UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

APEX BEAM TECHNOLOGIES LLC,
Patent Owner.

Case IPR2023-00601
Patent No. 10,568,113

PETITIONER'S REPLY

TABLE OF CONTENTS

I. Introduction 1

II. Apex's "Triggering" Construction is Incorrect and Irrelevant to the Outcome 1

A. There is No Basis or Support for Apex's Construction of "Triggering the Transmission" 2

1. Apex fails to provide a legitimate basis for swapping out "triggering" with "causing" 2

2. Apex cannot point to any evidence to support its construction 4

B. *Xia* Discloses the "Triggering" Limitation, Regardless of Whether Apex's Construction is Applied 5

III. Apex's Different "Time Window" Constructions are Incorrect and Irrelevant to the Outcome 9

A. Apex's Different Constructions of the "Time Window" Limitations Lack Support and Merit 10

1. Apex's "time window" constructions are inconsistent with its district court construction. 10

2. Apex's "time window" constructions flout the law. 11

3. Apex's "time window" constructions improperly stray from the plain and ordinary meaning 14

a. "First Time Window" 16

b. "Third Time Window" 17

c. "Second Time Window" 18

B. *Xia* Discloses the "Time Window" Limitations, Regardless of Whether Apex's Constructions Are Applied 19

IV. Apex's Teaching Away Argument for Ground 2 Fails 21

V. Apex's Arguments Against the Other Claims Similarly Fail 23

VI. The Board Should Give Mr. Gomez's Declaration No Weight.....23

VII. Conclusion 26

I. Introduction

Apex's Patent Owner's Response (Paper 16, "POR") repeats many of its Preliminary Patent Owner Response arguments, which were rejected by the Board at Institution. This time, however, Apex offers several unsupported and meritless claim constructions to advance its arguments. Not only are Apex's claim constructions erroneous, but they are irrelevant to the outcome because, even if they were accepted by the Board, the claims would still read on the prior art cited in the Petition. Thus, the Board need not construe the claims to conclude that all of the challenged claims are unpatentable.

Apex also argues that there is no motivation to combine *Xia* and *Jover* in Ground 2 of the Petition. But rather than address the proposed combination, Apex improperly resorts to attacking the references individually.

Finally, the testimony of Apex's expert, Mr. Gomez, should be given no weight because he does not qualify as a POSITA.

For the reasons below, the Board should reject Apex's claim constructions and arguments, and find all challenged claims unpatentable.

II. Apex's "Triggering" Construction is Incorrect and Irrelevant to the Outcome

The Board should reject Apex's construction for "triggering the transmission" because it lacks support and merit. But, even if the Board were to

accept Apex's construction, it would not affect the outcome because *Xia* still discloses the "triggering" limitation under Apex's construction.

A. There is No Basis or Support for Apex's Construction of "Triggering the Transmission"

Apex proposes construing "triggering the transmission" to mean "causing the transmission," allegedly because the Petition reads out the word "triggering" and only focuses on "the transmission." POR 8-10. But this is incorrect, and Apex's construction fails for several reasons.[1]

1. Apex fails to provide a legitimate basis for swapping out "triggering" with "causing"

Apex asks the Board to effectively swap out the word "triggering" for "causing," but it fails to explain why the metes and bounds of the term "triggering" are not already clear or why the term otherwise needs to be construed. Contrary to Apex's assertion, the Petition does not read out the word "triggering." In fact, the Petition explicitly addresses the claimed "triggering" when it states that "*Xia* uses an indicator of beam failure ('target measurement value') for ***triggering*** the transmission of the first and second BFRQs ('the first radio signal and the second

[1] Despite Samsung's Petition being filed long before the related district court proceeding's claim construction phase, Apex never raised this construction in district court. *See* Ex. 1024.

radio signal')." Petition 23 (emphasis added); Ex. 1002 ("Bims"), ¶97. The Petition further cites to *Xia*'s disclosure of a "beam failure ***trigger condition***" that is used to determine when to trigger the transmission of the first and second BFRQs. *Xia*, [0076] ("[t]o detect a beam failure, the UE (e.g., UE 404) monitors a reference signal (beam failure detection RS) to assess whether a beam failure trigger condition has been met"); *Xia Provisional*, [0062]. The Board confirmed *Xia*'s teachings and the Petition's discussion of them at Institution. Paper 11, 23-27.

Not only do Apex and its expert completely ignore this analysis from the Petition, but they also fail to account for the full teachings of *Xia*. Apex quotes just one sentence from paragraph [0078] of *Xia* ("[a]fter the UE 404 detects the beam failure; a beam failure recovery request (BFRQ) transmission is performed") and concludes that "Xia is silent on establishing causality between the threshold being exceeded and transmitting the first and second radio signal." POR 17-18. But as discussed above, and in Section II.B below, *Xia* discloses numerous examples that contradict Apex's argument.

Moreover, Apex's argument is essentially about a purported missing claim element, and the Board need not construe this term to resolve the dispute between the parties. Apex thus fails to provide a legitimate basis for swapping out the word "triggering" with "causing" in the claims.

2. Apex cannot point to any evidence to support its construction

Apex does not cite any intrinsic evidence to support its construction because, as Apex admits, a POSITA "would understand that the patent specification points to no specific meaning of the word 'triggering' other than the plain and ordinary meaning of the term." POR 9.

Apex thus resorts to extrinsic evidence, citing two purported dictionary definitions and the conclusory testimony from its expert. *Id.*; Ex. 2005, ¶¶34-35. But neither constitutes evidence supporting its construction. The purported dictionary definitions are not evidence in this case because they have not been filed as exhibits as required by Rule 42.63. Moreover, the purported dictionary definitions are undated and unauthenticated. Indeed, they appear to be links to present day websites, which are not proof of how a POSITA would have understood "triggering" at or around 2017.

Moreover, the conclusory testimony of Apex's expert should be given no weight because it simply parrots the Patent Owner Response and the two purported dictionary definitions (*see* Ex. 2005, ¶¶34-35) and does not provide any additional support for Apex's construction.

B. *Xia* Discloses the "Triggering" Limitation, Regardless of Whether Apex's Construction is Applied

While the Board should reject Apex's construction of "triggering the transmission" for at least the reasons above, *Xia* discloses this limitation, regardless of whether the Board were to accept Apex's construction.

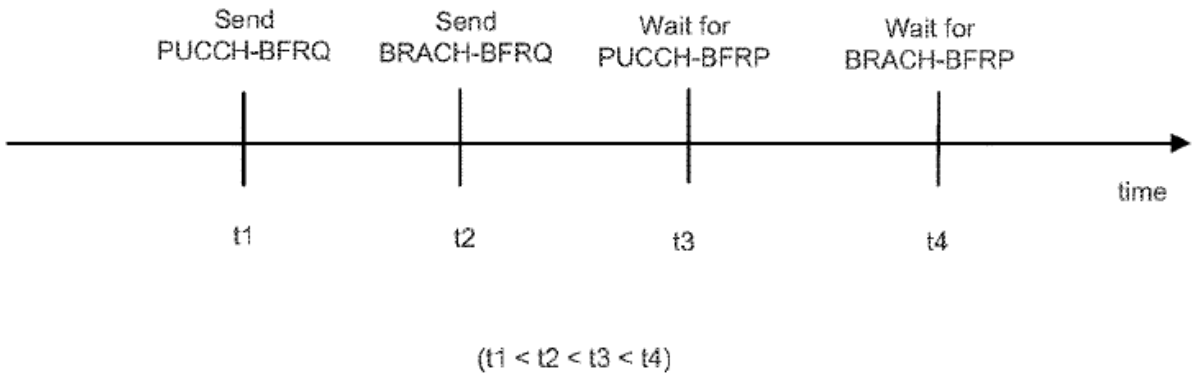
Claim 1 requires "wherein a measurement for the target radio signal obtains a target measurement value, the target measurement value, when higher than a target threshold is used for triggering the transmission of the first radio signal and the second radio signal," but Apex's attack is only directed to the "triggering the transmission" part of this limitation. POR 17-19.

The Petition shows *Xia* discloses that detecting a beam failure triggers the transmission of the first and second beam failure recovery requests. Petition 23 (citing *Xia*, [0076]; *Xia Provisional*, [0062]; Bims, ¶97). Indeed, *Xia* specifically refers to a "beam failure ***triggering condition***." *Xia*, [0076] (emphasis added); *Xia Provisional*, [0062]. As Dr. Bims explains, a POSITA would have understood that *Xia* uses an indicator of beam failure ("target measurement value") for triggering the transmission of the first and second BFRQs ("the first radio signal and the second radio signal"). Bims, ¶97.

Contrary to Apex's assertion, there are numerous examples where *Xia* establishes causality between the threshold being met (e.g., the "triggering condition") and transmitting the first and second radio signals (e.g., the first and

second BFRQs). For example, when viewed in the context of the rest of *Xia*, paragraph [0078] confirms the link between the threshold being met and the transmission of the first and second radio signals. Specifically, *Xia* explains that, "[t]o detect a beam failure, the UE (e.g., UE 404) monitors a reference signal (beam failure detection RS) to assess whether a beam failure trigger condition has been met (e.g., beam signal strength has dropped below a threshold)," and "[a]fter the UE 404 detects the beam failure; a beam failure recovery request (BFRQ) transmission is performed." *Xia*, [0076]-[0078]; *Xia Provisional*, [0062].

Paragraph [0091] further states that, in some embodiments, "more than one BFRQ (e.g., PUCCH-BFRQ, PRACH-BFRQ) is transmitted by a UE 404 for a single beam failure (BFR) event." *Xia*, [0091]; *Xia Provisional*, [0070]-[0072]. FIG. 6B below depicts one such embodiment.



Xia, FIG. 6B; *Xia Provisional*, FIG. 6.

Thus, instead of triggering a single BFRQ, *Xia* discloses that multiple BFRQs may be triggered in response to the beam failure detection.

Additional examples also confirm *Xia*'s disclosure of causality between the threshold being met (e.g., the "triggering condition") and transmitting the first and second radio signals (e.g., the first and second BFRQs). Paragraph [0066] states that, "[i]n order for the system to recover from such a beam failure, the user equipment (UE) 404 sends a beam failure recovery request (BFRQ) to the base station (gNB) 402." *Xia*, [0066]; *Xia Provisional*, [0053]. Similarly, claim 1 states "sending a first beam failure recovery request (BFRQ) to the base station upon detection of the beam failure event," and claim 10 states "sending a second BFRQ to the base station for a same beam failure event." *Xia*, claims 1, 10; *Xia Provisional*, claims 1, 4.

Further, as shown in FIGS. 7A and 7B below, *Xia* depicts a flow chart, where "in response to detecting the beam failure event, the UE 110 sends a first beam failure recovery request (BFRQ)," and "the UE 110 sends a second BFRQ form [sic] the UE 110 to the gNB 202 for a same beam failure event." *Xia*, [0105]-[0106]; *Xia Provisional*, [0062], [0084]-[0085], claims 1, 2, 4, 5.

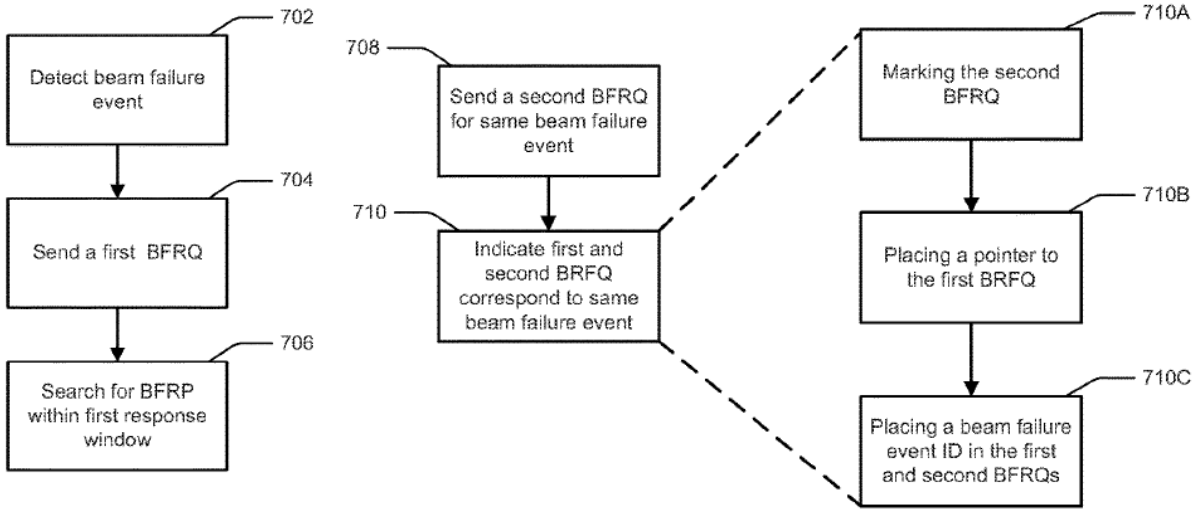


FIG. 7A FIG. 7B

Xia, FIG. 7A, 7B; *Xia Provisional*, [0062], [0084]-[0085], claims 1, 2, 4, 5.

Thus, contrary to Apex's assertion, *Xia* is not silent on establishing causality between the threshold being met and transmitting the first and second radio signals. Ground 1 of the Petition further shows that *Xia* renders obvious the threshold being exceeded triggering the transmission of the first and second radio signals. Petition 23-26.

The combination of *Xia* and *Jover* (Ground 2) renders this limitation obvious for similar reasons. Apex's attacks against *Jover* for purportedly not using its "triggering condition" for "triggering a transmission of the first and second radio signal" are misplaced because *Xia* already discloses these features. Ground 2 of the Petition relies on *Jover* for its teachings of a specific triggering condition (i.e., condition where a value is higher than a target threshold). *See* Petition 26-29. Apex

does not argue that this part of the claim limitation is missing from the proposed combination, and thus, for the same reasons above, *Xia* in combination with *Jover* renders obvious this limitation.

Finally, even if Apex's proposal to swap out the word "triggering" with "causing" was adopted by the Board, it would not change the outcome. For the same reasons discussed above, *Xia* discloses that the threshold being met (e.g., the "triggering condition") *causes* the transmission of the first and second radio signals (e.g., the first and second BFRQs). Petition 23; Bims, ¶97; *Xia*, [0066], [0076]-[0078], [0091], [0105]-[0106], claims 1 and 10, FIGS. 6B, 7A, and 7B; *Xia Provisional*, [0053], [0062], [0070]-[0072], [0084]-[0085], claims 1, 2, 4, 5, FIG. 6.

III. Apex's Different "Time Window" Constructions are Incorrect and Irrelevant to the Outcome

The Board should reject Apex's different constructions for each of the first, second, and third "time window[s]" because they lack support and merit. But, even if the Board were to accept Apex's constructions, they would not affect the outcome because *Xia* still discloses each of the "time window" limitations under Apex's constructions.

A. Apex's Different Constructions of the "Time Window" Limitations Lack Support and Merit

Apex proposes construing each of the "first time window," "second time window," and "third time window" separately and differently, as follows:

> "first time window": a period of time from the first radio signal in which to receive a third radio signal (*i.e.*, a response to either the first or second radio signals)
>
> "second time window": a period of time from the first radio signal in which to transmit the second radio signal
>
> "third time window": a period of time from the second radio signal in which to receive a third radio signal (*i.e.*, a response to either the first or second radio signals)

POR 10-14. Each of these constructions fails for several reasons.

1. Apex's "time window" constructions are inconsistent with its district court construction.

As an initial matter, Apex's constructions for these "time window" limitations are different than and inconsistent with the construction that it proposed for "time window" in the related district court proceeding: "the time allocated to respond to a signal request." Ex. 1024, 38-41. Unlike here, Apex's district court construction does not construe each of the first, second, and third time windows differently. Apex's district court construction also does not reference any particular

periods of time or particular radio signals, as its constructions do here. Instead, Apex's constructions in this proceeding replace more general terms like "time allocated" and "signal request" with specific periods of time and radio signals.

Another notable inconsistency in Apex's proposed constructions is that Apex has proposed "second time window" to mean "a period of time from the first radio signal in which to transmit the second radio signal," whereas its district court construction defined the term as "the time allocated to respond to a signal request." Both constructions cannot be correct, as one is limited by the time for responding to a signal request, while the other is limited by the time for transmitting a signal. Apex fails to explain its notable shift in claim construction positions, let alone explain how these positions are consistent. These inconsistencies illuminate the self-serving and result-oriented nature of Apex's constructions, which are not based on any intrinsic or extrinsic evidence, as they should be.

2. Apex's "time window" constructions flout the law.

Apex's constructions also fail because they flout the law. For example, it is well established that the same claim terms should be construed in the same manner. *See, e.g., Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1345 (Fed. Cir. 1998) (holding that, where a claim term is used two times in a claim, the construction "should encompass both uses because the same word appearing in the same claim should be interpreted consistently"); *Rexnord Corp. v. Laitram Corp.*,

274 F.3d 1336, 1342 (Fed. Cir. 2001) ("[A] claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent."); *Phonometrics, Inc. v. N. Telecom Inc.*, 133 F.3d 1459, 1465 (Fed. Cir. 1998) ("A word or phrase used consistently throughout a claim should be interpreted consistently."); *Acromed Corp. v. Sofamor Danek Grp., Inc.*, 253 F.3d 1371, 1381-82 (Fed. Cir. 2001) (holding that the claim's uses of the word "engage" to define three interfaces "require a meaning broad enough to apply to each of these interfaces"). Apex's different constructions for each of the first, second, and third "time window[s]" are anything but consistent and only create more confusion. Each use of the term "time window" should instead be interpreted to have the same meaning.

Moreover, in support of Apex's constructions, Apex cites the alleged "purpose" of the time windows. POR 12-14, 21. But the intended purpose of a particular claim limitation carries no patentable weight. *See, e.g., Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1368 (Fed. Cir. 2012) (rejecting a construction that would "improperly read a 'purpose' requirement into" the claim); *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1218 (Fed. Cir. 2014) (rejecting a construction that would read a purpose from the specification into the claim where the term "has another purpose as well"); *Woods v. DeAngelo Marine Exhaust, Inc.*, 692 F.3d 1272,1285 (Fed. Cir. 2012) (declining to construe an "otherwise clear term to

include a limitation already present in some claims but not others" where nothing in the specification required the limitation). Apex's attempt to read the alleged "purpose" of each time window into the claims is thus improper.

Finally, Apex relies heavily on other claim elements to craft its proposed constructions. But those other elements already provide limitations on the claim, and thus, it is not necessary or proper to construe one claim term to repeat these same limitations. *See, e.g., Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1237 (Fed. Cir. 2016) ("Ideally, claim constructions give meaning to all of a claim's terms. Construing a claim term to include features of that term already recited in the claims would make those expressly recited features redundant."); *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) ("Allowing a patentee to argue that physical structures and characteristics specifically described in a claim are merely superfluous would render the scope of the patent ambiguous, leaving examiners and the public to guess about which claim language the drafter deems necessary to his claimed invention and which language is merely superfluous, nonlimiting elaboration. For that reason, claims are interpreted with an eye toward giving effect to all terms in the claim."); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005) (en banc) (stating that a patent's assertion "that an invention achieves several objectives does not require that each of the claims be construed as limited to structures that are capable of achieving all of the objectives"). The

problem with Apex repeating other parts of claim in its "time window" constructions is that it twists the meaning beyond what those other claim limitations require. For example, although no claim element requires it, Apex defines each time window as having a specific purpose, e.g., "to [transmit/receive]" a particular radio signal in its respective time window. POR 10. There is no support in the claims or specification for this interpretation. And the Board should reject Apex's attempt to rewrite the claims under the guise of claim construction.

3. Apex's "time window" constructions improperly stray from the plain and ordinary meaning

Notwithstanding the inconsistencies and legal flaws above, Apex's constructions for the "time window" limitations improperly stray from the plain and ordinary meaning. "[T]he words of a claim are generally given their ordinary and customary meaning." *Phillips*, 415 F.3d at 1312 (quotations omitted). The only exceptions are lexicography or disavowal. *Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Neither exception applies here.

Apex concedes that "[a] person of ordinary skill in the art would understand that each of the claimed time windows are 'a period of time.'" POR 11. But rather than stopping at the plain and ordinary meaning, Apex injects different language into each of the "time window" limitations according to their alleged "purpose" and allegedly so that "the other elements of the claim can be met." *Id.*, 11-14, 21.

Apex cites to a statement from Dr. Bims' deposition and a purported dictionary definition (which is not evidence in this case because it has not been filed as an exhibit as required by Rule 42.63). POR 11. However, neither Dr. Bims' statement nor the purported dictionary definition ties the term "time window" to the transmission or receipt of particular radio signals, as Apex proposes. Instead, Dr. Bims' statement that "[a] time window as shown in Figure 6 is a period of time on the time axis," and the definition of "window" as "[a] time interval during which an activity may take place [or] a time interval during which an activity must take place" are consistent with the plain and ordinary meaning of "time window."[2] *Id*.

As shown below, Apex further cites to various non-limiting examples from the specification to advance its proposed constructions. But Apex does not cite any lexicography or clear disavowal to support departing from the plain and ordinary meaning of "time window." Thus, each "time window" construction fails.

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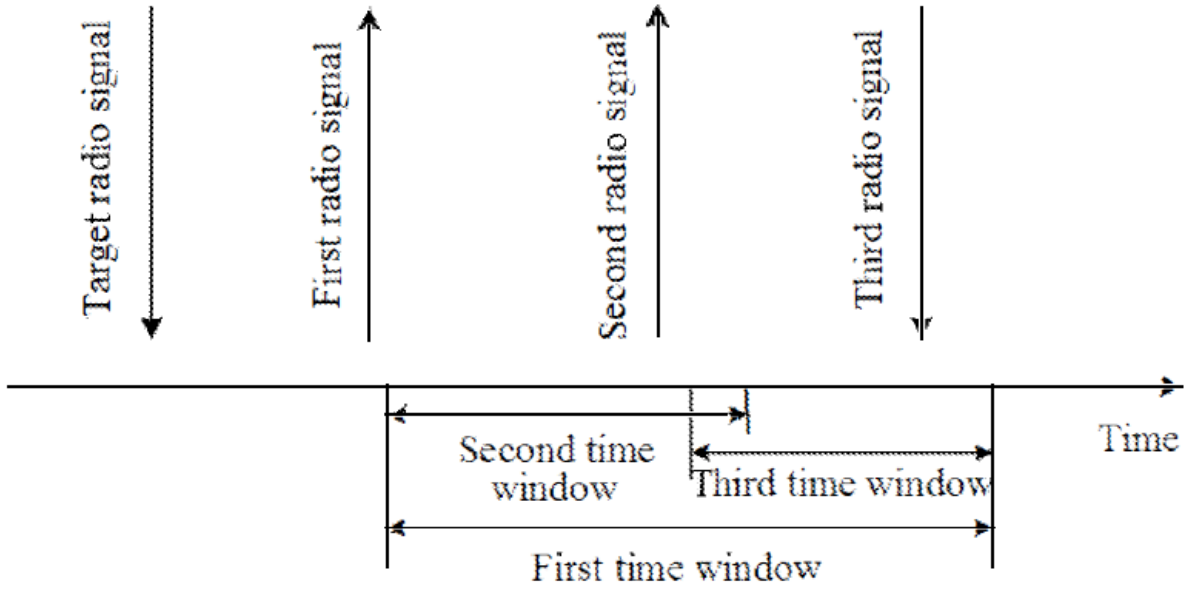
[2] In the related district court proceeding, Samsung proposed construing "time window" in accordance with its plain and ordinary meaning, as "one or more intervals of time." Ex. 1024, 38. This is consistent with a "time window" being "a period of time," which Apex agrees is the plain and ordinary meaning.

a. "First Time Window"

To support its construction of "first time window," Apex cites to the embodiment in FIG. 6, the claim language, and a portion of the Background section ('113 patent, 1:43-52). POR 11-13. None of these citations support Apex's construction. As illustrated below, FIG. 6 shows that the "first time window" starts a period of time after the "first radio signal" and extends a period of time beyond the "third radio signal."



'113 patent, FIG. 6.

Thus, FIG. 6 does not support the "first time window" being "a period of time ***from the first radio signal*** in which to ***receive a third radio signal*** (i.e., a response to either the first or second radio signals)" (emphases added). Further, the claim language "monitoring a third radio signal in a first time window" describes

something that happens during the first time window, but it does not mandate that the first time window be defined as "a period of time allocated in order to receive a response to the signal requests of the first and second radio signals, where the response is indicated by the monitored third radio signal," as Apex suggests. POR 12. Finally, the passage from the background section merely discloses the purported "problems" that the '113 patent attempts to solve and, as such, is not defining what is claimed. *See* '113 patent, 1:53-54. At most, this passage refers to an exemplary time window as indicated by the use of the word "of": "time window of ...." *Id.*, 1:43-52. Among other things, a definition would specify what the time window "is," not provide an example "of" a time window. This passage simply states a time window exists during which a UE waits for a response to a beam recovery request. Just because a UE may wait for a response during a time window does not mean that the time window should be defined as such.

b. "Third Time Window"

Apex alleges that the "third time window" is related to the first time window because "it is a portion of the first time window starting from the second radio signal in which to receive a third radio signal," and cites only to language in the claims to support its allegation. POR 13. But nothing in the limitation "a time domain resource occupied by the second radio signal is used for determining a third time window, and the end time of the third time window is the end time of the

first time window" mandates Apex's construction. Further, as noted above for the "first time window," FIG. 6 shows that the "third time window" starts a period of time after the "second radio signal" and extends a period of time beyond the "third radio signal." Thus, FIG. 6 does not support the "third time window" being "a period of time ***from the second radio signal*** in which to ***receive a third radio signal*** (i.e., a response to either the first or second radio signals)" (emphases added).

c. "Second Time Window"

Apex alleges that the "second time window" "has a different function than the first and third time windows," and cites to the embodiment in FIG. 6, the claim language, and other non-limiting examples in the specification (22:56-60, 22:53-54) to support its construction. POR 13-14. None of these citations support Apex's construction. As with the first and third time windows, FIG. 6 shows that the "second time window" starts a period of time after the "first radio signal" and extends a period of time beyond the "second radio signal." Thus, FIG. 6 does not support the "second time window" being "a period of time ***from the first radio signal*** in which to ***transmit the second radio signal***" (emphases added). Further, the passage at 22:56-60 does not mention "a second time window" at all, and thus, it does not support Apex's construction.

Apex also argues that the "second time window" is defined as "the period of time from the first radio signal in which to receive the second radio signal because it explicitly states that '[the]/[a] time domain resource occupied by the second radio signal is within the second time window.'" POR 14 (citing '113 patent, 22:53-54, claim 1). But the fact that a time domain resource occupied by the second radio signal happens to be within the second time window does not necessarily mean the purpose of the second time window is to transmit the second radio signal. Neither the specification nor claims limits the "second time window" in terms of the "second radio signal," let alone requires that it be defined as "the period of time from the first radio signal in which to transmit the second radio signal." The claim simply requires that "a time domain resource occupied by the second radio signal is within the second time window," and nothing more.

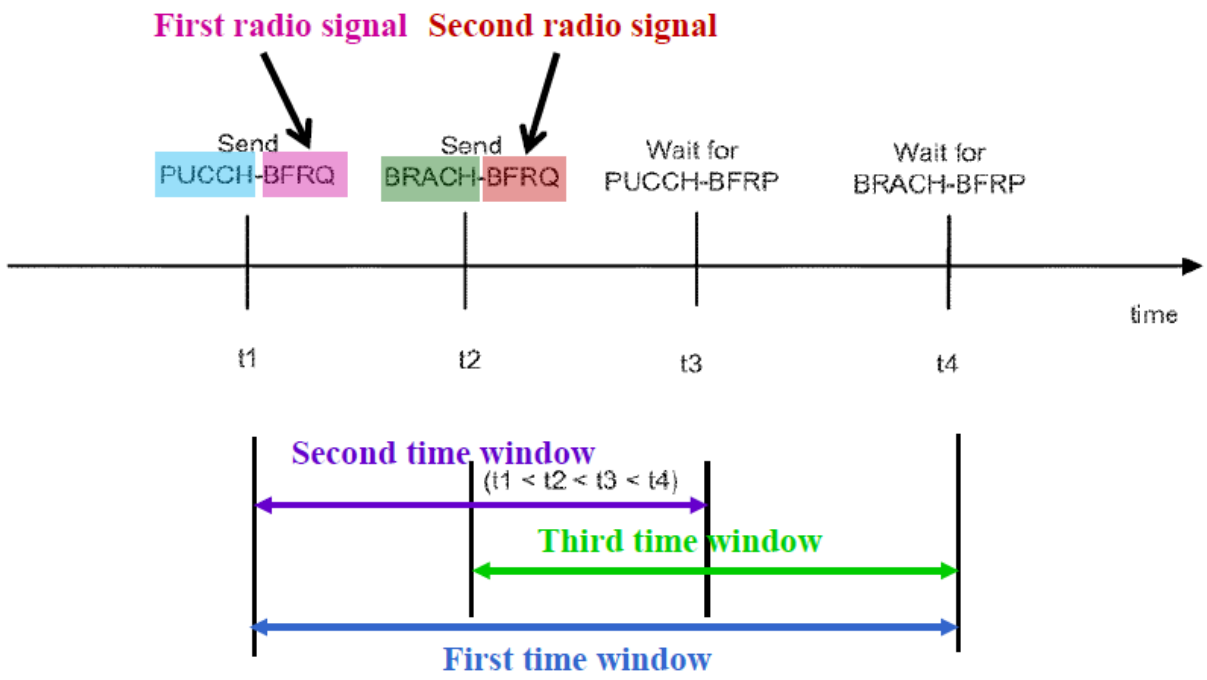
For the reasons above, the Board should reject Apex's constructions for each of the "time window" limitations.

B. *Xia* Discloses the "Time Window" Limitations, Regardless of Whether Apex's Constructions Are Applied

Although Apex proposes construing each of the first, second, and third time windows, it only argues that *Xia* fails to disclose the claimed "second time window." POR 20-21. Apex does not dispute that *Xia* discloses the "first time window" or the "third time window" even under its proposed constructions. *Id.*

In particular, Apex argues that "the purpose of a second time window is ensuring that the second radio signal is transmitted within a certain period of time from the first radio signal which overlaps with the period of time from the second radio signal to receive a responsive third radio signal." *Id.*, 21. While the Board should reject Apex's construction of the "second time window" (as well as the "first time window" and the "third time window") for the reasons above, *Xia* discloses this limitation, regardless of whether the Board were to accept Apex's construction.

Applying the plain and ordinary meaning, where a "time window" is a "period of time," the Petition shows that *Xia* meets the claimed "second time window," as depicted in annotated FIG. 6B below. Petition 31-36.



Xia, FIG. 6B (annotated); *Xia Provisional*, FIG. 6.

Apex does not dispute that *Xia* discloses the "second time window" under the plain and ordinary meaning of that term. Rather, Apex's entire argument depends on its erroneous claim construction of "second time window" discussed above.

Moreover, even if the Board were to accept Apex's construction of "second time window," *Xia* still discloses this limitation. As shown in annotated FIG. 6B above, *Xia* discloses a period of time (t1 to t3) from the first radio signal (PUCCH-BFRQ) in which to transmit the second radio signal (PRACH-BFRQ).

Apex's argument about the possibility that the "second radio signal" in *Xia* may be received outside of the "second time window" (POR 14, 21) is beside the point because *Xia* explicitly discloses an embodiment in FIG. 6B that meets all of the limitations of the claim under Apex's proposed construction.

To the extent Apex were to argue that the purpose of *Xia*'s second time window is to receive PUCCH-BFRP (and not to transmit PRACH-BFRQ), this is irrelevant because Apex's construction does not include such language.

IV. Apex's Teaching Away Argument for Ground 2 Fails

Apex argues that there is no motivation to combine *Xia* with *Jover* because "*Jover* is directed to the opposite objective of the '113 Patent or *Xia*." POR 22-24.[3] Specifically, Apex argues that the "beam steering and null generation" or "beam

[3] This argument only applies to Ground 2 of the Petition (not Ground 1).

sweeping" described in *Jover* "teaches away from the methods related to Beam Recovery Requests disclosed in the '113 Patent." *Id*. This argument falls flat, however, because there is nothing in *Jover* that explicitly teaches away from the use of beam recovery requests.

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). A reference does not teach away, however, if it merely expresses a general preference for an alternative invention but does not "criticize, discredit, or otherwise discourage" investigation into the invention claimed. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

As the Petition explains, both *Xia* and *Jover* are "directed to detecting a communication failure between the UE and the base station." Petition 27 (citing *Xia*, [0091]-[0093], [0097]-[0103], [0105]-[0106], FIGS. 6B, 7A-7B; *Xia Provisional*, [0084]-[0085], FIG. 6B; *Jover*, [0039]-[0040], FIG. 3). *Jover* does not mention beam recovery requests, let alone teach away from them. At most, *Jover* teaches alternative methods of resolving communication failures between a UE and a base station through the use of beam steering/null generation and beam sweeping. *In re Fulton*, 391 F.3d at 1201 ("The prior art's mere disclosure of more than one

alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed").

Moreover, Apex's argument ignores that the proposed combination of *Xia* and *Jover* in the Petition relies on *Jover* for its teachings of a specific triggering condition (i.e., condition where a value is higher than a target threshold). *See* Petition 27-29. The proposed combination does not propose bodily incorporating the beam steering/null generation or beam sweeping techniques of *Jover*. Thus, Apex's argument amounts to requiring bodily incorporation and "attacking references individually," as the Board acknowledged at Institution. Paper 11, 29. The Board should reject Apex's teaching away argument for at least these additional reasons.

V. Apex's Arguments Against the Other Claims Similarly Fail

Apex argues claims 2-20 are not unpatentable for the same reasons discussed above. POR 21-22. Thus, Apex's arguments for these claims fail for at least the reasons in Sections II-IV of this paper. As explained in the Petition, *Xia* and/or *Jover* render obvious claims 2-20.

VI. The Board Should Give Mr. Gomez's Declaration No Weight

The Board should give no weight to the testimony of Mr. Gomez because he does not qualify as a POSITA. In the Petition, Samsung proposed that a 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 telecommunications systems, including multiple-input multiple-output (MIMO) technology." Petition 14. Apex's expert does not meet this definition because he only has a bachelor's degree in electrical engineering, and no work experience with MIMO technology. Indeed, Mr. Gomez's CV is silent with respect to any work experience with MIMO technology. When asked about his work experience with MIMO technology in the related district court proceeding, he could not point to any specific work experience. Ex. 1025, 51:10-52:3. Mr. Gomez also admitted "I haven't actually specifically built a product related to those technologies." *Id*., 52:2-3.

Implicitly acknowledging that Apex's expert does not meet Samsung's definition of a POSITA, Apex proposed a different definition that leaves out the requirement for experience with MIMO technology and provides an alternative with only a bachelor's degree and more work experience. POR 14-15 ("a POSITA would have had either (i) at least a master's degree in electrical engineering or a similar field and at least two years of experience working with telecommunications systems; or (ii) at least a bachelor's degree in electrical engineering or a similar field and at least five years of experience working with telecommunications systems."). This definition is wrong because the '113 patent purports to address a MIMO problem in 5G. '113 patent, 1:23-54 (3GPP New Radio is commonly

understood to mean 5G). Indeed, Apex asserts that the patent is related to 5G technologies. Ex. 1017, 5 (asserting patented technology is implemented in 5G products); *see also* ’113 patent, 14:48 (disclosing 5G embodiment). Thus, telecommunications experience alone (without MIMO experience) is not enough. Samsung’s definition is thus more in line with the claimed invention and specification of the ’113 patent.

Regardless, it is questionable whether Apex’s expert meets his own definition of a POSITA. Because Mr. Gomez does not have a master’s degree, he must have had at least five years of experience working with telecommunications systems to meet Apex’s proposed definition. But Mr. Gomez did not identify whether and when he had such experience. And, in any case, Mr. Gomez has admitted that any such experience is not in the 5G technology of the ’113 patent, let alone 4G or even 3G. According to Mr. Gomez’s testimony in the related district court proceeding, only two of his engineering experiences involved wireless networking: his work for Philips (February 1997-December 1999) and ActSolar (August 2006-March 2009). Ex. 1025, 47:14-48:11; Ex. 2005, Exhibit A, 3, 5. His testimony about this work experience makes clear that it only tangentially involved wireless networking, at best. *See* Ex. 1025, 33:4-35:23, 38:17-39:25.

In addition, Mr. Gomez admitted that none of his engineering experiences involved 5G, much less 4G or even 3G. *Id.*, 50:2-51:9. His work for Phillips

involved 2G cellular network communications and "local-area-network-type technologies," and the work for ActSolar involved "transmission of data from the rooftops down to" nearby receivers "using a protocol called Zigbee." *Id.*, 47:25-48:22. Thus, Mr. Gomez's lack of practical experience related to 4G/LTE and 5G (or even 3G) highlights his lack of credentials. His only practical experience involving cellular wireless communications (Philips) ended nearly two decades before the claimed priority date of the '113 patent.

Unlike Mr. Gomez, Samsung's expert, Dr. Bims, meets the definition of a POSITA under either Samsung or Apex's definition of a POSITA. *See* Bims, Appendix A; Ex. 2006, 16:7-26:22. Dr. Bims' testimony is thus more credible and should be given more weight than Mr. Gomez's testimony.

VII. Conclusion

For these reasons and those in the petition, the challenged claims should be canceled.

Dated: March 19, 2024

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CERTIFICATION OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, Petitioner certifies that the word count of Petitioner's Reply (exclusive of any table of contents, table of authorities, mandatory notices under §42.8, certificates of service and word count, and list of exhibits or claim listing) as measured by Microsoft Word is 5,467.

Dated: March 19, 2024

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CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Petitioner's Reply** was served electronically via email on March 19, 2024, in its entirety on the following:

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