

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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**Intel Corporation**  
Petitioner

v.

**Qualcomm Incorporated**  
Patent Owner

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Case IPR2019-00128  
Patent 9,154,356

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**PATENT OWNER'S SUR-REPLY**

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## **I. Introduction**

Patent Owner's response identified two fatal defects in Petitioner's challenge to the patentability of the '356 Patent. Petitioner's reply fails to refute these points.

First, the petition is based on a flawed construction of the term "carrier aggregation." Patent Owner established that the term has an established and well understood meaning to skilled artisans. That meaning, which is set forth as Patent Owner's proposed construction, is supported by the intrinsic evidence, and it is further supported by extrinsic evidence.

But Petitioner argues that the patentee acted as a lexicographer to assign the term a special definition different than its plain and ordinary meaning. The petition fails, however, to establish that the patentee expressed the necessary intent to redefine the term.

Furthermore, Petitioner's proposed construction cannot be correct because: (1) the proposed construction violates the doctrine of prosecution disclaimer, and (2) the proposed construction reads out the term "aggregation." Petitioner's reply is unsuccessful in rebutting either point.

Properly construed, the Lee prior art reference fails to disclose the "carrier aggregation" limitation. Lee is the sole reference supporting petitioner's first and second ground and thus, Lee fails to establish unpatentability.

Second, Petitioner fails to sufficiently articulate a motivation to select and combine the Feasibility Study reference (as a means of supplying the missing “carrier aggregation” limitation) with Lee to support its third ground of unpatentability. No reasoned explanation is offered to explain why a skilled artisan would have been motivated to select and combine these two distinctly different references—Lee is directed to Bluetooth and WiFi communications equipment, whereas the Feasibility Study is directed to LTE cellular communications equipment. Absent such an explanation, Petitioner’s alleged obviousness combination amounts to impermissible hindsight reconstruction of the claimed invention. Accordingly, the remaining third ground also fails to establish unpatentability.

## **II. Patent Owner’s Proposed Claim Construction Is Correct.**

### **A. Petitioner Fails To Establish That The Patentee Acted As A Lexicographer.**

Petitioner does not propose construing the term “carrier aggregation” according to its plain and ordinary meaning. Instead, Petitioner and its expert argue that the patentee acted as a lexicographer to assign the term a special definition different than its plain and ordinary meaning. Reply at 2 (“defines the term”); *id.* at 3 (“serving as its own lexicographer”), *id.* at 4 (“the ’356 patent expressly defines”); Ex. 2029, 128:15–21 (concluding the specification’s disclosure in column 1 at lines 32–33 “is their definition of carrier aggregation acting as their own lexicographer”).

To maintain that flawed argument, Petitioner brushes aside all evidence, both intrinsic and extrinsic, Reply at 4–16, that establish the disputed term’s “ordinary and customary meaning, as would be understood by a skilled artisan in the context of the entire disclosure,” *Polygroup Ltd. MCO v. Willis Elec. Co., Ltd*, 759 F. App’x 934, 939 (Fed. Cir. 2019).

“However, a claim term is only given a special definition different from the term’s plain and ordinary meaning if the ‘patentee . . . clearly set[s] forth a definition of the disputed claim term other than its plain and ordinary meaning.’” *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 805 F.3d 1368, 1375 (Fed. Cir. 2015). As the Federal Circuit has also explained:

When a patentee acts as his own lexicographer in redefining the meaning of particular claim terms away from their ordinary meaning, he must clearly express that intent in the written description. We have repeatedly emphasized that the statement in the specification must have sufficient clarity to put one reasonably skilled in the art on notice that the inventor intended to redefine the claim term.

*Merck & Co., Inc. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1370 (Fed. Cir. 2005) (italics added). That exacting standard is not met here.

The analysis in *Medicines Co. v. Mylan, Inc.* is instructive. 853 F.3d 1296, 1306 (Fed. Cir. 2017). In *Medicines*, the Federal Circuit rejected an argument that

the patentee acted as a lexicographer and declined to construe a term using a “verbatim” statement taken from the specification. *Id.* The decision relied on the fact that the patentee defined terms elsewhere in the specification by placing “the defined term in quotation marks, followed by the terms ‘refers to’ or ‘as defined herein.’” *Id.* The patentee’s departure from this format demonstrated that the necessary intent to act as a lexicographer was not expressed in the statement at issue. *Id.*

In the ’356 Patent, the patentee adopted a similarly distinctive format to clearly set forth a definition for a different term—the defined term in quotation marks, followed by the phrase “is used herein to mean,” followed by the definition in quotation marks—as reproduced here:

The term “exemplary” is used herein to mean “serving as an example, instance, or illustration.”

Ex. 1301, 2:9–11. None of the statements Petitioner relies on for the term “carrier aggregation” resemble this format. Reply at 2–3 (citing Ex. 1301 at 1:32–33, 2:53–54, 2:54–55). The patentee did not use the phrase “is used herein to mean” for the term. Nor did the patentee use quotation marks for the term or its purported definition. *Cf. Sinorgchem Co., Shandong v. Int’l Trade Comm’n*, 511 F.3d 1132, 1136 (Fed. Cir. 2007) (observing that quotation marks are “often a strong indication that what follows is a definition”). In other words, the patentee did not intend for

these statements to redefine the plain and ordinary meaning of the term. Because the patentee departed from the definitional format used elsewhere in the specification, the statements Petitioner relies on “lack[ ] the clear expression of intent necessary for a patentee to act as its own lexicographer.” *Medicines*, 853 F.3d at 1306.

Furthermore, the three statements Petitioner relies on to support its argument lack the clear expression of intent because they do not characterize the term carrier aggregation consistently: (1) “which is simultaneous operation on multiple carriers,” Ex. 1301, 1:32–33; (2) “which is operation on multiple carriers,” *id.*, 2:53–54; and, (3) “may also be referred to as multi-carrier operation,” *id.*, 2:54–55. Petitioner’s expert asserts that the first statement is the “most complete” definition of the term and the second statement is not a definition but merely “a reiteration” of the first. Ex. 2029, 117:13–21, 121:20–122:5, 122:11–21. That makes no sense. Each begins with the same “which is” phrase and thus, there is no basis to conclude from their syntax that one serves as a definition and the other does not. Petitioner’s expert could not explain the distinction between the two either:

The sentence in column 2, rows 53 to 54, I believe supports the definition in column 1, rows 32 to 33 as a reiteration or recapitulation of the same theme. Whether that constitutes a definition is not so clear to me.

Ex. 2029, 126:24–127:4. The language of the third sentence casts even more doubt on the notion that it defines the term because it merely indicates that the term “may also be referred to” by another name, the name “multi-carrier operation.” Ex. 1301, 2:54–55.

In sum, Petitioner’s argument to support its proposed construction is that the specification “defines the term” and no other evidence need be considered. Reply at 2. But Petitioner fails to establish that the patentee expressed the necessary intent to redefine the term to have a special meaning that differed from its plain and ordinary meaning. *Akamai*, 805 F.3d at 1375. Thus, the Board should reject Petitioner’s lexicography argument and construe the term according to its “ordinary and customary meaning.” *Polygroup Ltd. MCO v. Willis Elec. Co., Ltd*, 759 F. App’x 934, 939 (Fed. Cir. 2019).

**B. Patent Owner Established That “Carrier Aggregation” Has A Well Understood Meaning In the Art.**

Petitioner asserts that Patent Owner’s construction is narrow and only applies to LTE systems. Reply at 4; *see also id.* at 5 (“merely one example of carrier aggregation”), *id.* at 8 (Kaukovuori discloses “one specific type of carrier aggregation”). But Petitioner’s only evidence that a broader construction is necessary to encompass other types of systems is a conclusory statement from its expert that its proposed construction “is consistent with the understanding of the

term by a POSITA.” Reply at 3 (citing Ex. 1302, ¶60). Neither the Petitioner nor its expert cite to any intrinsic or extrinsic evidence to support this argument. Accordingly, no weight should be accorded to such statements from Petitioner’s expert because “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1318 (Fed. Cir. 2005).

“Carrier aggregation” is a technical term that was known to skilled artisans. Ex. 2029, 131:4–18 (A person of ordinary skill “would have recognized the term” . . . [and] “would have had an understanding of what carrier aggregation means.”). “[B]ecause patentees frequently use terms idiosyncratically,” the Board must examine ““those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.”” *Phillips*, 415 F.3d at 1314. In its response, Patent Owner demonstrated, using both intrinsic and extrinsic evidence, that its construction is the ordinary and customary meaning of the term. Resp. at 11–22.

### **1. Intrinsic Evidence**

In its response, Patent Owner identified evidence from the specification and the file history, including statements from the applicant, a prior art reference patent (Kaukovuori) used by the examiner to reject the claims, and two foreign references disclosed in the applicant’s Information Disclosure Statements (WO 2012/008705

and GB 2472978). Resp. at 12–17. In an attempt to discredit this intrinsic evidence, Petitioner resorts to hyperbole for its arguments:

- (1) the evidence was taken from “*hidden portions* of its voluminous information disclosure statement[s],” Reply at 4,
- (2) it “is *debatable*” that the three references cited in the prosecution history “qualify as intrinsic evidence,” *id.* at 7,
- (3) the two foreign references “amount to *less than 1%* of the prior art references submitted during prosecution,” *id.* at 8, and
- (4) the two foreign references “were *never discussed during prosecution*,” *id.*

However, Petitioner cites no case law to establish that this intrinsic evidence is not relevant (or even less relevant) to the claim construction analysis as a consequence. And as the response noted, Federal Circuit law makes clear “that prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence.” Resp. at 16 (citing *Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1231 (Fed. Cir. 2011)).

In its Response, Patent Owner explained that Petitioner’s proposed construction fails to provide any additional meaning to the claim language. Resp. at 29 (“Substituting Petitioner’s proposed construction would result in a claim that recited ‘the input RF signal employing *simultaneous operation on multiple carriers*

comprising transmissions sent on multiple carriers.”). Although this absence of additional meaning illustrates a serious flaw in Petitioner’s proposed construction, Petitioner failed to offer any reply. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”); *Mangosoft, Inc. v. Oracle Corp.*, 525 F.3d 1327, 1330–31 (Fed. Cir. 2008) (rejecting claim construction that “ascribes no meaning to the term . . . not already implicit in the rest of the claim.”).

Petitioner also argues that Patent Owner’s construction “lack[s] any written description support.” Reply at 5. But “a skilled artisan reads a claim term . . . in the context of the entire patent, including the written description and prosecution history, as well as relevant extrinsic evidence.” *Howmedica Osteonics Corp. v. Zimmer, Inc.*, No. 2015-1232, 2016 WL 2754049, at \*5 (Fed. Cir. May 12, 2016). And as explained in the Response, the written description and prosecution history *do* indeed support patent owner’s proposed construction. Resp. at 11–17. For example, the specification discloses that the multiple carriers may be referred to as “component carriers.” Resp. at 12. The plain meaning of the adjective “component” indicates that the multiple carriers are components that are combined to form a single aggregated carrier. *Id.*

As the Response also explained, the written description distinguishes “carrier aggregation” from terms such as “multiple bands” and “multiple radio technologies.” Resp. at 29 (citing Ex. 1301 at 3:43–49; Ex. 2024 ¶ 119). Petitioner ignores this distinction in construing the term “carrier aggregation” so that it reads on “multiple radio technologies,” such as Lee’s disclosure of Bluetooth and WiFi radio technologies. In its Reply, Petitioner failed to respond to this distinction in the specification between the two terms.

Dr. Foty also emphasized during his deposition that the written description identifies just one attribute of “carrier aggregation,” and that the term must also be considered in the context of the prosecution history:

“It’s providing a necessary condition. . . . I don’t regard it as a complete definition which is why the file history has so much further information.”

Ex. 1340 at 56:1–9.

Moreover, Petitioner’s expert does not dispute that the intrinsic evidence is consistent with how a person of ordinary skill in the art would understand carrier aggregation. Ex. 2029, 144:10–145:13 (discussing Kaukovuori, Ex. 1325), 152:14–153:9 (discussing GB 2472978, Ex. 2017).

## **2. Extrinsic Evidence**

Petitioner argues that extrinsic evidence is being used to change the ordinary and customary meaning of the term. Reply at 13. It is not. The extrinsic evidence is entirely consistent with the intrinsic evidence. Resp. at 17–22. Specifically, Patent Owner identified seven separate examples of extrinsic evidence from various sources, each of which provides further support and confirmation of the term’s ordinary and customary meaning. *Id.* (citing Ex. 1304, 2013, 2018–2022).

For example, Petitioner does not dispute that its own inventors understood the term to mean multiple carriers are combined (aggregated) as a single virtual channel to provide higher bandwidth. Resp. at 17–18 (citing Ex. 2013, an LTE-related patent which claims priority to September 28, 2012—just four months later than the ’356 Patent’s claimed priority date). Nor does Petitioner dispute that each of the textbooks, publications, and patents cited in Patent Owner’s Response use the term as it was ordinarily understood by a skilled artisan, consistent with Patent Owner’s proposed construction. Resp. at 18–22. Nor does Petitioner dispute that the Feasibility Study (a reference Petitioner selected and introduced into this proceeding) evidences that a skilled artisan understood that carrier aggregation meant combining carriers for operation as a single virtual channel (i.e., multiplexing user data to each user device). Resp. at 19–20 (citing Ex. 1304, dated September 2012); Ex. 2024 ¶¶

95–96. Indeed, Petitioner even admits that the extrinsic evidence is “not inconsistent with [its] proposed construction.” Reply at 13.

“[B]ecause extrinsic evidence can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean,” it is proper for the Board to consider Patent Owner’s extrinsic evidence. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1319 (Fed. Cir. 2005).

**C. Petitioner’s Proposed Construction Cannot Be Correct.**

**1. Petitioner’s Construction Violates The Doctrine Of Prosecution History Disclaimer.**

Petitioner asserts that Patent Owner’s arguments and amendments during prosecution to distinguish the Hirose reference cannot constitute a prosecution history disclaimer.<sup>1</sup> Reply at 10–12. As the Response explained, the applicant

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<sup>1</sup> Petitioner’s argument that Patent Owner’s expert purportedly “abandoned” a theory of prosecution disclaimer is of no moment. Reply at 9. First, “interpretations of evidence intrinsic to the patent . . . are legal conclusions.” *UltimatePointer, L.L.C. v. Nintendo Co.*, 816 F.3d 816, 822 (Fed. Cir. 2016). Second, the issue is not whether the scope of the “carrier aggregation” term was disclaimed. The issue is that Petitioner’s proposed construction negates the amendment to overcome Hirose.

amended the pending claims during prosecution to add the “employing carrier aggregation” limitation to overcome the Hirose reference and argued that “Hirose’s ‘satellite wave signal and ground wave signal’ do not result in ‘carrier aggregation’ as claimed by Applicant.” Resp. at 24–26; Ex. 1315. Yet Petitioner now proposes construing the term so broadly that the claims once again read on Hirose, which discloses “simultaneous operation on multiple carriers.” Resp. at 26–27; Ex. 2024

¶ 113. Petitioner’s construction violates the doctrine of prosecution disclaimer:

[A]n amendment that clearly narrows the scope of a claim, such as by the addition of a new claim limitation, constitutes a disclaimer of any claim interpretation that would effectively eliminate the limitation or that would otherwise recapture the claim’s original scope.

*Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010).

To support its position, Petitioner argues that “the law is unsettled as to whether . . . prosecution history disclaimer applies under the BRI standard” and further, that disclaimer “does not apply” here because Patent Owner advanced the argument during claim construction. Reply at 9–10. The Federal Circuit rejects both of Petitioner’s arguments:

In inter partes review, the Board construes claims according to “their *broadest reasonable construction* in light of the specification as they would be interpreted by one of ordinary skill in the art.” In applying this standard,

“words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and the prosecution history.” *The Board must “exclude any interpretation that was disclaimed during prosecution.” Never have we authorized the Board to disregard clear and unmistakable statements of disclaimer from the prosecution history of a patent simply because it is the patent owner arguing for disclaimer. . . . Claim construction is an objective inquiry. . . . The meaning of a claim term does not change depending on the party that argues prosecution disclaimer.*

*VirnetX Inc. v. Mangrove Partners Master Fund, Ltd.*, 778 F. App’x 897, 910 (Fed. Cir. 2019) (concluding the Board erred in refusing to consider statements of disclaimer because it was the patent owner that advanced the disclaimer argument in support of its proposed claim construction) (italics added) (citations omitted).

Petitioner’s argument that disclaimer binds only the patent owner misreads *Tempo*. Reply at 9–10 (citing *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 978 (Fed. Cir. 2014)). *Tempo* stands for the proposition that “the Board is not required to accept a patent owner’s arguments as disclaimer when deciding the merits of those arguments. It does not mean the Board in an inter partes review can ignore statements made in a prior reexamination.” *VirnetX*, 778 F. App’x at 910.

Petitioner never disputes that Hirose could not have been distinguished if the term “carrier aggregation” meant “simultaneous operation on multiple carriers.” *See* Reply at 9–12. Moreover, Petitioner concedes that Hirose discloses “three different carriers . . . [that] are received simultaneously and synthesized to obtain a single stream of data.” Reply at 10. Petitioner’s expert states it even more clearly: “Hirose’s receiver operates simultaneously on multiple carriers.” Ex. 2029, 163:8–9. Thus, “carrier aggregation” cannot simply mean “simultaneous operation on multiple carriers” as Petitioner proposes because “by distinguishing the claimed invention over [Hirose], [the] applicant . . . indicat[ed] what the claims do not cover.” *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed. Cir. 1997).

**2. Petitioner’s Construction Is Incorrect Because It Reads Out The Word “Aggregation.”**

In its reply, Petitioner argues that its proposed construction does not read out the term “aggregation.” Petitioner asserts the term “aggregation” in this context means “multiple carriers would be present simultaneously in the input RF signal.” Reply at 14. This explanation is unhelpful as it merely rehashes its proposed construction. Moreover, Petitioner’s explanation is not consistent with the intrinsic and extrinsic evidence, including evidence of how its own inventors described the “aggregation.” Resp. at 11–22; *see, e.g.*, Ex. 2013 at 3:19–53 (U.S. Pat. No. 9,161,254, assigned to Intel Corp.) (“One technique for providing additional

bandwidth capacity to wireless devices is . . . *aggregation of multiple smaller bandwidths to form a virtual wideband channel* at a wireless device. . . . Carrier aggregation provides a broader choice to the wireless devices, enabling more bandwidth to be obtained. The greater bandwidth can be used to communicate bandwidth intensive operations, such as streaming video or communicating large data files.”).

As Patent Owner’s response explained, “aggregate” means “to collect together, assemble.” Resp. at 29. With carrier aggregation, data is split up (multiplexed) and transmitted over multiple frequencies (component carriers) to create a higher bandwidth channel for the device. Resp. at 4; Ex. 2024 ¶ 51. The user device receives and de-multiplexes (aggregates) the multiple streams to recreate the original incoming data stream. Resp. at 14. The result is that the incoming data stream is received more quickly because it was transmitted in a higher bandwidth virtual channel. *Id.* Petitioner’s proposed construction (“simultaneous operation on multiple carriers”) should be rejected because it fails to impart any meaning to the term “aggregation.”

**3. Petitioner’s Arguments And Criticisms Of Patent Owner’s Proposed Constructions Are Based On The Flawed Premise That The Patentee Acted As A Lexicographer.**

Petitioner seeks a broad construction so that the disputed claim limitation reads on the prior art it has identified. To support this objective, Petitioner

repeatedly argues that Patent Owner’s proposed construction is too *narrow*. Reply at 2 (“overly *narrow*”); *id.* at 8 (“prior art references submitted during prosecution . . . cannot properly be used to *narrow* the express definition”); *id.* at 10 (“the doctrine does not apply where a patent owner seeks to rely upon it to *narrow* the broadest reasonable interpretation”); *id.* at 15–16 (“*narrow* interpretations”).

Each of Petitioner’s arguments stems from the premise that the patentee acted as a lexicographer to assign the term a special definition different than its ordinary meaning. From Petitioner’s perspective, Patent Owner’s proposed construction must be wrong because it is narrower than the purported special definition. But as explained above, this reasoning is flawed because the patentee did not act as a lexicographer.

Notably, Petitioner never disputes that skilled artisans understood the term to have the plain and ordinary meaning as Patent Owner’s proposed construction. Petitioner cannot dispute this. Indeed, Petitioner’s own patents demonstrate the term has the same plain and ordinary meaning that Patent Owner proposes. Ex. 2013.

To avoid the plain and ordinary meaning, Petitioner must begin with the premise that the patentee acted as a lexicographer, and thus, any other construction must be “too narrow.” But stripped of its lexicography argument, Petitioner’s arguments and criticisms of Patent Owner’s proposed construction must also fail.

**D. The Term Carrier Aggregation Requires An Increased Bandwidth.**

As the term implies, “carrier aggregation” includes an aggregation of component carriers. *See* Ex. 1301, 3:1-38; Figs. 2A-2D, Ex. 2024, ¶¶ 83-85. And as the intrinsic and extrinsic evidence show, this aggregation provides an increased bandwidth that results in an increased aggregated data rate. Resp. at 11–22; *see, e.g.*, Ex. 2013 at 3:19–53. In other words, carrier aggregation allows data to be transmitted to a user more quickly than is the case with traditional single-frequency methods. Resp. at 4; Ex. 2024 ¶ 51.

Petitioner’s proposed construction fails to address any of these characteristics that were well-known to skilled artisans at the time of the alleged invention. At the very least, the term carrier aggregation must be construed to reflect that, in addition to referring to simultaneous operation on multiple carriers, the term reflects operation that provides an increased bandwidth and thereby an increased aggregated data rate to the user.

**III. Ground I – Petitioner Fails To Establish That Lee Anticipates The Claims.**

**A. Lee Fails To Disclose “Carrier Aggregation.”**

Petitioner argues that Lee discloses the “carrier aggregation” limitation even under Patent Owner’s proposed construction. Reply at 16. It does not. Lee never describes its input RF signal (VIN) as “employing carrier aggregation.” Resp. at 32.

Lee never describes combining carriers as a single virtual channel. *Id.* Lee never describes providing a higher bandwidth. *Id.* at 33; *see* Resp. at 33–34; Ex. 2024, ¶¶ 141–42 (“The term ‘bandwidth’ applies . . . to a single channel not to the numbers associated with two independent channels; mathematically adding together the bandwidths of two independent channels simply does not make physical sense.”).

Petitioner merely repeats its argument that Lee’s Bluetooth and WiFi carriers are simultaneously received. However, the mere presence of two carriers cannot establish “carrier aggregation” without evidence of anything being aggregated. Resp. at 33; Ex. 2024 ¶ 140. Standing alone, the disclosure of two unrelated carrier signals is not evidence of an “aggregation” because it ignores the meaning of the word “aggregation.” *Id.* Petitioner also fails to identify any evidence of skilled artisans aggregating Bluetooth and WiFi signals. This is likely because skilled artisans understood it would not have been useful to do so. Resp. at 34; Ex. 2024 ¶ 144.

At the time of the invention of the ’356 patent, a person of ordinary skill would not have understood Lee to disclose an “input RF signal employing carrier aggregation.” Resp. at 32–34. As just one example, the examiner considered Lee during prosecution and declined to reject the claims based on its disclosure. Resp. at 30–31.

**B. Lee Does Not Anticipate Claims 7 And 8 For An Additional Reason.**

In the response, Patent Owner explained that Petitioner improperly mixed different embodiments to set forth its anticipation case for claim 7. Resp. at 35–38. For some limitations of claim 7, Petitioner alleged the anticipating circuit operates in a “shared mode”; for other limitations the anticipating circuit operates in a “combo mode.” But Lee fails to disclose circuits that simultaneously embody both a time-division “shared mode” and a “combo mode.” Thus, Lee fails to anticipate claim 7 and its dependent claim, claim 8, for this additional reason.

Petitioner does not agree that it relies on different embodiments for anticipation. Reply at 19–20. Yet, in a contradictory statement, Petitioner appears to admit it does: “A POSITA would understand that operation in the shared mode described in paragraph [0038] . . . would apply in ‘the alternative design’ [i.e., the combo mode] of Lee paragraph [0041].” *Id.* In any event, because Petitioner’s reply fails to identify where Lee discloses an embodiment that operates simultaneously in both a shared mode and a combo mode, the Board should reject Petitioner’s anticipation argument for claim 7. *Microsoft Corp. v. Biscotti, Inc.*, 878 F.3d 1052, 1069 (Fed. Cir. 2017) (“[A]nticipation is not proven by ‘multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention.’”)

**IV. Ground II – Petitioner Fails To Establish That Claims 7 And 8 Are Obvious Over Lee.**

As explained in the Response, Lee fails to render obvious claims 7 or 8 at least because it fails to disclose “the input RF signal employing carrier aggregation” limitation. Resp. at 38. Furthermore, Petitioner’s conclusory assertions of motivation to combine embodiments lack sufficient support and lead to hindsight bias. Resp. at 38–39.

Aside from pointing to the Board’s Decision on Institution for support, Petitioner raises no new arguments in reply regarding the motivation to combine Lee’s embodiments. Reply at 20–21.

**V. Ground III – Petitioner Fails To Establish That Claims 1, 7, 8, 11, 17, and 18 Are Obvious Over Lee And The Feasibility Study.**

**A. No Motivation To Select And Combine Lee And The Feasibility Study**

In its response, Patent Owner explained that Petitioner had failed to sufficiently articulate a motivation to combine these two distinctly different references. Resp. at 41–47; *InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (“A reason for combining disparate prior art references is a critical component of an obviousness analysis.”). In reply, Petitioner asserts two main points. First, that the motivation “arises from the references themselves.” Reply at 23. Second, that it relies on Feasibility Study only to “apply the input RF signal of Feasibility Study to the amplifier stages of Lee.” *Id.* at 24.

Yet nowhere does Petitioner sufficiently explain what it is about “the references themselves” or “the input RF signal of Feasibility Study” that would have motivated a skilled artisan to combine Lee, which is directed to Bluetooth and WiFi, and the Feasibility Study, which is directed to LTE cellular communications. Resp. at 42. Nor does Petitioner explain why a skilled artisan would combine Lee, which does not disclose carrier aggregation, and the Feasibility Study, which does not even disclose an amplifier circuit. *Id.*

It is well established that a patent “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). “Without any explanation as to . . . *why* the references would be combined to arrive at the claimed invention, we are left with only hindsight bias that *KSR* warns against.” *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017).

**B. Petitioner Failed to Establish That The Feasibility Study Is Analogous Art**

In Reply, Petitioner argues that the Feasibility Study is analogous art from the same field of endeavor as the ’356 Patent because: (1) “of the content within the Feasibility Study reference itself . . . (including its broad ‘Keywords’ of ‘LTE, Radio’),” and (2) Patent Owner “relies upon it as extrinsic evidence in support of its proposed ‘carrier aggregation’ construction.” Reply at 22–23. Notably absent from

Petitioner's Reply, however, is any statement identifying a specific field of endeavor in order that the Board may objectively determine whether the Feasibility Study falls within that field.

The '356 patent itself describes the field of the invention as “low noise amplifiers (LNAs).” Ex. 1301, 1:16–17. Its claims are directed to LNAs that include at least “a first amplifier stage” and “a second amplifier stage.” *Id.* at 20:43–62 (claim 1). Petitioner fails to explain how the “reference itself,” which is titled a “Feasibility study for Further Advancements for E-UTRA (LTE-Advanced),” or its “broad ‘Keywords’ of ‘LTE, Radio’” fall within the field of “LNAs” or “amplifier stages.” As previously explained, the Feasibility Study does not even disclose an amplifier circuit (or any other circuit for that matter).<sup>2</sup> Indeed, Petitioner states that its rationale for selecting the Feasibility Study as a reference is to “apply the input RF *signal* of Feasibility Study to the amplifier stages of Lee.” Reply at 24; *see also id.* at 25 (“[T]he only prior art element from Feasibility Study in the proposed

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<sup>2</sup> Petitioner argues the “Feasibility Study does disclose an amplifier circuit” and points to a three-letter acronym “AGC” for support. Reply at 24. First, this is not a disclosure of a “circuit” (*see, e.g.*, Ex. 1301 at Fig. 6A as an example of an amplifier “circuit”) and second, Automatic Gain Control is not an amplifier. Resp. at 45; Ex. 2024 ¶ 172.

combination is the input RF signal disclosed in Feasibility Study, which is an LTE carrier aggregated signal”). Petitioner also fails to explain how the “input RF signal of Feasibility Study” is within the field of “LNAs” or “amplifier stages.”

Petitioner argues that Patent Owner’s use of the Feasibility Study as extrinsic evidence of the plain and ordinary meaning of the term “carrier aggregation” somehow supports its position that the Feasibility Study is analogous art. First, it was Petitioner that introduced the Feasibility Study into this proceeding, not Patent Owner. Second, Petitioner argues that the Feasibility Study is of “little or no relevance” as extrinsic evidence. Reply at 13. Petitioner cannot have it both ways by arguing that it is not relevant extrinsic evidence at the same time it is arguing that it is analogous art. Third, and more important, the fact that the Feasibility Study is extrinsic evidence of the meaning of the term “carrier aggregation” fails to establish that the Feasibility Study is analogous art.

Accordingly, the Board should reject the Feasibility Study as non-analogous art.

## **VI. CONCLUSION**

The Board should reject Petitioner’s alleged grounds of invalidity and hold that the challenged claims are not unpatentable.

IPR2019-00128  
Patent 9,154,356

Respectfully submitted,

Date: January 24, 2020

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**TABLE OF EXHIBITS**

<b>Exhibit</b>	<b>Description</b>
2001	Advisory Action dated June 16, 2014
2002	Request for Continued Examination dated July 17, 2014
2003	Request for Continued Examination dated May 20, 2015
2004	IDS with Examiner's Initials
2005	International Search Report and Written Opinion
2006	Original Claims from the '423 Application
2007	Original Claims from related PCT Application
2008	District Court Scheduling Order
2009	Intel's ITC Statement of Public Interest
2010	ITC Complaint
2011	ITC Scheduling Order
2012	ITC Revised Schedule
2013	U.S. Patent No. 9,161,254
2014	Transcript of the First Deposition of Patrick Fay, Ph.D.
2015	'356 Patent File History – List of References Considered By Examiner
2016	'356 Patent File History – Foreign Reference WO 2012/008705
2017	'356 Patent File History – Foreign Reference GB 2472978
2018	U.S. Pat. No. 10,044,613

2019	Qualcomm Inc., STRATEGIES TO WIN IN LTE AND EVOLVE TO LTE ADVANCED (2013)
2020	U.S. Pat. Pub. No. 2013/0217398
2021	ERIK DAHLMAN ET AL., 4G LTE/LTE-ADVANCED FOR MOBILE BROADBAND (Academic Press 2011) (excerpted)
2022	Qualcomm Carrier Aggregation Infographic (2014)
2023	Google Patents search results for “low noise amplifiers” prior art having a priority date before May 25, 2012
2024	Declaration of Daniel Foty, Ph.D.
2025	THE OXFORD ENGLISH DICTIONARY (Oxford University Press) (2d ed. 1989) (excerpted)
2026	3GPP TS 36.101 V11.0.0, 3RD GENERATION PARTNERSHIP PROJECT; TECHNICAL SPECIFICATION GROUP RADIO ACCESS NETWORK; EVOLVED UNIVERSAL TERRESTRIAL RADIO ACCESS (E-UTRA); USER EQUIPMENT (UE) RADIO TRANSMISSION AND RECEPTION (RELEASE 11 ), MARCH 2012 (excerpted)
2027	Reserved
2028	Declaration in Support of Patent Owner’s Unopposed Motion for Admission Pro Hac Vice of William E. Devitt
2029	Transcript of the Second Deposition of Patrick Fay, Ph.D.
2030	Reserved

**CERTIFICATE OF COMPLIANCE**

I, the undersigned, certify that the above Patent Owner's Sur-Reply complies with the applicable type-volume limitations of 37 C.F.R. § 42.24 (b)(1). This Sur-Reply contains 5,328 words, as counted by the word count function of Microsoft Word. This is less than the limit of 5,600 words as specified by 37 C.F.R. § 42.24(c).

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a copy of the foregoing **Patent Owner's Sur-Reply** and supporting exhibits was served on January 24, 2020 by email at the following address of record:

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