nanda*, a POSITA would have recognized that "[s]uch features would have leveraged use of a remote database (as contemplated by *Spain-I* and *Nanda*) that receives strength measurements from other MUs, while still providing for the first MU to perform location determining processes consistent with that discussed for Claim 1. (*Id*.; §IX.A.1(b).)" *See* Pet. at 44-45. Similarly, Dr. Almeroth opined regarding the benefits and motivation to combine related to this combination. *See* Ex-1002 (Almeroth Declaration), ¶¶185-191.

Claim 5 of the '583 Patent states "the database is stored remotely, and not on the first portable RF communication device." *See* Ex-1001 at 26:43-45. The Petition's Claim 5 analysis explains that the *Spain-I-Hunzinger-Nanda* combination discloses and/or suggests this limitation. *See* Pet. at 47-49. Specifically, the Petition explains that:

> Such teachings in context of the rationale/teachings/suggestions for claims 1 and 3-4 (§§IX.A.1, IX.A.3-A.4), would have motivated a POSITA to configure the modified *Spain-I-Hunzinger-Nanda* system/processes such that the MU operates in conjunction with a remote fingerprint database, where the MU generates/provides fingerprint information (signal strengths and ID information) for respective locations to a remote server for storage in a database for subsequent analysis, consistent with that contemplated by *Spain-I* and *Nanda*. (Ex-1002, ¶196.).

Pet. at 47. As support for this modification, the Petition details that:

> A POSITA would have been motivated to consider/implement such features to allow the modified system to work with a remote database that receives fingerprint data from multiple MUs, like that suggested by *Nanda* (Ex-1006, 12:26-29) and discussed for Claim 3, thus beneficially expanding the applications of the modified *Spain-I* system/process[.]

Pet. at 47. Moreover, a POSITA would have contemplated using either a remote server to perform determining processes, as mentioned by *Spain-I* and *Nanda*, or would have likewise been motivated and found benefit in allowing the MU to perform the determination processes as discussed for Claims 1 and 3-4 using signal strength/ID information stored at a remote database, consistent with that known in the art because a POSITA would have recognized advantages in conserving memory/processing resources in the MU that would have otherwise been used to maintain the fingerprint database locally. *See* Pet. at 48. Similarly, Dr. Almeroth opined regarding the benefits and motivation to combine related to this combination. *See* Ex-1002, ¶¶195-202.

Therefore, as detailed by the Petition and Dr. Almeroth's supporting declaration, the limitations of Claims 3 and 5 of the '583 Patent are taught by Ground 1 of the Petition. As an additional point, and as explained in the following section (*see infra* §II.A.4), Dr. Cooklev's cross-examination testimony (to the extent it is given weight) noted the benefits of using a remote fingerprint database as contemplated in the *Spain-I-Hunzinger-Nanda* combination. For these reasons, Broadphone's arguments that Ground 1 fails to show obviousness of Claims 3 or 5 should be rejected.

### 4. Broadphone's Arguments Regarding Increased Bandwidth and Power Consumption Do Not Undermine the Motivation to Combine

In its Response, Broadphone argues that Samsung's proposed combination of *Spain-I*, *Nanda*, and *Hunzinger* would increase bandwidth and power consumption and therefore, a POSITA would be dissuaded from making the proposed modification. *See* POR at 12; *see also* Ex-2003, ¶¶37-38. But Broadphone's consumption-based argument lacks evidentiary support and does not undermine the motivation to combine. To the extent that the testimony of Dr. Cooklev is given any weight, it does not serve to defeat obviousness. Specifically, during cross-examination, Dr. Cooklev agreed that decreasing the processing requirements as well as the storage requirements of the MU would be a benefit of moving a fingerprint database to a remote location. *See* Ex-1079 at 93:14-18 ("**Q**: So you agree that reducing processing requirements and reducing storage requirements are two separate benefits for storing the fingerprint database on the server, correct? **A**: I think I agree with that."). Dr. Cooklev was unable to explain why such a configuration would not be possible. *See, e.g.*, Ex-1079 at 98:1-102:6, 103:16-104:3. Thus, Dr. Cooklev acknowledged that there are multiple benefits to the proposed *Spain-I*, *Nanda*, *Hunzinger* combination and his testimony regarding this combination, to the extent it is given any weight, does not show non-obviousness. *See also id.* at 104:18-106:12 (stating that MU storage would be saved with a remote

fingerprint database). Additionally, Dr. Cooklev was unable to articulate what drawbacks, if any, would be realized by configuring a system with a remote fingerprint database. *Id*. at 106:13-108:1.

Assuming, *arguendo*, that moving the fingerprint database to a remote server may increase bandwidth and/or power consumption, there would still be a beneficial decrease in processing requirements for the MU and reduced storage requirements at the MU. Ex-1002, ¶¶195-202. That is, the MU would no longer need to store fingerprint data in an on-device database, freeing up processing ability and storage space of the device. *Id*. at ¶¶200-202. Broadphone's insistence that the motivation to combine must not have any disadvantages is not supported by the case law. *See Medichem, S.A. v. Rolabo, S.L*., 437 F.3d 1157, 1165 (Fed. Cir. 2006) ("[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine."); *Rackspace US, Inc. et al. v. PersonalWeb Tech., LLC*, IPR2014-00066, Paper 9 at 33 (Apr. 15, 2014) ("Although implementing [the solution of the teaching reference] may increase cost, such disadvantages are not dispositive of non-obviousness, especially in view of the explicit teachings of [the reference] . . . ."); *Ex parte Goldman et al.*, 2016 Pat. App. LEXIS 5125, *7-8 (P.T.A.B. June 30, 2016) (finding that the fact that one benefit comes at the expense of another benefit does not nullify the motivation to combine the references).

Although bandwidth consumption and/or power consumption may be factors that a POSITA would consider, motivation to combine is not simply a cost-benefit analysis. The advantages gained by configuring a system with the fingerprint database in a remote location would have motivated a POSITA to modify *Spain-I*, and Broadphone's arguments to the contrary do not negate that motivation. *Winner Intern. Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) ("The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another."); *see also* Ex-1002, ¶¶195-202.

**B. Ground 2 Demonstrates That Claim 5 Is Obvious**

Broadphone contends that Ground 2 of the Petition "does not actually explain how or why its combination involving *Spain-I*, *Hunzinger*, *Nanda*, and *Damarla* satisfies all requirements of Claim 1, from which challenged Claim[] 5 depends." POR at 14. Broadphone further alleges that the Petition's only discussion of how Claim 1 is satisfied is provided with respect to the *Spain-I*, *Nanda*, *Hunzinger* combination set forth in Ground 1. *Id*. Broadphone is not correct.

The Petition's Ground 2 analysis demonstrates that Claims 3, 5, and 6 are obvious over *Spain-I* in view of *Hunzinger*, *Nanda*, and *Damarla*. Pet. at 61-64. Significantly, Broadphone does not dispute that Claim 3 is taught by Ground 2's proposed combination of *Spain-I-Hunzinger-Nanda-Damarla*. *See* POR at 14-16.

Instead, Broadphone only argues that Ground 2 fails to show obviousness of Claim 5. *Id*. However, Broadphone neglects to ever address *Damarla*, which was an important reference in this Ground. *See generally* POR. Additionally, Dr. Cooklev never addressed *Damarla* or Ground 2 of the Petition in his declaration. *See generally* Ex-2003.

Sections IX.B.1 and IX.B.2 of the Petition detail the *Spain-I-Hunzinger-Nanda-Damarla* combination of Ground 2. *See* Pet. at 61-64. Regarding Claim 5, the Petition explains that *Damarla* discloses configurations where a server hosts the fingerprint database which can send the appropriate reference RF fingerprints to an MU for use at run-time. *Id*. at 64 (citing Ex-1028 (*Damarla*) at 5:57-62, 16:42-57). The Petition explicitly states that these teachings of *Damarla* would have complemented the rationale for modifying/configuring *Spain-I-Hunzinger-Nanda* system/processes as discussed in §§**IX.A.1**, IX.A.5-IX.A.6 of the Petition. *Id*. at 64 (emphasis added). Section IX.A.1 is the Petition's Ground 1 analysis of Claim 1. Thus, Section IX.B.2 of the Petition directly addresses how the *Spain-I-Hunzinger-Nanda-Damarla* combination would meet the limitations of Claim 1 by incorporating the Claim 1 analysis therein. Moreover, Section IX.B.2 further states:

> *Spain-I-Hunzinger-Nanda-Damarla* discloses/suggests claims 5-6 for reasons in §§IX.A.1, IX.A.4-6, IX.B.1. (*Id*., ¶246.) A POSITA would have had similar rationale/skills/knowledge and expectation of success as

> respectively discussed above for claims 5-6 (§IX.A.5-6) (and in §IX.B.1) to configure/implement features like those in claims 5-6 in light of *Damarla*, *Spain-I*, and *Nanda*. (Ex-1002, ¶¶246-247.)

Pet. at 64. Section IX.B.1 of the Petition details the rationale that a POSITA would have considered in looking to *Damarla*—rationale that Broadphone does not dispute. *Id*. at 61 ("*Damarla* discloses RF fingerprinting technologies/techniques and is in the same technical field as the '583 patent and *Spain-I-Hunzinger-Nanda* and pertinent to problem(s) addressed by the '583 patent (and a POSITA), and thus would have been consulted in context of *Spain-I-Hunzinger-Nanda*.") (internal citations omitted). The Petition further explains that based on *Damarla*, an "MU samples/records 'the RF environment (e.g., signal strength of transmissions from various sources)' at each location to address environment changes and improve accuracy of a location system. (*Id*.; Ex-1028, 5:10-16, FIG. 4.) Thereafter, updated reference fingerprints are deployed to the MUs for location determinations. . . Thus, a first MU can use fingerprint matching to determine location based on database information updated by signal strength measurements taken by a second MU." Pet. at 62.

Accordingly, the Petition details the teachings of *Damarla* and the rationale that a POSITA would have in applying those teachings to the *Spain-I-Hunzinger-Nanda* combination in the context of Claims 1, 3, and 5. Broadphone's arguments

to the contrary are inaccurate and should be rejected.

Broadphone posits that "while both *Spain-I* and *Nanda* teach that the relied-upon calculation can occur either on a remote server or on the device itself, both references are clear that when the fingerprint database is stored on a remote server, the calculations the Petition alleges satisfy the Claim 1 determining step would also be performed on the remote server rather than on the database itself." POR at 14 (citations omitted). As explained in the Petition's discussion of Ground 2 related to Claims 3 and 5, the combination of *Spain-I*, *Hunzinger*, *Nanda*, and *Damarla* contemplates storing fingerprints in a remote database while performing the location determination on the MU. *See* Pet. at 61-64. In addition to the Ground 1 analysis explained above in Section II.A, *Damarla* teaches that a server that hosts the fingerprint database can send the appropriate reference RF fingerprints to a MU to perform the location determination at run-time. *Id*. Specifically, *Damarla* states:

> [T]he reference RF fingerprints are deployed 500 to the computing infrastructure used to support location determination in the environment. This infrastructure could be a server that delivers reference RF fingerprint information to MUs, or it could be the MUs themselves.

Ex-1028 at 5:57-62.

> Reference RF fingerprints must be matched against MU RF fingerprints. This may or may not be performed by the

> same processing unit that stores the reference RF fingerprint database; however, processing units could also dynamically transmit portions of the database for use at run-time (e.g., a server that hosts the database could send the appropriate reference RF fingerprints to a MU so that it could do fingerprint matching).

Ex-1028 at 16:42-57. Therefore, Broadphone's argument that when the fingerprint database is stored on a remote server, the calculations would also be performed on the remote server ignores the explicit teachings of *Damarla* and should be rejected. Indeed, as noted above, Broadphone's Response entirely overlooks *Damarla* and provides no argument that the reference fails to teach limitations of Claims 3, 5, and 6.[2]

Broadphone further alleges that the Petition presents no motivation to pursue a combination where the calculations would be conducted on the MU even though the fingerprint database is stored on a remote server, "and does not even acknowledge that this approach is inconsistent with the teachings of both *Nanda* and *Spain-I*." POR at 15-16. Again, as detailed above, the Petition's Ground 2 analysis (Pet. at 61-64) provides that the combination of *Spain-I*, *Hunzinger*, *Nanda*, and

[2] Similarly, Dr. Cooklev fails to address *Damarla* and the Petition's Ground 2 combination of *Spain-I-Hunzinger-Nanda-Damarla*. *See generally* Ex-2003.

*Damarla* teaches a system in which the remote fingerprint database can send reference fingerprints to the MU for performing the location determination analysis. *See, e.g.*, Ex-1028 at 5:57-62, 16:42-57. As the Petition notes, such a combination is not inconsistent with *Spain-I* or *Nanda*, as a POSITA would have had similar rationale and expectation of success to implement the teachings of *Damarla* with *Spain-I* and *Nanda*. *See* Pet. at 64.

Broadphone also argues that the only motivation of record to incur the alleged drawbacks of "performing a fingerprint comparison on the device itself (as opposed to on the remote server the fingerprint database is stored on) is disclosed by the '583 Patent itself, which teaches that having the calculation performed on the device solves privacy concerns posed by having a network monitor the device's location." POR at 16 (citing Ex-1001 at 3:7-9). Broadphone's contention is wrong because a POSITA would understand that a server that hosts the fingerprint database can send the appropriate reference RF fingerprints to a MU to perform the location determination at run-time, conserving at least storage requirements of the MU, as explained above. Broadphone's argument also fails given Dr. Cooklev's cross-examination testimony (*see supra* §II.A.4) (to the extent it is accorded any weight) in which he admitted that decreasing the processing requirements as well as the storage requirements of the MU would be a benefit of moving a fingerprint database to a remote location. *See, e.g.*, Ex-1079 at 93:14-18, 98:1-102:6, 103:16-104:3,

104:18-106:12, 106:13-108:1. Thus, Dr. Cooklev acknowledged that there are multiple benefits to implementing a system with a remote fingerprint database while still performing location determination at the MU. For these reasons, Broadphone's arguments that the only benefits realized by the Petition's proposed combination are related to privacy concerns cannot be accurate.

## III. THE TESTIMONY OF DR. COOKLEV IS NOT CREDIBLE AND SHOULD BE GIVEN NO WEIGHT

Because Dr. Cooklev's testimony is inconsistent and evasive, it deserves no weight in this proceeding. *See Ultratec, Inc. v. CaptionCall, LLC*, 872 F.3d 1267, 1275 (Fed. Cir. 2017) (remanding to the Board to consider the impact of an expert's inconsistent testimony on his credibility); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations."). For example, during cross-examination, Dr. Cooklev testified that Claim 1 of the '583 Patent precludes the first portable RF communications device from performing location determination with assistance from another device. *See* Ex-1079 at 39:10-40:21, 42:10-43:7. However, as discussed above, the '583 Patent contemplates multiple devices performing the steps of Claim 1. *See* Ex-1001 at 12:35-39 ("[O]ne might even reach the case where Registering is done on a first device, Monitoring is done on a second device, Storing is done in an offsite facility, and Determining is done in a different offsite facility.").

Thus, Dr. Cooklev's testimony is not consistent with the plain reading of the claims and specification. Additionally, throughout his deposition, Dr. Cooklev refused to answer basic questions regarding the scope of the challenged claims or the meaning of particular claim terms. *See, e.g.*, Ex-1079 at 33:10-17, 33:18-34:5, 36:19-37:9; *see also id.* at 44:8-45:21, 48:16-49:3, 106:13-107:9. Accordingly, Dr. Cooklev's contradictory and evasive testimony should be accorded no weight. *Ultratec,* 872 F.3d at 1275; *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368.

## IV. CONCLUSION

For the reasons set forth above, in the Petition, and the Board's Institution Decision, the Board should reject Broadphone's arguments and find the challenged claims unpatentable.

Dated: November 12, 2024

Respectfully submitted,

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## CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Petitioner's Reply contains, as measured by the word-processing system used to prepare this paper, 5,531 words. This word count does not include the items excluded by 37 C.F.R. § 42.24.

Respectfully submitted,

Dated: November 12, 2024

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**CERTIFICATE OF SERVICE**

I hereby certify that on November 12, 2024, a copy of the foregoing Petitioner's Reply was served by electronic means upon the following:

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