

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
AND SAMSUNG ELECTRONICS AMERICA, INC.,

Case IPR2025-01188
Patent No. 11,272,535 B2

PATENT OWNER HANNIBAL IP LLC's PRELIMINARY RESPONSE

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Patent Owner, Hannibal IP LLC (“Hannibal” or “Patent Owner”)
respectfully requests that the Director deny institution in this *inter partes* review proceeding because Petitioners cannot show “a reasonable likelihood” of prevailing against Claims 1 and 10, the only independent claims at issue (the “Challenged Independent Claims”), of U.S. Patent No. 11,272,535 titled “Method and Apparatus for LBT Failure Detection” (the “’535 Patent”). 35 U.S.C. § 314(a). Petitioners also sought review of dependent Claims 2-8; 11-20 (“Challenged Dependent Claims”), but since Petitioners failed to carry their burden as to Claims 1 and 10, the Director does not need to address these Challenged Dependent Claims to deny institution. (The Challenged Independent Claims and Challenged Dependent Claims referred to herein as the “Challenged Claims”).

I. INTRODUCTION

The Director should exercise his discretion and deny institution as to the Challenged Claims for at least the following reasons. First, the Petitioner’s challenge fails to present any prior art or combination of art that discloses the limitation “reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.” Ex. 1001, 13:45 – 46. To fill the gap in the prior art, Petitioner relies solely on expert testimony in support of an incorrect and unsupported premise that the MAC reset procedure requires resetting *all*

counters maintained by the MAC. As discussed herein, the art demonstrates the error in the expert's opinion. Further, the art relied on in the Petition is substantially the same as the art made of record during prosecution. For at least these reasons, the Director should deny institution.

II. FACTUAL BACKGROUND

A. The '535 Patent

The '535 Patent issued on March 8, 2022, and contains two independent claims, Claims 1 and 10. Claim 1 is an apparatus claim directed to a device, “a user equipment (UE).” Claim 10 is a method claim that closely corresponds to Claim 1. The application for the '535 Patent was filed on January 8, 2020, and claims priority to Provisional Application No. 62/790,099 filed on January 9, 2019. Ex. 1001. The priority date of January 9, 2019, is not challenged by Petitioner. Petition, p. 1; Ex. 1002, ¶ 51.

As background, an improvement in the fifth generation (5G) New Radio (NR) wireless communications standard was making available to user devices (UE's) a portion of the RF spectrum known as the “unlicensed spectrum,” such as 5 GHz. Household Wi-Fi networks, for example, also utilize 5 GHz. Ex. 1001, 1:25-37. Much like the old CB radios or walkie-talkies, communication cannot occur if two devices are trying to transmit on the same frequency. Given the prevalence of Wi-Fi devices, the use of the unlicensed 5 GHz band could be

especially problematic. To avoid interfering with other devices, the 5G standards specify a Listen-Before-Talk (“LBT”) scheme that requires a UE to listen to a particular frequency within the unlicensed spectrum before transmitting. LBT is analogous to what a human would do using a CB radio or walkie-talkie, that is, to listen before pushing the talk button, and if others are talking, either refrain or switch to another frequency. As explained in the Background section, “[i]n NR, LBT may be required prior to any transmission when operating on an unlicensed spectrum.” Ex. 1001, 1:37-45.

The claimed inventions are directed to “an improved and efficient mechanism for a UE to handle LBT failure that may take place in the physical layer.” Ex. 1001, 1:38-41. As noted by Petitioner, the 5G/NR specifications specify two protocol stacks, the user plane and the control plane. Petition, pp. 2 – 3. The inventions concern the control plane, which is as follows:

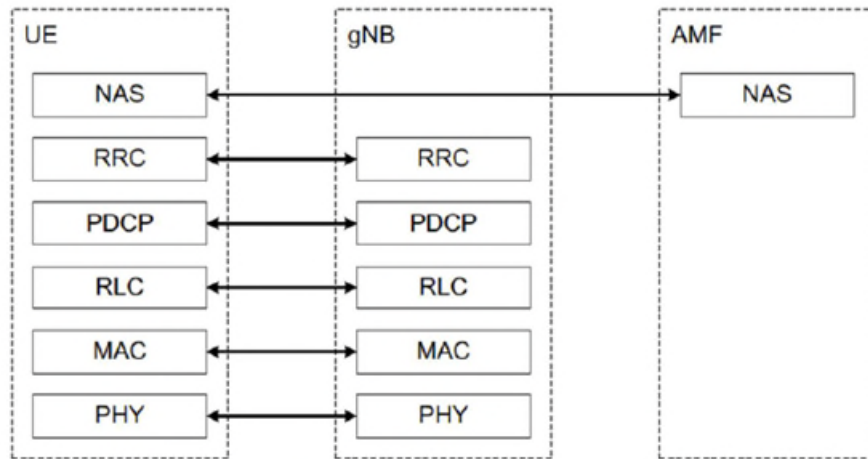


Figure 4.4.2-1: Control Plane Protocol Stack

Petition, p. 3. The “physical layer” (Ex. 1001, 1:38 – 41) is the “PHY” layer shown above.

The inventions of Challenged Independent Claims 1 and 10 provide a novel and non-obvious “improved and efficient mechanism” for handling LBT failures reported to the MAC layer by the PHY layer. Ex. 1001, 1:3. LBT failures can be temporary, and it would be very inefficient to report every failure to the higher layers. The inventions enhance efficiency by requiring that the MAC layer keep track of the number of LBT failures reported to it by the PHY layer. Ex. 1001, ’535 Patent, Cl. 1, 13:36-39. The MAC layer uses a “failure counter” to count the number of LBT failures reported by the PHY layer. Cl. 1, 13:40-41. The MAC layer compares the count of LBT failures to a threshold value. Only when the count is equal to or greater than the threshold, which event is referred to as an

“LBT failure event,” does the MAC layer then report the failure event to “an upper layer.” Ex. 1001, 13:42-44.

B. Overview of Claims 1 and 10

Claim 1 of the '535 Patent is as follows (using the same identifiers as in Petition):

[1pre] 1. A user equipment (UE) comprising:

[1a] one or more non-transitory computer-readable media having computer-executable instructions embodied thereon; and

[1a] at least one processor coupled to the one or more non-transitory computer-readable media, the at least one processor is configured to execute the computer-executable instructions to:

[1b] receive, by a Medium Access Control (MAC) entity of the UE, a Listen-Before-Talk (LBT) failure indication from a lower layer of the UE for all uplink (UL) transmissions;

[1c] increase an LBT failure counter when the MAC entity receives the LBT failure indication;

[1d] determine that an LBT failure event has occurred when the LBT failure counter is greater than or equal to a threshold; and

[1e] reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.

Exhibit 1001, 13:28 – 46 (emphasis added). Limitation [1e] (highlighted) is especially important for the reasons explained below. Claim 10 is a method claim and is closely analogous to the apparatus of Claim 1.

[10pre] 10. A method for Listen-Before-Talk (LBT) failure detection performed by a User Equipment (UE), the method comprising:

[10a] receiving, by a Medium Access Control (MAC) entity of the UE, a Listen-Before-Talk (LBT) failure indication from a lower layer of the UE for all uplink (UL) transmissions;

[10b] increasing an LBT failure counter when the MAC entity receives the LBT failure indication;

[10c] determining that an LBT failure event has occurred when the LBT failure counter is greater than or equal to a threshold; and

[10d] resetting the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.

Ex. 1001, 14:27–39. The Petitioners did not address the limitations of Claim 10 separately, but merely referenced their prior arguments regarding the limitations of Claim 1. *See* Petition, p. 41. Therefore, for purposes of this Preliminary Response only, Hannibal will not separately address Claim 10.

C. Overview of the Prosecution History

Importantly, and a point completely ignored by Petitioner, the inventions require a particular mechanism for resetting the LBT counter. Where the prior art reset LBT counters based on an expiration of a timer, the Challenged Claims require by Limitation [1e] “reset[ting] the LBT counter when a reset of the MAC entity is requested by an upper layer of the UE.” *Id.*, Cl. 1, 13:45-46. In fact, the claims were amended to add Limitation [1e] during prosecution, which Petitioner

failed to mention. Ex. 1003, p. 43, Request for Continued Examination; *cf.* Petition, p. 16. The Examiner agreed that Limitation [1e] distinguished the invention over the prior art. Ex. 1003, p. 21 of 356, Notice of Allowance. Therein, the Examiner stated: “[t]he reasons for Allowance are the same as those presented by the Applicant in the Remarks submitted on 10/11/2021.” Ex. 1003, pp. 18 – 23 of 356, NOA mailed 11/01/2021, p. 2. In the referenced Remarks, the Applicant stated: “Applicant thanks the Examiner for finding that the cited art does not disclose resetting the LBT failure counter when a reset of a MAC entity is requested by an upper layer of the UE. See FOA, p.2.” Ex. 1003, pp. 42-51 of 356, RCE, p. 7, filed 10/11/2021. Petitioners attempt to gloss over Limitation [1e], which is not disclosed by any of the references, by heavily relying on unsupported expert testimony to fill the gap.

D. Samsung Has Long Had Notice of the ’535 Patent

The ’535 Patent issued on March 8, 2022. Samsung had knowledge of the published application for the ’535 Patent at least four years before it filed the Petition. On July 8, 2021, during the prosecution of Samsung’s U.S. Patent No. 11,284,433, the examiner cited the application for the ’535 Patent, U.S. Publ. Appl. 2020/0221495-A1. Ex. 2002 (Notice of References Cited).

Samsung also received express notice of the ’535 Patent and its infringement at least as early as February 14, 2023, when Hannibal provided Samsung with a

claim chart directed to the '535 Patent.¹ Hannibal also followed up on November 6, 2023, with a letter expressly discussing the '535 Patent and referencing the previously provided claim chart. Ex. 2005, p. 2.

E. The Litigation Between Hannibal and Samsung

On February 27, 2025, Hannibal filed its Complaint seeking relief for Samsung's infringement of four patents, including the '535 Patent, in the U.S. District Court for the Eastern District of Texas, Case 4:25-cv-00200-SDJ (the "Litigation")². The accused products are consumer devices such as smartphones and tablets. See Complaint, ¶¶ 67 – 75. Samsung answered on June 16, 2025. On July 24, 2025, the Court issued its Order providing certain case deadlines (the "Order"). Ex. 2006. Based on the Court's schedule the Final Pre-Trial Conference is set for November 18, 2026. *Id.* No trial date was set, but in view of the Court's practice, the trial is likely to be set in late November or early December 2026.

F. Schedule in this IPR Proceeding

Samsung filed its Petition on July 11, 2025, which was accorded that filing date by the Notice of Filing Date Accorded mailed July 21, 2025. Hannibal's

¹ Hannibal and Samsung entered into a Non-Disclosure Agreement on July 12, 2022.

² Samsung has filed three other Petitions for *inter partes* review against Hannibal of U.S. Patent Nos. 11,057,896, 11,368,911, and 11,641,661 (IPR2025-01187, IPR2025-01189, and IPR2025-01190, respectively).

Preliminary Response is due October 21, 2025. The PTAB's decision on institution must be made by January 21, 2026. The Board's Final Written Decision ("FWD") must be issued before January 21, 2027. Notably, the FWD will most likely issue *after* the jury trial in the Litigation.

G. Overview of the Petition

The Petition attacks the validity of all twenty claims of the '535 Patent on four grounds. The Petitioner asserts in its first ground that Claims 1, 3-4, 7-8, 10, 12-13, 16-17, and 19-20 are obvious based on *Shi* (Ex. 1004) in view of *TS-38.321* (Ex. 1007) ("Ground 1"). Petition, p. 22. The Petitioner asserts in the second ground that claims 1–8, 10–17, and 19–20 are obvious based on *Shi* in view of *Hong* (Ex. 1005) and *TS-38.321* ("Ground 2"). Petition, p. 44. Only Grounds 1 and 2 concern the Challenged Independent Claims. At least because these Grounds fail, the other two Grounds (3 and 4) also lack merit.

In both Grounds 1 and 2, the Petitioner acknowledges that none of the art expressly discloses Limitation [1e] "reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE." Ex. 1001, 13:45 – 46. Instead, Samsung relies solely on Dr. Kakaes' opinion, based on *TS-38.321*, to contend that this limitation would be obvious. Petitioner is wrong. Each of the Grounds 1 and 2 will be addressed below.

III. LEVEL OF SKILL IN THE ART

Petitioners define the person of ordinary skill in the art (“POSITA”) as follows:

A person of ordinary skill in the art (“POSITA”) would have had at least a master’s degree in electrical engineering or a similar field and at least two years of experience working with wireless telecommunications systems. Additional relevant work experience can compensate for less education, and vice versa. Kakaes, ¶¶155-211.

Petition, p. 22; Ex. 1002, ¶ 137. Notably, neither Petitioner nor Dr. Kakaes provided any analysis of the five relevant factors (Ex. 1002, ¶ 36) before stating the conclusion quoted above. Ex. 1002, ¶ 137. Neither explains why a master’s degree would be necessary. Hannibal would define the POSITA as having a bachelor’s degree with at least two years of work experience. However, for the present purposes only, Hannibal will use the Petitioners’ definition of the POSITA, but reserves the right to challenge Petitioner’s definition in the future.

IV. LEGAL STANDARDS

A. Claim Construction

The first step in an analysis of validity over the prior art is claim construction. *Oakley, Inc. v. Sunglass Hut Intern.*, 316 F.3d 1331, 1339 (Fed. Cir. 2003); *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed.

Cir. 2001). The Director is well acquainted with general law of claim construction established by *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*), which applies here. 37 C.F.R. 42.100(a).

B. Law of Obviousness

1. Claim as a Whole

The legally correct analysis for obviousness is to first identify the differences between the claimed invention and the references relied upon. *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). The M.P.E.P. correctly summarizes Federal Circuit precedent as follows:

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 **is not whether the differences themselves would have been obvious**, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)

M.P.E.P., Ninth Edition, Rev. 07.2022, Pbl. Feb 2023, Section 2141.02. It is not enough to merely show that each element was independently known in the prior art. *KSR*, 550 U.S. at 418; *see also Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017).

Ample authorities illustrate that the Petitioner's limitation-by-limitation approach is improper. Petition, p. 30 (“Shi in view of TS-38.321 renders obvious limitation [1e].”); *see also* pp. 35; 38; 43; 48; 52; 56; 62; 63; 66; 67, 68, 70. For

example, the Federal Circuit in *In re Dembicki*, 175 F.3d 994, 1000 (Fed. Cir. 1999) stated that "this reference by reference, limitation-by-limitation analysis fails to demonstrate how [the two references] teach or suggest their combination with conventional trash or lawn bags to yield the claimed invention." *Id.*, see also *Myspace, Inc. v. Garphon Corp.*, 672 F.3d 1250, 1257 (Fed. Cir. 2012); *Ecochem, Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 1374 (Fed. Cir. 2000). Instead, the relevant question is whether the claim as a whole would have been obvious. E.g., M.P.E.P., § 2141.02.

It is axiomatic that a difference between anticipation and obviousness is that each limitation need not be present in a single piece of prior art for the invention to be obvious. To prove obviousness, Petitioners must show that all of the limitations are present in the combination of references relied upon. *Application of Royka*, 490 F.2d 981, 985 (CCPA 1974); *Roku, Inc. v. ITC*, 90 F.4th 1367, 1374 (Fed. Cir. 2024) (affirming ITC findings on nonobvious where one limitation was missing from the combination); see also *Intellectual Ventures I, LLC v. Motorola Mobility LLC*, 176 F. Supp. 3d 405, 428 (D. Del. 2016), *aff'd in relevant part* 870 F.3d 1320 (Fed. Cir. 2017); *Upsher-Smith Laboratories, Inc. v. Pan American Labs., Inc.*, 2003 WL 22999551, *4 (D. Min. Dec. 19, 2003) (stating that "[t]o establish invalidity on obviousness grounds, the moving party must show by clear and convincing evidence that all claim limitations are present in a combination of prior

art references,” citing *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351 (Fed. Cir. 2001)).

2. Rationales to Combine

The party alleging obviousness must show that all of the claim limitations are present in a combination of prior art references provided that the party shows a reason or rationale to combine the references. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1578 – 79 (Fed. Cir. 1997). The Supreme Court in *KSR* confirmed that a rationale must be given for combining references and expanded the rationales that might be used beyond the “teaching-suggestion-motivation” test. *KSR Intern. Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1742 (2007). An obviousness determination requires two separate factual findings, (1) a motivation to combine and (2) reasonable expectation of success. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016) (quoting *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012)).

3. Limitation on use of “Knowledge of POSA” to Account for Missing Material Limitations

The Federal Circuit has provided guidance as to when “knowledge of one skilled in the art,” also sometimes referred to as “common sense,” may be relied upon to supply a limitation missing from a single reference or combination of

references. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F. 3d 1324 (Fed. Cir. 2009); *Arendi v. Apple, Inc.*, 832 F. 3d 1355 (Fed. Cir. 2016); *DSS Tech. Mgmt. v. Apple Inc.*, 885 F. 3d 1367 (Fed. Cir. 2018). A comparison of *Perfect Web* and *Arendi* provides a limit to the use of “common sense” or “knowledge of one skilled in the art” (as Petitioner casts it) based on whether or not the limitation is a minor or “peripheral” limitations versus a major limitation that goes to the “heart of the invention” *Arendi*, 832 F. 3d at 1363.

In *Perfect Web*, the Federal Circuit discussed KSR’s “common sense” and “obvious to try” factors at length and upheld the lower court’s finding of obviousness where common sense had been used to supply a missing limitation. The Federal Circuit distinguished *Perfect Web* in *Arendi*. It first acknowledged that *Perfect Web* was the only case cited where “common sense” was used to supply a missing limitation. *Arendi*, 832 F. 3d at 1362.

The Court in *Arendi* then distinguished the missing limitation (D) in *Perfect Web* as nothing more than an instruction to repeat the first three steps (A-C) found in the prior art. *Id.* The Court then noted that, “in contrast, the missing search [*i.e.*, the missing limitation in *Arendi*] ‘plays **a major role** in the subject matter claimed.’ *Id.* The Court concluded:

[W]hile ‘common sense’ can be invoked, even potentially to supply a limitation missing from the prior art, it must still be supported by evidence and reasoned explanation. In cases **where ‘common sense’ is**

used to supply a missing limitation, as distinct from a motivation to combine, moreover, our search for a reasoned basis for resort to common senses ***must be searching***. And, ***this is particularly true where the missing limitation goes to the heart of the invention.***”

Arendi, 832 F.3d at 1363 (emphasis added).

In *DSS Technology Management*, the Federal Circuit applied *Arendi* in reversing the PTAB’s ruling of obviousness where a conclusory allegation of “common sense” was relied upon to supply a missing limitation, stating:

As we observed in *Arendi*, “common sense and common knowledge have their proper place in the obviousness inquiry,” at least “if explained with sufficient reasoning.” 832 F.3d at 1361 (*quoting Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328 (Fed. Cir. 2009)). “But,” we cautioned, “there are at least three caveats to note in applying ‘common sense’ in an obviousness analysis.” *Id.* “First, common sense is typically invoked to provide a known motivation to combine, not to supply a missing claim limitation.” *Id.* at 1361–62 [citations omitted] Second, we have invoked common sense to fill in a missing limitation only when “the limitation in question was unusually simple and the technology particularly straightforward.” *Id.* at 1362 (*citing Perfect Web*, 587 F.3d at 1326). “Third, our cases repeatedly warn that references to ‘***common sense***’—whether to supply a motivation to combine ***or a missing limitation***—cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, ***especially when dealing with a limitation missing from the prior art references specified.***” *Id.*

DSS, 885 F.3d at 1374 (emphasis added).

V. PETITIONER FAILED TO PROVIDE ANY CLAIM CONSTRUCTION

The first step for any validity analysis is claim construction. *E.g., Oakley*, 316 F.3d at 1339. Petitioner's expert Dr. Kakaes in his Declaration (Ex. 1002) did not provide any construction, but merely stated:

I understand that no claim term's construction is in dispute at this time. ... I have considered each term of the '535 patent as it would be understood by a [POSA] at the earliest claimed priority date of January 9, 2019.

Exhibit 1002, ¶ 135. In doing so, Petitioners and Dr. Kakaes failed to comply with 37 C.F.R. § 42.104(b)(3) and (4). Nevertheless, Hannibal will continue this preliminary response using the plain and ordinary meaning of the claim terms.

VI. CLAIM 1 IS NOT RENDERED OBVIOUS BY THE COMBINATION OF GROUND 1 – THE COMBINATION OF SHI AND TS-38.321

A. The Combination of Ground 1 is Missing Limitation [1e] – “Reset the LBT Failure Counter When a Reset of the MAC Entity is Requested by an Upper Layer of the UE”

Petitioners contend that *Shi* discloses all of the limitations of Claim 1 but for Limitation [1e], which is “reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.” Petition, pp. 22 (preamble); 24 (1a); 26 (1b); 28 (1c); 29 (1d); 30 (1e). For Limitation [1e], Petitioners assert that “*Shi* in view of *TS-38.321* renders obvious limitation [1e].” Petition, p. 30.

Petitioners do not explain how Claims 1 and 10 as a whole are rendered obvious. Instead, Petitioners and their expert merely concluded that individual limitations were “obvious,” which is not the legally correct approach. *Id.*; *see, e.g.*, Petition, p. 30 (“Shi in view of TS-38.321 renders obvious limitation [1e].”); *see also* pp. 35; 38; 43; 48; 52; 56; 62; 63; 66; 67, 68, 70. A particular limitation cannot be said to obvious. *In re Dembicki*, 175 F.3d at 1000; *Myspace*, 672 F.3d at 1257; *Ecochem*, 227 F.3d at 1374.

Regardless, the combination of *Shi* and TS-38.321 does not disclose Limitation [1e] - “reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.” And as discussed below, Petitioner’s contention is supported only by the *ipse dixit* of its expert, Dr. Kakaes.

Shi discloses a “global counter” for maintaining a count of LBT failures, among other indications, and that “it is possible to reset the global counter when the global timer times out.” Ex. 1004, p. 6 of 51:28. *Shi* also discloses that

when the global counter reaches a preset threshold value, the Radio Resource Control (RRC) layer triggers one of the following processes: RRC connection reestablishment, Secondary Cell Group (SCG) — Radio Link Failure (RLF) processing, and RRC reconfiguration.

Ex. 1004, 6 of 51:31-34. Finally, *Shi* discloses that the SCG-RLF process includes “reset[ting] the SCG Media Access Control (MAC) address entity, and report[ing] the number of LBT failures [maintained by the global counter] to the network via

an MCG.” Ex. 1004, 6 of 51:37-40. Nowhere does *Shi* disclose or suggest that the SCG-MAC reset impacts the global counter. Nor does *Shi* disclose any other mechanism for resetting the global counter other than through a time out of the global timer. See Ex. 1004, 6 of 51:29-30.

Based on the statement (Ex. 1004, 6:37-40) that the SCG-RLF process includes a reset of the SCG-MAC address entity, Dr. Kakaes opines: “[i]t was well known to a POSITA that resetting a MAC entity includes, for example, resetting counters associated with the MAC entity.” Ex. 1002, ¶ 177. Dr. Kakaes relies on Section 5.12 of *TS-38.321*, titled “MAC Reset” in support of his opinion. *Id.* But *TS 38.321* does not disclose resetting an LBT counter when a reset of the MAC entity is requested by an upper layer of the UE. Specifically, *TS-38.321* states that “[i]f a reset of the MAC entity is requested by upper layers, the MAC entity shall: [among other things] reset BFI_COUNTER.” Ex. 1007, pp. 43-44. It does not even mention an LBT counter. A “BFI_COUNTER” has nothing to do with LBT. The BFI_COUNTER is a variable used by a UE to keep track of beam failures. LBT is not directed to beam failures. Despite these being completely different technologies, Dr. Kakaes relies solely on this disclosure to conclude that ***all*** counters maintained by the MAC entity are reset when the MAC is reset, and therefore, the claimed limitation is obvious. Dr. Kakaes is wrong.

TS-38.321, the Medium Access Control (MAC) protocol specification itself directly contradicts Dr. Kakaes' opinion. The version of *TS-38.321* Petitioner relies on as prior art makes no mention of LBT or an LBT counter. Dr. Kakaes does not explain why the Challenged Claims would be obvious when *TS-38.321* makes no mention of an LBT counter or LBT functionality, and *Shi* discloses only resetting its global counter based on the expiration of a timer.

TS-38.321 does, however, define two other counters, PREAMBLE_TRANSMISSION_COUNTER and PREAMBLE_POWER_RAMPING_COUNTER, that are maintained by the MAC entity. Ex. 1007, *TS-38.321*, p. 14 of 76. Neither counter is reset during the MAC entity reset provided in Section 5.11. Ex. 1007, *TS 38.321*, p. 43 of 76. The reset procedure is reproduced below as follows:

5.12 MAC Reset

If a reset of the MAC entity is requested by upper layers, the MAC entity shall:

- 1> initialize B_j for each logical channel to zero;
- 1> stop (if running) all timers;
- 1> consider all *timeAlignmentTimers* as expired and perform the corresponding actions in subclause 5.2;
- 1> set the NDIs for all uplink HARQ processes to the value 0;
- 1> stop, if any, ongoing RACH procedure;
- 1> discard explicitly signalled contention-free Random Access Resources, if any;
- 1> flush Msg3 buffer;
- 1> cancel, if any, triggered Scheduling Request procedure;
- 1> cancel, if any, triggered Buffer Status Reporting procedure;
- 1> cancel, if any, triggered Power Headroom Reporting procedure;
- 1> flush the soft buffers for all DL HARQ processes;
- 1> for each DL HARQ process, consider the next received transmission for a TB as the very first transmission;
- 1> release, if any, Temporary C-RNTI;
- 1> reset *BFI_COUNTER*.

Ex. 1007, pp. 43-44 of 76. As shown, neither the

PREAMBLE_TRANSMISSION_COUNTER nor PREAMBLE_POWER_
RAMPING_COUNTER is reset under the MAC entity reset protocol.

Curiously, Dr. Kakaes does not consider these other counters --
PREAMBLE_TRANSMISSION_COUNTER nor PREAMBLE_POWER_
RAMPING_COUNTER -- in his analysis. Dr. Kakaes also fails to explain why,
when these counters are not reset, it still would have been obvious to reset a
counter that *TS-38.321* does not even mention. Regardless, *TS-38.321* — the very
document Dr. Kakaes purports to rely on — expressly demonstrates that Dr.
Kakaes' premise that a MAC reset necessitates resetting **all** counters is wrong.

This flaw is fatal to both Grounds 1 and 2 because both grounds rely solely on Dr. Kakaes' incorrect opinion to meet what is required by Limitation [1e], "reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE." Ground 2 is discussed further below. Because the combination of *Shi* and *TS-38.321* fails to create a reasonable likelihood that the Petitioner would prevail with respect to the Challenged Independent Claims, institution should be denied. 35 U.S.C. § 314(a).

B. Petitioners Attempt to Use Their Expert's Opinion as a Gap-Filler for Limitation [1e]

As discussed above and further below, none of the references in Grounds 1 or 2 disclose the Limitation [1e], "reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE." Ex. 1001, 13:45 – 46. Instead, Petitioner relies solely on Dr. Kakaes' opinion that all counters maintained by the MAC entity are reset during a MAC reset — which is incorrect for the reasons just explained in Section A above. *See* Petition, p. 31. Indeed, Petitioner and its expert rely on long narratives regarding what a "POSITA would have understood." *See e.g.*, Ex. 1002, ¶¶ 176, 214. This phrase is used at least twenty-three (23) times in Dr. Kakaes Declaration. Ex. 1002. Samsung uses the phrase at least twenty (20) times in the Petition. By using this phrase, the Petitioner and its expert are attempting to rely on the mere assertion of "common sense" to gloss

over the fact that the combination of Shi and *TS-38.321* are missing Limitation [1e] without providing any reasoned basis to meet the high bar set for the use of “common sense” as a substitute for a missing limitation. *See DSS*, 885 F.3d at 1375.

Furthermore, as the Director recently stated in her Memorandum dated July 31, 2025, regarding Enforcement and Non-Waiver of 37 C.F.R. § 42.104, “expert testimony, common sense, and other evidence that is not ‘prior art consisting of patents or printed publications’ (collectively, ‘general knowledge’) may not supply a missing limitation.” The legal authorities cited by the Director pre-date the Petition. *See* 35 U.S.C. § 312(a)(3); 37 C.F.R. § 42.104(b)(4); *Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1373-77 (Fed. Cir. 2022); *see also DSS*, 885 F.3d at 1375.

Here, it is only unsupported expert testimony that purports to supply the Limitation [1e], “reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.” Ex. 1001, 13:45 – 46. Accordingly, Petitioner fails to show a reasonable likelihood that it will prevail against the Challenged Independent Claims for the reasons that (1) the combination of Ground 1 is missing Limitation [1e], and (2) Petitioners have not met the high burden set to allow expert testimony as to “common sense” or “knowledge of a POSA” to fill this gap. *E.g., DSS*, 885 F.3d at 1374.

C. Petitioners Failed to Establish a Rationale for Combining References

As to Claim 1, the Petitioners only alleged a rationale to combine references for a single limitation, Limitation [1e], rather than addressing the Claim as a whole. In *KSR*, the court recognized as one rationale the use of known techniques to improve similar devices in the same way. *KSR*, 127 S. Ct. at 1731. Beyond repeating that a “POSITA would have been motivated” or “would have known,” Petitioners come closest to alluding to “known techniques” by their reference to “conventional procedures” in the following statements:

- [a] POSITA would therefore have found it obvious to combine Shi and TS-38.321 by implementing ***TS-38.321’s teachings of resetting a failure counter when resetting a MAC entity*** into Shi’s method, because this was a well-known conventional procedure, as taught by TS-38.321. [Ex. 1003,] Kakaes, ¶ 179;
- [a] POSITA would have understood that TS-38.321’s disclosure simply provides additional details and explanation about the details of Shi’s reset of a MAC entity, and, thus, would have found it obvious to look to the ***conventional procedure described in TS-321*** to understand and implement the details not expressly described in Shi’s method. *Id.*

Petition, p. 32 (emphasis added). But as discussed above, *TS-38.321* does not even mention the LBT functionality or an LBT counter. And further, *TS-38.321* expressly demonstrates that Dr. Kakaes’ premise that a MAC reset necessitates resetting ***all*** counters is objectively wrong. Therefore, Limitation [1e] is not satisfied by the combination of *Shi* and *TS-38.321*. There is no need to discuss

motivation to combine the references of the combination when together they do not meet all claim limitations. *See, generally, Rhine v. Casio, Inc.*, 183 F.3d 1342, 1346 (Fed. Cir. 1999) (remanding for further fact-finding including motivation to combine even though court found all limitations present in combination). That is because, as explained above, the combination relied upon must at least account for all limitations. *Royka*, 490 F.2d at 985 (CCPA 1974); *ITC*, 90 F.4th at 1374 ; *see also Intellectual Ventures I*, , 176 F. Supp. 3d at 428 (D. Del. 2016), *aff'd in relevant part* 870F.3d 1320 (Fed. Cir. 2017).

Furthermore, a POSA would not look to the teachings of *TS-38.321* to modify the system of *Shi* to add the missing Limitation [1e], “reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE,” because *TS-38.321* does not even mention LBT much less resetting an LBT failure counter. Additionally, as discussed above, *Shi* disclosed a mechanism for resetting its global counter, namely by the expiration of a time. Neither Samsung nor Dr. Kakaes explain why a person of skill in the art would be motivated to combine *Shi* with *TS 38.321* especially where *TS 38.321* makes no mention of any LBT functionality let alone a mechanism to reset an LBT counter. And there could be no reasonable expectation of success when neither reference of the combination mentions what is required by Limitation [1e]. The two rationales quoted above (bullet points) both are clearly based on the wrong assumption that the resetting of

a MAC entity necessarily require resetting all counters including any LBT failure counter. But regardless, Petitioners and Dr. Kakaes fail to set forth any support for the contention that a person of skill in the art would be motivated the two references. Therefore, Petitioners have also failed to provide any valid rationale to combine *Shi* and *TS-38.321* and have failed to show a reasonable expectation for success in making such a combination, for these additional reasons, institution should be denied. Rather it appears that Petitioner simply relies on hindsight and unsupported expert opinion to argue obviousness.

VII. GROUND 2 – THE COMBINATION OF *SHI*, *HONG* AND *TS-38.321* FAILS FOR THE SAME REASON THAT GROUND 1 FAILS – NONE OF THE REFERENCES DISCLOSE RESETTING AN LBT COUNTER WHEN A MAC RESET IS REQUESTED

In Ground 2, Samsung similarly relies on *Shi* but in view of both *TS 38.321* and *Hong*. Petition, p. 44. Petitioner again relies on *Shi* for limitations [1pre] – [1d]. *Id.* Petitioner argues that the combination of *Shi*, *TS 38.321*, and *Hong* (Ex. 1005) and *Hong Priority* (Ex. 1006) renders the remaining limitation obvious.

As discussed above, *Shi* discloses that when the global counter reaches a preset threshold value, a RRC connection reestablishment procedure can be initiated. Ex. 1004, 6 of 51:31 – 34; Section VI(A) above. Samsung relies on *Hong* (Ex. 1005) and *Hong Priority* (Ex. 1006) to contend:

[a]ccording to **Hong**, the RRC connection reestablishment/resumption procedure includes, among other things, ‘reset[ting] the MAC.’ **Hong**, [195]; **Hong Priority, [0095]**. A POSITA would have understood that resetting the MAC means resetting the MAC layer, including each MAC entity in the MAC layer. **Hong** therefore discloses resetting a MAC entity in the MAC layer in response to a request from an upper layer (RRC layer) of the UE. Kakaes, ¶214.

Petition, p. 45 (emphasis added).

As shown in Paragraph 214 of Dr. Kakeas’ Declaration quoted above, Petitioners and Dr. Kakaes rely on the following paragraph [0095] of **Hong Priority**:

[0095]

By way of another example, the terminal can initiate an RRC connection re-establishment/resumption. The terminal suspends all RBs except SRB0. The terminal resets the MAC. The terminal releases the MCG SCell. The terminal applies a default physical channel configuration. The terminal applies a default MAC main configuration. The terminal carries out cell selection. At this time, the terminal can cause cell selection to be carried out, excluding/prohibiting a cell in which an LBT failure occurred.

Ex. 1006, [0095]. This paragraph does **not** teach what is required in Claim 1, Limitation [1e], which is- “reset the LBT failure counter when a reset of the MAC entity is requested by an upper layer of the UE.” Exhibit 1001, 13:45 – 46. Thus, the combination of *Shi*, *TS-38.321*, and *Hong/Hong Priority* is missing Limitation [1e]. *Hong Priority* adds nothing to bolster the combination of Ground 1.

As in Ground 1, Samsung’s patentability challenge relies solely on Dr. Kakaes’ unsupported opinion that “it was well known to a POSITA that resetting

a MAC entity includes, for example, resetting the counters associated with the MAC entity.” Ex. 1002, ¶ 215. Dr. Kakaes’ analysis in support of this opinion for Ground 2 mirrors his analysis in Ground 1. He and the Petitioners rely on the MAC reset procedure described in TS 38.321. *Id.* Again, Petitioners and Dr. Kakeas rely on the wrong assumption that resetting of the MAC necessarily requires resetting all counters. *Id.* As already demonstrated above, TS-38.321 actually teaches the opposite. See Section VII(A) above. Namely, two other counters -- PREAMBLE_TRANSMISSION_COUNTER nor PREAMBLE_POWER_RAMPING_COUNTER -- are expressly identified by TS-38.321 as being held by the MAC entity and neither is reset under the MAC entity reset protocol. Ex. 1007, pp. 43-44 of 76. Thus, TS-38.321 — the very document Dr. Kakaes purports to rely on — expressly demonstrates that Dr. Kakaes’ opinion that a MAC reset necessitates resetting **all** counters is objectively wrong. Therefore, Ground 2 must fail for the same reasons that Ground 1 fails. Institution on Ground 2 should be denied.

**VIII. THE ART RELIED ON IN GROUNDS 1 AND 2 IS
SUBSTANTIALLY THE SAME AS ART PRESENTED
DURING PROSECUTION.**

The prior art of record disclosed the same process Samsung relies on in Grounds 1 and 2. First, *TS 38.321* is expressly discussed in the specification of the ’535 Patent. Ex. 1001 at Col. 6:1-11. But additionally, U.S. Pat. Pub. No.

2018/0124831 (“*Dinan*”), cited by the examiner during prosecution and listed on the face of the ’535 Patent, discloses an SCG-MAC reset when an LBT counter reached a threshold value. Ex. 2003, ¶¶184-187. Specifically, *Dinan* discloses,

[i]n response to unsuccessful termination of an SR process because of excessive LBT (e.g., SR_LBT counter reaches a first value), the UE may transmit an RRC message to the MeNB indicating that the LBT process is failed...The RRC message may be SCG Failure Information message transmitted by the UE to an MeNB.

Id., ¶187. *Dinan* further discloses that the “SCG failure notification procedure” includes informing the E-UTRAN about an “SCG failure that the UE has experienced e.g., SCG radio link failure” and transmitting “SCG failure information to the MeNB” when the UE experiences “excessive LBT.” *Id.*, ¶184. Finally, *Dinan* discloses that upon initiating this procedure, the UE may “reset SCG-MAC.” *Id.*

Dinan disclosed the same MAC reset that Samsung now contends — wrongly — creates a question of patentability. See Grounds 1 and 2. But the examiner cited *Dinan* during prosecution and correctly determined that the Challenged Independent Claims were patentable.

The Petition makes no contention that the Patent Office erred in a manner material to the patentability of the Challenged Claims. *Advanced Bionics, LLC v. MED-EL Elektr. Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential) (“we assess whether the petitioner has demonstrated that the

Office erred in a manner material to the patentability of the challenged claims.”).

Because Samsung’s Petition presents art that is substantially the same as the art previously presented to the Patent Office, it should be denied. 35 U.S.C. § 325(d); *Intel Corp., v. Interdigital, Inc.*, IPR2024-01441, Paper 13 at 9 (P.T.A.B. April 1, 2025) (“In determining whether to institute an *inter partes* review, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.”) (internal quotations and citing reference omitted)³; *see also Advanced Bionics*, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential); *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (P.T.A.B. Dec. 15, 2017) (precedential as to Section III.C.5, ¶1); *Cultec, Inc. v. StormTech LLC*, Case IPR2017-00777 (P.T.A.B. Aug. 22, 2017) (Paper 7) (informative) (denying institution under 35 U.S.C. § 325(d) where the Office previously evaluated two asserted references during examination and additional relied upon references were cumulative of prior art considered during examination); *Splunk Inc. v. Sable Networks, Inc.*, IPR2022-00003, Paper 10 at 8 (P.T.A.B. April 14, 2022).

³ Previously presented art includes art made of record by the Examiner. *Intel Corp., v. Interdigital, Inc.*, IPR2024-01441, Paper 13 at 11 (P.T.A.B. April 1, 2025).

IX. CONCLUSION

Because Petitioner has failed to show a reasonable likelihood of prevailing, the Director should deny institution.

Dated: October 21, 2025

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CERTIFICATE UNDER 37 C.F.R. SECTION 42.24

Hannibal certifies that this Preliminary Response complies with the type-volume limitation of 14,000 words. As calculated by the word count feature in Microsoft Word, it contains 6,436 words, excluding the parts exempted by 37 C.F.R. §§ 42.24(a)-(b).

CERTIFICATE OF SERVICE

I, Brian A. Carpenter, hereby certify that on the 21st day of October, 2025,
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