

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.

IPR2023-00601
IPR2023-00602
Patent 10,568,113 B2

Record of Oral Hearing
Held: July 12, 2024

Before JOHN D. HAMANN, SEAN P. O'HANLON, and
SCOTT RAEVSKY, *Administrative Patent Judges*.

IPR2023-00601
IPR2023-00602
Patent 10,568,113 B2

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The above-entitled matter came on for hearing on Friday, July 12, 2024, commencing at 11:00 a.m., via video teleconference.

P R O C E E D I N G S

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JUDGE RAEVSKY: Welcome to the Patent Trial and Appeal Board. Your panel today includes Judges Hamann, Judge O'Hanlon, and myself. We're here today for oral arguments in inter partes review numbers 2023-00601 and 00602, in which Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. are the Petitioners, and Apex Beam Technologies, LLC, is Patent Owner. The issue today in both cases is U.S. patent number 10,568,113. So, let's go ahead and enter appearances. Who do we have appearing for Petitioner today?

MR. GOLDBERG: Joshua Goldberg for Petitioner.

JUDGE RAEVSKY: Thank you, Mr. Goldberg. And how about for Patent Owner?

MR. RUBINO: Good morning, Your Honor. Vincent Rubino from the law firm Fabricant LLP, for Patent Owner.

JUDGE RAEVSKY: Great. Okay. Well, before we begin, I just have a few housekeeping items. If you can, when it's your turn to present, if you could please present your slides by sharing your screen, that would be helpful to us since we have sometimes large PDF files and opening too many PDFs when there are multiple cases at once can be challenging. If you have any concerns with that, we do have the ability to open the slides on our end and we'll follow along the best we can. Even though you'll be presenting, if possible, the slides, please still refer to the slide number when speaking for the benefit of the court reporter. Also, when you're not speaking, please remember to mute yourself. And when you begin speaking again, please

1 identify yourself if there's any possibility that it would be unclear for the
2 purposes of the transcript. Also, please note that there may be members of
3 the public listening in on the public line today. We have allotted 90 minutes
4 to each party for total argument time. There are two cases. You may
5 allocate that time among those cases however you see fit, and for
6 convenience will enter a single transcript into both cases.

7 Mr. Goldberg, would you like to reserve any time for rebuttal?

8 MR. GOLDBERG: Yes, Your Honor. I don't think time will be
9 an issue, but I'll reserve 15 minutes.

10 JUDGE RAEVSKY: Okay. And Patent Owner, Mr. Rubino, how
11 much time would you like to reserve, if any?

12 MR. RUBINO: Your Honor, I'd like to also reserve 15 minutes for
13 sur-rebuttal.

14 JUDGE RAEVSKY: Okay. Since this is a potentially long
15 hearing today, we'll likely plan to have a short break at some point, most
16 likely after Petitioner's main case. And then the last thing I'd like to note is
17 that we are familiar as a panel with the briefing and the general background.
18 So, you can feel free to jump directly into the issues. And with that, when
19 you're ready, Mr. Goldberg, you maybe again.

20 MR. GOLDBERG: Your Honor, if you could just give me one
21 moment, I typically don't share the slides. So, I'm figuring out how to do
22 that correctly.

23 JUDGE RAEVSKY: No problem. I won't start your time until
24 you do. And if that's not working on your end, we'll -- we'll just take care of
25 it on our end. Just, you know, no more than a minute and we'll go again.

1 MR. GOLDBERG: Yeah.

2 JUDGE RAEVSKY: Looks like we can see your slides. So,
3 something's working.

4 MR. GOLDBERG: Okay. I will proceed then. All right. So,
5 good morning, Your Honors. I wanted to start here.

6 JUDGE RAEVSKY: That does look better. It looks bigger now,
7 so whatever you did was helpful.

8 MR. GOLDBERG: Okay.

9 JUDGE RAEVSKY: Although now it looks like we see your
10 desktop, so.

11 MR. GOLDBERG: Sorry.

12 JUDGE RAEVSKY: No problem.

13 MR. GOLDBERG: That doesn't work because it needs to be the --

14 JUDGE RAEVSKY: Counsel, if it's --

15 MR. GOLDBERG: I apologize.

16 JUDGE RAEVSKY: If these are not working on your end. We'll
17 go ahead and follow up with slides here.

18 MR. GOLDBERG: Yeah, if you could do that, I'd appreciate it.
19 Sorry, Your Honors, it's a pickle you don't present the slides.

20 JUDGE RAEVSKY: No problem. We'll go ahead and start your
21 time now.

22 MR. GOLDBERG: Okay. Thank you, Your Honor. If we could
23 start on slide 4. So, I'd like to focus on the Xia alone ground and the Liu
24 Jover ground. Apex's slides don't mention that Xia alone ground. So, I
25 expect they might focus only on the Xia Jover ground. But there's no reason

1 for the Board to reach the Xia Jover ground because Apex has not disputed
2 the obviousness point in the Xia alone ground for which the Xia Jover
3 ground is a fallback. I'll come back to that in a few minutes, but I'd like to
4 first turn to Claim 1 of the '113 patent. If we could go to slide 6. I think it's
5 helpful to look at how Claim 1 maps to Figure 6 of the '113 patent, because
6 as we'll see, Claim 1 maps to the Figures of the Xia and Liu references in the
7 same way.

8 First, when there's a problem with the target radio signal, which
9 can be a reference signal from the base station, the UA transmits the first
10 radio signal, which can be a first beam recovery request. The UA then
11 transmits the second radio signal, which can be a second beam recovery
12 request. And finally, the UA receives a third radio signal, which can be a
13 response to the beam recovery requests. The claim also articulates various
14 time windows. The main disputes between the parties relate to what
15 constitutes triggering the transmission of the first and second radio signals
16 and what constitutes the second time window. Apex no longer disputes that
17 the Xia and Liu references teach the first and third time windows. As we
18 can see for the second time window, Claim 1 only requires that a time
19 domain resource occupied by the first radio signal is used for determining a
20 second time window. The time domain resource occupied by the second
21 radio signal is within the second time window. The second time window is
22 within the first time window, and the second time window and the third time
23 window have overlapped time domain resources.

24 If we go to slide 7, Xia teaches everything we just discussed. In
25 Xia, the reference signal isn't shown in a figure specifically called out in

1 paragraph 76. It says to detect a beam failure, UE, for example, UE 404,
2 monitors a reference signal which could be beam failure detection RS to
3 assess whether a beam failure trigger condition has been met. For example,
4 beam signal strength is dropped below the threshold. The only difference
5 between this trigger condition and that in Claim 1 is that it looks at whether
6 beam signal strength is below a threshold instead of higher than a threshold,
7 but switching to a trigger condition that looks at whether something like that
8 error rate is higher than a threshold would have been obvious and Apex has
9 not disputed that.

10 Turning to the second time window, we can see in Figure 6B that a
11 time domain resource occupied by the first radio signal, such that the first
12 beam failure recovery request is used for determining a second time window
13 shown in purple. The time domain resource occupied by the second radio
14 signal, the second beam failure recovery request, is within that purple second
15 time window. The purple second time window is within the blue first time
16 window, and the purple second time window and the green third time
17 window have overlapped time domain resources. Instead of disputing these
18 things, Apex instead seeks to add limitations to the claims through claim
19 construction. But as we'll see in a few minutes those constructions are
20 wrong and wouldn't change the outcome even if the Board was to adopt
21 them.

22 If we go to slide 13. As I noted earlier, Apex also disputes whether
23 a person ordinary skill in the art would have been motivated to combine Xia
24 and Jover, but the Board shouldn't have to reach that issue. If we go to slide
25 15. Starting with the triggering the transmission dispute. Despite not

1 construing that terminal litigation, Apex argues here that it should be
2 construed to mean causing the transmission.

3 If we go to slide 16, Apex says its construction is necessary
4 because the petition allegedly didn't address triggering. But to the contrary,
5 the petition expressly addressed the triggering aspect of the claim. We can
6 see a screenshot here of the petition at page 23 where we said, Xia discloses
7 that to detect a beam failure, the UE, for example, UE 404 monitors a
8 reference signal, beam failure detection RS to assess whether a beam failure
9 trigger condition has been met. That is, Xia uses an indicator of beam
10 failure, the target measurement value in the claim for triggering the
11 transmission of the first and second beam failure recovery requests as
12 corresponding to the first radio signal and the second radio signal in the
13 claim. So, it isn't clear why the construction is necessary, but if we go to
14 slide 17, it particularly seems unnecessary because Apex admits that the
15 specification points to no specific meaning to the word triggering. This is
16 the Patent Owner response that's at the top of the page. Apex also has no
17 meaningful evidence supporting its construction. It's supposed dictionary
18 definitions highlighted in red on the slide, they're not evidence in this case.
19 They didn't file those. All they did was just cite to these websites. And
20 Apex's expert has no other support for the conclusory opinions that he
21 issues.

22 If we go to slide 18, even if the Board was to find that triggering
23 meant causing, Xia discloses that. If we look at paragraph 76 at the top, this
24 is the same quote we keep seeing over and over, to detect a beam failure, the
25 UE, for example, UE 404 monitors a reference signal, beam failure detection

1 RS, to assess whether a beam failure trigger condition has been met. In
2 paragraph 66, in order for the system to recover from such a beam failure,
3 the user equipment, UE 404, sends a beam failure recovery request to the
4 base station, eNB 402, paragraph 78. After the UE 404 detects the beam
5 failure, a beam failure recovery request transmission is performed. In the
6 claims of Xia the same thing, sending a first beam failure recovery request to
7 the base station upon detection of the beam failure event. And also sending
8 a second beam failure recovery request to the base station for a same beam
9 failure event. Apex seems to try to draw a distinction between the beam
10 failure detection and the reference signal triggering the transmission in Xia,
11 but that argument is also incorrect. The beam failure detection is
12 accomplished by monitoring the reference signal, so they are one in the
13 same. The reference signal passing a threshold is what causes the
14 transmission of the beam failure recovery requests.

15 If we go to slide 19, Xia's figures also show this causation. We
16 can see on the left at Figure 7A, detect a beam failure event at step 702, and
17 then at step 704, send a first beam failure recovery request. Then we keep
18 going through the steps and we get up to 708, which is send a second beam
19 failure recovery request for the same beam failure event.

20 If we go to slide 20. Figure 6B also makes clear that the beam
21 failure detection causes transmission of both the first and second radio
22 signals. As paragraph 91 states, N is shown in Figure 6B, more than one
23 beam failure recovery request. For example, PUCCH-BFRQ, and PRACH-
24 BFRQ, is transmitted by a UE 404 for a single beam failure event.

25 If we go to slide 21, these arguments aren't new, and we didn't

1 ignore the triggering limitation in our petition. As Dr. Bims testified in his
2 declaration in support of the petition, this is at paragraph 97, shown on the
3 slide, again, citing to paragraph 76 of Xia, Xia discloses that to detect a
4 beam failure, the UE, for example, UE 404, monitors a reference signal,
5 beam failure detection RS, to assess whether a beam failure trigger condition
6 has been met. Even if these were new arguments, which they're not, this is
7 responsive to the claim construction that was articulated by Apex and its
8 Patent Owner response, so it would be entirely appropriate to have new
9 arguments under the Federal Circuit's precedential Axonics case.

10 If we go to slide 23, turning to a second time limit dispute. Apex
11 is seeking constructions of the first, second, and third time window turns.
12 Despite arguing in District Court that the time window means the time
13 allocated to respond to a signal request, so this was across all of the time
14 windows, and agreeing here, this is at their sur-reply at page 10, that time
15 window simply means period of time, Apex takes the position in the IPRs
16 that all of the time windows have completely different meanings. That
17 cannot be the case.

18 If we go to slide 24, according to the Federal Circuit, in the
19 Rexnord case, a claim term should be construed consistently with its
20 appearance in other places in the same claim or in other claims of the same
21 patent. Apex thinks it's okay to construe the different time windows
22 differently to address their different purposes, but that is not a valid claim
23 construction doctrine. Claim 1 does not recite any purposes of the different
24 time windows, and the Federal Circuit held in the precedential to issue
25 because it is improper to read a purpose requirement into a claim. Apex

1 cites some non-precedential cases where the Federal Circuit looked at the
2 purpose of the invention to construe the claims, but that's not what Apex is
3 doing. They are trying to inject purposes for each of the individual time
4 windows into the claims, and these purposes aren't even articulated as being
5 purposes of the invention, much less purposes of the individual time
6 windows.

7 If we go to the slide 25. And Apex admits that the plain and --
8 sorry. Yes.

9 JUDGE HAMANN: This is Judge Hamann. I'm just trying to
10 understand the argument that you're setting forth. I'm not sure I'd equate
11 what the Patent Owner is proposing as a purpose. It seems more structural,
12 meaning not a physical structure, but a temporal structure. And so, I'm
13 trying to understand why Petitioner is characterizing that as a purpose.

14 MR. GOLDBERG: So, the actual constructions I'm not
15 necessarily saying are a purpose, but in Apex's briefing, they continually, in
16 their claim construction discussions, talk about how it's important to
17 construe the terms in this way because you need to give purpose to these
18 different time windows. And that's the justification that they use for their
19 claim constructions. So, what I'm saying is that's not a proper way to do
20 claim construction. And what we need to be looking at is, you know, we
21 have on slide 25, just the baseline, the words of a claim are generally given
22 their ordinary and customary meaning as understood by person of ordinary
23 skill in the art, when read in the context of the specification and prosecution
24 history. Apex admits that the plain and ordinary meaning of time window is
25 a period of time. And the only valid reasons to move away from the plain

1 and ordinary meaning are lexicography and disclaimer. That's coming from
2 the precedential Thorner case.

3 If we go to slide 26, the issue is Apex doesn't actually cite any
4 lexicography or clear disavowal to support its constructions. They say that
5 their correct construction stems from lexicography. They say that the
6 meaning of the three terms must be derived from the lexicography of the
7 '113 patent specification. But there simply is no such lexicography. To act
8 as its own lexicographer, this is again from the Thorner Federal Circuit case,
9 the patentee must clearly set forth a definition of the disputed claim term
10 other than its plain and ordinary meaning. It's not enough for a patentee to
11 simply disclose a single embodiment or use a word in the same manner in all
12 embodiments. The patentee must clearly express an intent to redefine the
13 term. That simply did not happen here.

14 If we look at side 27, this is the portion of the specification that
15 Apex cites in support of its constructions. All Apex identifies is the
16 embodiment on the left, Embodiment 6, that has different examples of time
17 windows. And then a background discussion on the right, that discusses a
18 time window of waiting the response, which is just another example of a
19 time window. Now, as I mentioned earlier, Apex does not dispute that the
20 prior art discloses the first and the third time windows, so I'm going to focus
21 on the second time window.

22 If we can go to slide 30. We have here all of what Apex relies
23 upon to support its construction for second time window. As a period of
24 time from the first radio signal in which to transmit the second radio signal.
25 There's no support here for Apex's construction, much less lexicography that

1 would justify it. If we start with the claim language at the top left there, that
2 can't justify Apex's construction because that claim language is already
3 required by the claim. And it's neither necessary nor proper to construe one
4 claim term to repeat the other claim limitations. If we look at the
5 specification, so that's the bottom red part there, the first sentence, it merely
6 says the time domain resource occupied by the second radio signals is within
7 the second time window. And that's already part of the claim. That's in the
8 red language. It's part of the claim at the top of the slide. The second
9 highlighted sentence doesn't even mention the second time window, much
10 less define it. And rather than support Apex's construction, Figure 6 actually
11 contradicts Apex's construction by showing that the second time window
12 does not have to be a period from the first radio signal. You can see in the
13 figure that the second time window in the embodiment of Figure 6 actually
14 starts a little bit after the first radio signal. There's no lexicography in the
15 patent that justifies deviating from the plain and ordinary meaning of time
16 window. The second time window is just a second period of time.

17 If we go to slide 31, even if the Board was to construe the second
18 time window to mean a period of time from the first radio signal in which to
19 transmit the second radio signal, that still wouldn't impact the outcome of
20 the case. As we can see in the annotated figure on the slide, slide 31, the
21 second time window in Xia is a period of time from the first radio signal in
22 which to transmit the second radio signal. We can see the second radio
23 signal is within that second time window in purple, and the second time
24 window is starting from the first radio signal.

25 Now, if we go to slide 32, as I mentioned earlier, Apex disputes

1 whether there would have been a motivation to combine Xia and Jover, that
2 only applies to the Xia Jover ground, which the Board need not reach.

3 If we go to slide 33, as the Board found at institution, Petitioner
4 contends, and we agree on this record, it would have been obvious to modify
5 Xia to monitor an indicator such as bit error rate or block error rate, that
6 would instead trigger a failure condition when the indicator is higher rather
7 than lower than a target threshold. Apex didn't dispute this in its Patent
8 Owner response, so it's waived the argument. There's no need for the Board
9 to even reach the Xia Jover ground, which was just a fallback position for
10 this Xia alone obviousness point that we just talked about.

11 But if we go back to slide 9, I'll move to the Liu grounds. Liu is
12 very similar to Xia. In response to a beam failure, first and second beam
13 failure recovery requests are sent, and the UE monitors for a response. Liu
14 doesn't disclose the details of how the beam failure is detected, but that
15 would have been obvious based on the Jover reference.

16 If we go to slide 11, we can see paragraph 40 of Jover on the right
17 side, it discloses how to detect beam failure. In particular, it says that the
18 wireless channel sensing engine 320 is also for detecting a communication
19 impairment. Wireless channel sensing engine 320 may detect an increase in
20 the bit error rate, for example when the bit error rate increases beyond one
21 percent. When the wireless channel sensing engine 320 determines that one
22 and more of such threshold conditions are met, the wireless channel sensing
23 engine 320 may signal to the beam forming engine 310 to begin the beam
24 sweeping procedure. So, this is a trigger that's being disclosed in Jover.
25 And if we go back to slide 9, we turn to the second time window, we can see

1 in Figure 5B that Liu discloses, similar to Xia, a time domain resource
2 occupied by the first radio signal shown as the first BFRR. The time domain
3 resource occupied by the second radio signal is within the second time
4 window. So, we can see at the second radio signal, the second BFRR is
5 within the purple second time window. The purple second time window is
6 within that green, sorry, the blue first time window, and the purple second
7 time window and the green third time window have overlapped time domain
8 resources. As with Xia, instead of disputing whether Liu discloses the
9 words of the claims, Apex seeks to add limitations to the claims through
10 claim construction. But just as with Xia, those constructions are wrong and
11 wouldn't change the outcome even if the Board was to adopt them.

12 If we go to side 37. One difference with the Liu and Jover grounds
13 is that Apex also disputes whether Liu discloses or renders obvious
14 transmitting two radio signals on two channels. But we'll start with the
15 triggering transmission and second time window issues that mirror what we
16 discussed for Xia, and then we'll move on to that.

17 So, if we can go to side 39. As was discussed earlier, it isn't clear
18 to us why this construction is necessary. The triggering construction in
19 Apex has no meaningful evidence to support it. Apex admits that the
20 specification points no specific meaning for the word triggering. Apex's
21 supposed dictionary definitions aren't evidence in the case, and Apex's
22 expert has no other support for his conclusory opinion.

23 If we go to slide 40, even if the Board was to find that triggering
24 means causing, Liu discloses that. We can see in paragraph five of Liu that
25 it discloses sending a beam failure recovery request, BFRR, to the base

1 station upon detection of a beam failure between the base station and the
2 user equipment. In paragraph 84, in order for the system to recover from
3 such a beam failure, the user equipment 404 sends a beam failure recovery
4 request to the base station 402. And like in Xia, also in the claims of Liu
5 disclosure of this. In Claim 1, sending a beam failure recovery request to a
6 base station upon detection of a beam failure between the base station and
7 the user equipment. And similar in Claims 5 and 7 of Liu. Again, Apex
8 seems to try to draw a distinction between the beam failure detection and the
9 reference signal triggering the transmission in the Liu Jover combination,
10 but that argument is also incorrect. The beam failure detection in the
11 combination is accomplished by monitoring the reference signal, so they're
12 one in the same, just like in Xia. The reference signal passing a threshold is
13 what causes the transmission of the beam failure recovery requests.

14 If we go to slide 41, these figures also show this causation in
15 paragraph 103 with reference to Figure 6A. When a beam failure is detected
16 by the user equipment, 110A to 110C, the user equipment 110A to 110B
17 sends a beam failure recovery request, BFRR, to the servicing base station,
18 170A to 170B.

19 If we go to slide 42. This Figure 5B also shows this in size in
20 paragraph 99. Sometimes, so this would be in one embodiment, when
21 multiple UL beam pairs are available, and each beam pair has a
22 corresponding SQL DL beam pair, the user equipment 404 may transmit
23 multiple BFRRs and UL beam pairs.

24 If we go to slide 43. As with the Xia ground, these arguments
25 aren't new. And even if they were, that would be allowed under the Axonics

1 case. We didn't ignore the triggering limitation in our petition. As Dr. Bims
2 testified in his declaration in support of the petition at paragraph 99, Dr.
3 Bims said, Liu discloses that a detection of a beam failure triggers
4 transmission of the first and second BFRRs, which are corresponding to the
5 first radio signal and second radio signal to the base station.

6 If we go to slide 46. For the reasons we discussed earlier, the
7 Board should reject Apex's construction of second time window. There's no
8 lexicography in the patent that justifies deviating from the plain and ordinary
9 meaning of time window. The second time window is just a second period
10 of time. But even if the Board was to construe the second time window to
11 mean a period of time from the first radio signal in which to transmit the
12 second radio signal, that wouldn't impact the outcome of the case. As we
13 can see in the annotated figure, on side 46, the second time window in Liu is
14 a period of time from the first radio signal in which to transmit second radio
15 signal. We can see that second radio signal, and the orangish, reddish color
16 is within the second time window in purple.

17 If we go to side 48. Turning to the dispute about the motivation to
18 combine Liu and Jover, the petition established the motivation to combine
19 through the testimony of Dr. Bims. As we can see on the slide, paragraphs
20 101 and 102 of his declaration, that's where Dr. Bims testified that both Liu
21 and Jover involve wireless communication between a UE and a base station.
22 Both references are also specifically directed to detecting the communication
23 failure between the UE and the base station. Liu already discloses that the
24 transmission of the first and second BFRRs to the base station are triggered
25 by the detection of a communication failure, and Jover simply provides

1 further details about how and when to implement those teachings regarding
2 the detection of the communication failure. And a person of ordinary skill in
3 the art would have been motivated and found it obvious to look to Jover to
4 understand and implement its additional teachings to improve the accuracy
5 and reliability of the beam failure determination. For example, a triggering
6 condition based on bit error rate would have provided threshold
7 measurements to ensure beam failure detection is appropriate. A person of
8 ordinary skill in the art would have been motivated to implement Jover's
9 triggering condition because of the known benefits of evaluating bit error
10 rate.

11 If we go to slide 49. Instead of disputing the motivation articulated
12 by Dr. Bims, Apex argues that Jover teaches away. But at most, all Jover
13 does is teach alternative methods of resolving communication failures.
14 That's not teaching away. According to the Federal Circuit, the prior arts
15 mere disclosure of more than one alternative does not constitute a teaching
16 away from any of these alternatives because such disclosure does not
17 criticize, discredit, or otherwise discourage the solution claimed. Jover does
18 not criticize, discredit, or otherwise discourage the use of beam recovery
19 requests. It doesn't even mention Apex's arguments against the combination
20 fail as a matter of law.

21 If we go to slide 51. Turning to the last substantive dispute
22 between the parties, Liu discloses transmitting two radio signals over two
23 different channels. We start at the top right of the slide, paragraph 4 of Liu.
24 During the 3GPP TSG RAN WG1 #89, it was agreed upon to support a non-
25 contention based PRACH-like channel based on the physical, random access

1 channel, PRACH, and the physical uplink control channel, PUCCH, for
2 beam failure recovery request transmission. It's disclosing both of those two
3 different types of signals. If we go down into paragraph 84 on the bottom
4 right there, it says that in one embodiment, when only the DL beam has
5 failed, the user equipment may use the active PUCCH originally allocated
6 for UCI to report the beam failure and request recovery from the base station
7 402. As agreed upon during the 3GPP TSG RAN WG1, #89 meeting. I'm
8 going to get to the next sentence, but I want to just note again in that first
9 sentence we just read, it's talking about when only the DL beam has failed.
10 Now, we get to the next sentence, in another embodiment when the DL and
11 UL beams have failed. So, that's the difference here. The user equipment
12 may also attempt to use the PUCCH for a beam failure recovery request. So,
13 we have a different situation instead of just the DL beam failing, but DL and
14 UL failed, and it's saying that in this situation, it also uses PUCCH. So, it's
15 acting in the same way. If we continue reading, because, however, beam
16 failure recovery in this instance is less likely to be successful since both the
17 UL and DL beams have failed. So, that's introducing a problem, and then
18 we get to the next sentence, which is providing the solution, and still another
19 embodiment, when the DL and UL beams have failed. So, we have the same
20 situation, UL and DL have failed. The user equipment may also attempt to
21 use the PRACH. So, this is in addition to here, it's using the PRACH in
22 addition to the PUCCH because beam failure recovery in this instance is less
23 likely to be successful.

24 So, here we have disclosure of Liu using two different radio
25 signals over two different channels, both the PUCCH and the PRACH.

1 If we go to the next slide, slide 52, Liu also renders obvious
2 transmitting the two radio signals over two different channels. As Dr. Bims
3 explained, Liu discloses sending multiple beam failure recovery requests and
4 the ability to use both PUCCH and PRACH channels for a given beam
5 failure recovery request. Plus, it would have been a matter of simple design
6 choice between the two known alternatives, using a PUCCH channel or a
7 PRACH channel, which was well within the skill of a person of ordinary
8 skill in the art. A person of ordinary skill in the art would have been
9 motivated to use different channels for the first and second beam failure
10 recovery request to ensure greater reliability of the base station's response.
11 Different channels may be used so that both BFRRs can be sent
12 simultaneously. Sending a request through multiple different channels
13 increases the chances that the base station will receive the request and
14 respond accordingly. They may also decrease the response time of the base
15 station.

16 If we go to slide 53. Dr. Bims also explained why the modification
17 would have been straightforward at paragraph 128 of his declaration. He
18 said that Liu already discloses sending multiple BFRRs and the ability to use
19 PUCCH and PRACH channels for a given beam failure recovery request.
20 Thus, it would have been straightforward for a person of ordinary skill in the
21 art to use one channel for the first BFRR and a second channel for the
22 second BFRR. He provided further detail when pressed during his
23 deposition. Apex's counsel asked, okay, you're representing that it's obvious
24 to me, and I'm saying, what are the design implementations that would occur
25 to make this a reality? Dr. Bims's response, the way it designed such a

1 system would be to make a very tiny change in the implementation so that
2 information sent through the PUCCH could alternatively be sent on the
3 PRACH. And Apex's counsel asks, what is that tiny change? And Dr. Bims
4 explains, the tiny change would be, for example, let's say that the
5 implementation was performed in software, although this example would
6 apply in hardware as well. Then what would be required is a modification to
7 the source code that would send the information on the PUCCH to instead
8 designate the information to be sent on the PRACH, which may be
9 something as simple as changing the function that gets called to transmit
10 message.

11 If we go to slide 54. Apex's attempted rebuttal to Dr. Bims's
12 testimony does not stand up to scrutiny. Mr. Gomez, Apex's expert, he
13 testified about the difficulty of the combination, and that cannot be squared
14 with the mere tiny and simple change that Dr. Bims articulated. The
15 discussion and beam alignment in paragraph 46 of Mr. Gomez's declaration
16 has nothing to do with whether both the PUCCH and PRACH are used. And
17 paragraph 4 of Liu expressly recognizes that both can be used. Again, we
18 looked at this earlier. It was agreed upon to support a non-contention based
19 PRACH-like channel based on the physical random access channel,
20 PRACH, and the physical uplink control channel, PUCCH, for beam failure
21 recovery request transmission. That's something that Liu has recognized
22 happened during the earlier 3GPP TSG RAN WG1 #89.

23 If we go to slide 55. Paragraph 52 of Mr. Gomez's declaration
24 similarly fails in the face of Liu. Contrary to his assertions about PUCCH
25 and PRACH, Liu expressly recognizes that both can be used for beam failure

1 recovery request transmissions. It doesn't matter whether Liu is addressing
2 the same problem as the '113 patent. The combination of Liu and Jover
3 would have rendered all claims obvious for the reasons that we've discussed.

4 If we go to slide 58. Very briefly, I just want to call your attention
5 to the different definitions of a person of ordinary skill in the art in this case.
6 You can see on the left Samsung's definition is focused on the wireless
7 technology of the '113 patent, specifically calling out the requirement for
8 experience working with telecommunication systems, including MIMO
9 technology. Despite what Apex says in its slides, Samsung does not agree
10 that generic experience with telecommunication systems is good enough. I
11 think Apex wants to focus on generic telecommunication systems because
12 Mr. Gomez doesn't have the required education or wireless experience in
13 Samsung's definition. For the reasons discussed in our reply, the Board
14 should disregard Mr. Gomez's testimony, and at a minimum, credit Dr.
15 Bims's testimony over Mr. Gomez's testimony.

16 Unless Your Honors have any questions, I'll stop there.

17 JUDGE RAEVSKY: Seeing no questions, you've used about 33
18 minutes of your time. Under the trial practice guide, we don't allow
19 reserving more than half of your time. So, we'll update you on your time
20 when it's time for rebuttal.

21 MR. GOLDBERG: Thank you, Your Honor.

22 JUDGE RAEVSKY: Thank you. Mr. Rubino, when you're ready,
23 you may begin.

24 MR. RUBINO: Sure, Your Honor. And before I start, just to
25 confirm, it seems like that went a little shorter. Are we not -- we're not

1 taking a break now, right? You think we could plow all the way through?

2 JUDGE RAEVSKY: Yeah, sorry, I did mean to mention this.

3 Thank you for clarifying. I think we can keep going.

4 MR. RUBINO: Great. And I'm not going to ask you to hold me to
5 this, but I hope that my presentation will be of similar length to Petitioner's
6 presentation, and, you know, I think we'll keep to that. So, not taking a
7 break is probably fine with us as well. Thank you.

8 JUDGE RAEVSKY: Okay. You're entitled to all of your time,
9 but use it as a see fit.

10 MR. RUBINO: Thank you, Your Honor. Good morning,
11 everyone, still. Vincent Rubino for Patent Owner. So, I'm also not going to
12 put my slides up on the screen at the moment. I'm grateful that Petitioner
13 had the same issue. I know I'm going to have similar issues because I'm
14 using a Mac, and it's not going to allow me to share the screen properly.

15 JUDGE RAEVSKY: I'll jump in and say, counsel, that it worked
16 out okay for me this time. I've had recent hearings where too many PDFs
17 open have caused some crashing with Adobe, but it's working fine this
18 morning. So, just rest assured everything's okay.

19 MR. RUBINO: Great. Thank you, Your Honor. I will be asking
20 the Board to look at Petitioner's slides, a few of Petitioner's slides. So, if
21 those could remain open as well. And I may focus on that to start and then
22 jump into my presentation.

23 In in terms of Patent Owner's presentation we're going to focus on
24 three key areas. The first is the issue of transmission, or triggering rather,
25 triggering transmission. The second is of the time window. And the third is

1 of the motivation to combine both references with Jover.

2 Before I get into that I would just like to --

3 JUDGE HAMANN: Counsel?

4 MR. RUBINO: Yes.

5 JUDGE HAMANN: This is this Judge Hamann. I -- just a real
6 introductory question from me, because particularly as you just talked about
7 the motivation and combining for the grounds, looking at your slide 3 it
8 appears you've done it by two grounds, in Xia and Jover, and Liu and Jover,
9 I thought there's also just Xia by itself as the initial ground. That was in the
10 petition for the '601, and I believe on Petitioner's slides. I just want to make
11 certain that I'm not missing something here.

12 MR. RUBINO: That's right, Your Honor, and in in terms of our
13 arguments, the motivation to combine argument, is for that second ground.
14 And so, that third argument about Jover really only applies to that second
15 ground. For the first ground our understanding is it is Xia alone, or Liu
16 alone, and for that ground we have specifically the triggering argument, and
17 the second time window argument which go to whether or not those
18 limitations are rendered obvious by Xia and Liu in each petition alone. Does
19 that answer Your Honor's question?

20 JUDGE HAMANN: Yes. Thank you.

21 MR. RUBINO: And so, before I get into the specifics of those
22 arguments, I would just like to present some background about what the Xia
23 reference is, what the Liu reference is, and what the '113 patent is and why
24 at a high level everything is different, and they are not really related to each
25 other. Now, this doesn't go -- the specific issues we'll feed from this, but I

1 just want to give a little bit of background information.

2 I'd like to start by saying that the Xia reference only predates the
3 '113 patent by I think it's probably 12 hours or so. If we look at the
4 provisional dates on the Xia reference, it was filed on August 10th in the
5 United States as a provisional. The '113 patent was filed on August 11th in
6 China. It's possible they were filed at the same time, or one was earlier,
7 we're not contesting in this proceeding those dates. But I just want to point
8 out that it was around the same time. And at that time, if we look at the Xia
9 reference specifically, paragraph 90 of the Xia reference talks about the art.
10 And when it talks about the art, it talks about really also the Liu reference as
11 well, because the Liu reference was prior art to the Xia reference or was
12 prior to the Xia reference. It talks about conventionally, more than one
13 BFRQ for each BFR event is not permitted. So, generally in the art, it seems
14 like what Xia is saying is that this scenario where you have two BFR
15 requests sent in a given time is not conventional. So, it appears to be one of
16 the advancements of Xia. And the point of Xia, if we go on to look at the
17 rest of the paragraphs, 91 through around 100 or so, talk about what to do
18 when you have two BFR requests and how to handle BFR requests. And the
19 way it talks about handling BFR requests is actually quite different from the
20 '113 patent. It talks about having particular fields in an event that can be
21 related. It talks about having pointers. It talks about a whole bunch of ways
22 to tell the system that this unconventional method is being used and how to
23 minimize resources in that process. And it uses one of those methods to
24 relate the two beams to each other, so the system knows both are coming.

25 The '113 patent, the patent at issue here, is also related to trying to

1 minimize over-the-air resources. But it does it in a different way. Where
2 the Xia reference talks about minimizing resources by relating these two
3 beams to each other with messaging inside the beam, the '113 patent, the
4 structure and the claims, what we'll get to in the constructions later, uses
5 time resources and the time windows themselves, and the allocation of the
6 time windows in order to let the system know when a first beam request may
7 be coming, when a second beam request may be coming, and when to look
8 for that response. As opposed to Xia, where the system might not know it's
9 coming and has to look at event fields to determine.

10 So, that really gets to the crux of the second time window and why
11 that is so important, and I will get to the construction of that in a bit. Before
12 I get into that, this is just some general background. I would like to talk
13 about the triggering term. As a background again, general background to
14 our presentation, I know we talked a lot about claim constructions in our
15 briefing. I know Petitioner addressed a lot about claim constructions. It just
16 so happens that in the order of the way we do things, we put our claim
17 constructions up in the front of the briefing. I think that the main arguments
18 we have are not necessarily claim construction related, but we do have
19 backup claim construction arguments. For example, with the triggering
20 term, I don't think it's really disputed between the parties that triggering has
21 to have some kind of meaning. It can't just be coincidence that a signal is
22 sent. That something has to -- there has to be some relationship between an
23 event and then the resulting beam failure request in the example of Xia being
24 sent. We said that was causing. We think that Petitioner's expert agrees it is
25 causing, but there has to be some relationship. And if we stick with the

1 word triggering, I think we are still clear that triggering means some kind of
2 causal relationship. I don't think there needs to be an explicit construction.
3 It's probably still within the plain and ordinary meaning. And I think that in
4 the briefing, we got to that point where both parties essentially seem to agree
5 that there is some kind of causality involved in the word triggering.

6 So, our construction of the word triggering and our argument of the
7 triggering really focuses on what is triggered, not how it is triggered. The
8 how is really where Petitioner goes to Jover to try to look for different
9 thresholding's, you know, to get the thresholding and above or below a
10 certain threshold limitation. We're not even really arguing about that. We're
11 arguing about what is triggered by the system when a threshold is exceeded.
12 And our argument is that the thresholding required by the claims -- or, sorry,
13 the triggering required by the claims triggers both signals. It triggers two
14 signals. It triggers, let me make sure I'm saying the right thing here. It
15 triggers. It triggers transmitting a first radio signal and transmitting a second
16 radio signal. And, of course, those are on a first channel and on a second
17 channel. And so, at best, Petitioner's arguments may describe transmitting
18 one signal, or sorry, triggering one signal, but they do not disclose one
19 thresholding, one threshold being met, triggering two signals. Ultimately, in
20 Xia, there is a discussion of two radio signals. Ultimately, in Liu, there is a
21 discussion of two radio signals, but the references themselves are silent
22 about what is a beam failure event, whether a beam failure event is a
23 threshold, whether there could be two thresholds for one beam failure event.
24 So, let me try to point the Board to what I'm talking about, and this is going
25 back to Petitioner's own demonstratives.

1 Can we look at Petitioner's demonstrative number 51, this sort of
2 gets to the heart of the issue. So, Petitioner talks about the example from
3 Liu of how a signal is sent on a first channel and then another signal is sent
4 on a second channel, but it is explicit what's happening here. It says when a
5 beam failure recovery happens on the uplink and the downlink beams, so
6 there are two beams there. So, and there's no argument by Petitioner,
7 anywhere in the petition, about how that could be one threshold. That one
8 threshold triggers both beams. When the petition talks about in Xia, that
9 there is a beam failure event, again in Xia, Xia is generally discussing when
10 a beam failure event happens sending one signal. When it talks about
11 sending a second radio signal, there is no discussion about whether it's the
12 same threshold or a different threshold for that second radio signal. And
13 again, all we have are explicit teachings here in the art in Liu and in Xia
14 about two different radio signals. This is supported by Patent Owner's
15 response. This is supported by Patent Owner's expert, Dr. Bims, in his
16 declaration does not get into really the cause -- the relationship between the
17 threshold and how that causes two beams. He just has a conclusory sentence
18 in a paragraph saying, ah, it's an event. That's two beams. Sorry, it's an
19 event. That's two radio signals are caused. When he goes on in his
20 declaration to discuss at length how -- how, you know, and this is in an
21 attempt to try to get the obviousness over Jover and the obviousness of Xia
22 alone, Petitioner's expert in paragraphs 98 through 102 of his own
23 declaration talks about how you can use SNR. You could use SINR. You
24 could use BER. You could use BLER. There are all sorts of thresholds that
25 you could use. That seems to point to the fact that there could be multiple

1 thresholds used, one for the first radio signal, one for the second radio
2 signal, even within the same beam failure event. In fact, there has to be a
3 reason for it.

4 JUDGE RAEVSKY: Mr. Rubino, I'm going to jump in here. This
5 is Judge Raevsky. I don't remember this multiple threshold argument in
6 your briefing. Can you point us to where you made that in the briefing?

7 MR. RUBINO: Yes. So, our argument is about whether or not the
8 threshold triggers two beams. And that is very clear in our argument. It is
9 in our expert's declaration at paragraph 42, and this is merely just additional
10 evidence in support of that argument. We're not making a new argument
11 here, it is the same argument, that the threshold has to -- that one threshold
12 has to result in two radio signals being sent. And whether or not, you know,
13 we've carried that burden of proof is not necessarily relevant, it's about
14 whether or not a Petitioner has shown in the petition that the trigger has
15 caused two radio signals.

16 JUDGE RAEVSKY: I just want to pause for a second, because
17 you mentioned a citation to your expert declaration, but I was asking where
18 in your papers that was discussed.

19 MR. RUBINO: Sure, and I believe if the Board is okay, since I do
20 have some time, let me just pull up my papers.

21 JUDGE RAEVSKY: If it's something where it might take a while
22 for you to find it, then feel free to proceed and tell us on rebuttal.

23 MR. RUBINO: Sure, let me do that. But I know it is in our
24 papers. I know it is definitely in our sur-reply, and also is in our slides,
25 which have gone unobjected to. But I can leave that to rebuttal.

1 So, regardless, I think that we have at least set forth in our papers,
2 in our discussion of the triggering limitation, the argument that the triggering
3 must require, or the triggering must result in both radio signals being sent.
4 And Petitioner has not identified how that's possible, or that it is necessary.
5 It seems almost like it is an inherency argument that is being made,
6 although, and this is sort of striking me for the first time after hearing
7 Petitioner's arguments here, they've said it is disclosed. But we don't see an
8 explicit disclosure, so maybe they're saying it's inherent. Maybe that's what
9 they're saying, and maybe we'll hear that on rebuttal, or on sur-rebuttal --
10 reply rather. But it is definitely not explicit in Xia or Liu.

11 With regard to the remainder of Xia -- if we look at -- sorry.
12 Anyway, if you look at -- if we look at Petitioner's own demonstratives, and
13 this is just what's in the record, we'll have to, the Board will have to address
14 the teachings that are explicit on slide 51 that Petitioner has just put into
15 evidence and highlighted, showing the two separate channels, and describing
16 the download and uplink beams as two.

17 JUDGE HAMANN: Counsel, this is Judge Hamann. I'm just
18 trying to understand your comment—"slide 51 that Petitioner just put into
19 evidence." I don't know what you meant by that. Obviously, slides are not
20 evidence, and any information on the slides is not evidence. And so, you
21 know, it's clear they are to be helpful in making arguments. But yeah, I just
22 didn't understand that comment. That's just not what slides or the
23 information contained there are.

24 MR. RUBINO: Apologies. Maybe I should have said highlighted
25 the evidence. You know, what is on the slide is an excerpt from Liu,

1 paragraph 84, with highlighting in it, which is in the record. And that is the
2 evidence that Petitioner is relying on for the disclosure of a first radio signal,
3 sorry, a first channel and a second channel, or the first and second radio
4 signals. However, the sentence leading right up to that talks about two
5 separate beams. And there is nothing in the petition explaining how that
6 would trigger the first and second channels. Now, the argument that they --
7 it was the main argument in Liu on Figure 5B was for no real discussion of
8 what channels the signals came from, which prompted Patent Owner to say
9 that it has to come from two separate channels. And then Petitioner put into
10 the record in his papers this disclosure from Liu about the download and
11 uplink beams, two separate beams, which likely have to have two separate
12 thresholds, as teaching the two separate channels. But there is nothing in the
13 record explaining how those two separate beams could possibly be a
14 measurement of the target radio signal obtains a target measurement value.
15 The target measurement value when higher than a threshold is used for
16 triggering the transmission of those two radio signals.

17 Unless the Board has any additional questions about that, I will
18 move on to the second time window argument.

19 JUDGE RAEVSKY: Counsel, I do have a question about
20 triggering the transmission. On page 18 of your response near the top of the
21 page, I guess it's the first full sentence, you say that Xia's disclosure of
22 transmission that occurs after detection of beam failure is not the same as
23 and does not render obvious the claim system where the exceeding of a
24 target threshold itself causes transmission of the first and second radio
25 signals as the claim requires. I want you to focus on the language that you

1 said, the target threshold itself causes a transmission of the first and second
2 radio signals. And I'd like you to address why the claim in your mind
3 requires that in light of the fact that the way I'm reading the claim, it says
4 that when higher than a target threshold is used for triggering the
5 transmission. In other words, I don't see where it says the target threshold
6 itself causes a transmission or triggers the transmission. It's simply used for
7 triggering the transmission. Could you address that just as possible
8 (CROSSTALK).

9 MR. RUBINO: Your Honor, it may be just inartful drafting, but
10 the point of that sentence was the argument that I was just making, and it's
11 consistent with Your Honor's understanding, which is that the claims do
12 require that the target measurement value when higher than target threshold
13 is used. So, in other words, that the threshold, or the higher than a target
14 threshold is used for both. That is what we meant by that sentence, is that
15 one threshold is used for both, not that the fact that there is a beam failure is
16 used for both, but that within a beam failure, there has to be the target
17 threshold itself being used, not just the fact of a beam failure. So, I think
18 maybe we probably shouldn't have used the word "itself" right after the
19 word threshold, but that is the argument that we meant.

20 JUDGE RAEVSKY: Okay. I think I understand you.

21 MR. RUBINO: And just to say it one more time so the record is
22 clear, the purpose of that statement was to make the argument that Petitioner
23 argues that the beam failure request event is the trigger. And the claim
24 requires that even within a beam failure request, or beam failure event, there
25 has to be one threshold that causes both signals. And that a beam failure on

1 one channel could be one threshold, a beam failure on another channel could
2 be another threshold, that doesn't satisfy the claims. And that is just
3 something that is not in the petition, that perhaps should have been an
4 obviousness argument that would have been made, but Petitioner never
5 attempted to make that as an obviousness argument to say it would be
6 obvious to have one threshold that results in both signals.

7 JUDGE RAEVSKY: I'll just note again that, of course, my
8 memory is not perfect, but it seems to me, it strikes me that the record
9 doesn't clearly articulate this one threshold argument. But nevertheless, just
10 for sake of argument, wouldn't "a target threshold" as specified in the claim
11 under Federal Circuit law be broad enough to cover one or more target
12 thresholds?

13 MR. RUBINO: I don't think so because it's not just one "a." It is a
14 target measurement value. The target measurement value when higher than
15 a target threshold is used for triggering. So, there is a measurement value
16 and it says the measurement value not when one or more measurement
17 values. So, there has to be the measurement value of the threshold that
18 triggers. I think that with all of that language in the claim that stems from a
19 target measurement value, the target measurement value when higher than a
20 threshold is used for triggering the transmission of the first radio signal and
21 the second radio signal. That that statement together would require both.

22 JUDGE RAEVSKY: I guess more generally in -- thank you
23 counsel. I guess more generally in Xia, paragraph 91 for instance, it says at
24 the beginning of the paragraph that more than one BFRQ is transmitted by a
25 UE for a single beam failure event, and the beam failure event is described

1 above in paragraph 76 as assessing whether a beam failure trigger condition
2 has been met, e.g., beam signal strength has dropped below a threshold. So,
3 it seems to me that a single threshold triggers or causes multiple BFRQ
4 messages under Petitioner's theory. So, I'm not sure how you're addressing
5 this.

6 MR. RUBINO: Yes, Your Honor. And so, again, this is the
7 argument that we're saying and perhaps this is what the Board was saying in
8 his institution decision. It seems to us like it sounds like an inherency
9 argument is being made, at least as I'm understanding it right now. But if we
10 look at the petition and we look at Xia, in Xia, Xia discloses more than just
11 the embodiment in paragraph 90 where there's a beam failure event and two
12 channels are used, two radio signals are used, two beam failure requests are
13 used. It also discloses when there's a beam failure event and one beam
14 failure request is sent throughout Xia. There is nothing in Xia that describes
15 how or why you send two rather than one. It says that they are sent in
16 response to a beam failure event. But again, this is conflating beam failure
17 event with a single threshold triggering two signals or meeting or exceeding
18 a target threshold triggering the transmission of two signals. Again, and it
19 could be that there are, in a beam failure event, you have beam failure event
20 generally classified as what Liu talks about, an uplink beam failure, beam
21 failure event classified as a downlink beam failure, beam failure event
22 classified as both uplink and downlink, where maybe there are two
23 thresholds, one of which can trigger on the uplink, one of which can trigger
24 on the downlink, which is why you send on two separate channels, which is
25 what Xia talks about. But again, this is not explicit in the petition. This was

1 Petitioner's burden to explain why event, beam failure event would mean
2 either necessarily or why it would be obvious to make it two radio signals
3 triggered by the same threshold. But instead, all they relied on for the
4 thresholding was, and they didn't rely on Jover for the teaching of the
5 threshold triggering, they relied only on Jover for the teaching of how to
6 calculate a threshold. So, this was their burden to explain how event means
7 triggering two signals, when in fact, perhaps what Your Honor has said
8 could be true, but it is not necessarily true. It is not inherent. And so, that
9 would have had to be a description from Petitioner as to why that teaching
10 was obvious. And instead, all we get is a single sentence in Bims's
11 declaration that just says, the event triggers two radio signals. No
12 explanation, no exposition, and that cannot possibly meet its burden,
13 particularly here where we've pointed out that it's possible that it could be
14 one or two thresholds causing both signals. And as Petitioner just pointed
15 out, in its disclosure of Liu, that's clearly within the art that a beam failure
16 event could be both uplink and downlink, which necessarily would have two
17 separate thresholds.

18 And again, it is not Patent Owner's burden to prove the negative
19 here, to show how it is only one channel being used or is only one threshold
20 being used or not one threshold being used, but it is Petitioner's burden to
21 show by a preponderance of the evidence that this reference that Xia either
22 necessarily implicitly teaches one threshold causing both transmissions, or
23 that it would be obvious. And perhaps the obviousness argument wouldn't
24 have been a tough one to make, but they didn't make it. Does that answer
25 the Board's question?

1 JUDGE RAEVSKY: Yes. Thank you. Please proceed.

2 MR. RUBINO: With regard to the second time window argument,
3 again, there were claim constructions advanced, which Patent Owner
4 believes helped the record, helped guide the Board in its determinations. We
5 don't believe that the constructions are necessary to get to our result. I
6 would also point out that in the constructions, Patent Owner relies on Figure
7 6 of the '113 patent, and that in the institution decisions, the Board itself had
8 sort of pointed us in this direction. And the Board said that Figure 6 was the
9 most helpful in understanding the claims. And so, as a result, that is where
10 we direct the Board's attention. That being said, we are not trying to read in
11 what Petitioner explained in their presentation. Instead, as Your Honors
12 pointed out, what we're really doing is explaining how there is structure in
13 the signals of the claims. And if we look at the claims themselves, they
14 support Patent Owner's argument, particularly about the second radio signal,
15 because in Claim 1, for example, of the '113, the second radio signal, the
16 timing for the second radio signal is determined by a time domain resource
17 occupied by the first radio signal that is used for determining a second time
18 window. So, the claim itself has that structure in it, that the second time
19 window, the whole window, not just the beginning and end of it, the whole
20 window is determined by the first time domain resource. Now, I want to be
21 clear, the claim also talks about start points of time windows. It talks about
22 end points of time windows. And when the patentee wanted to do that, the
23 patentee explained that, for example, the end time of the third time window
24 is the end time of the first time window. And then also that the time domain
25 resource occupied by the first radio signal is used for determining the start

1 time of the first time window. So, the first time window has its start time
2 determined by the start time of the first time window. That's explicit in the
3 claims. And the first time window has its end time determined by the third
4 signal. That's the end of the first time window. Whereas the entirety of the
5 second time window is determined by the time domain resource occupied by
6 the first radio signal. So, as a result, that is why Patent Owner came to the
7 conclusion, or attempt -- is advancing the construction of second radio signal
8 to make sure that structure is explicit and upfront in the Board's
9 determination. Regardless of whether that construction is adopted, the
10 claims still explicitly require that the entire second radio signal is determined
11 by the time domain resource for the first time window.

12 JUDGE RAEVSKY: But did you mean to say the second time
13 window? I think you said the second radio signal.

14 MR. RUBINO: Sorry, that's right. The second radio signal.

15 JUDGE RAEVSKY: Okay. Just clarifying.

16 MR. RUBINO: Apologies, Your Honor. You know, I am and I'm
17 sure the Board is also struggling with first signal, second signals, first time
18 window, third time window, a lot of time windows, a lot of start times, end
19 times. But, you know, it all makes sense if you kind of map it out and plot it
20 out. And it all lines up what's disclosed in Claim 1 with what is in Figure 6
21 of the '113 patent, as the Board pointed out in his institution decision. And
22 that Figure 6 of the '113 patent, you know, meets all of the requisite time
23 window requirements of the claim. With that being said, you know, there
24 still has to be an explicit relationship between the second time window and
25 the time domain resource of the first radio signal. And that is what is --

1 JUDGE RAEVSKY: Mr. Rubino, what's your response to
2 Petitioner's argument that even under your claim construction for second
3 time window, Xia and Liu in each separate case nevertheless teach the
4 second time window, or a signal being transmitted during the second time
5 window?

6 MR. RUBINO: Yes, Your Honor. So, I think it is pretty clear if
7 we look at both Xia and Liu together that what Petitioner is mapping the
8 second time window to is different for each of those -- those arguments.
9 You know, for Liu, for example, if we look at the mapping, it is mapped to a
10 time offset, the end of a time offset. And the end of the second time window
11 is the start of the first BFRR response. And with Xia it was a slightly
12 different mapping with the second time window ending with no time offset.
13 So, in other words, the second time window in Liu is the time offset. It's the
14 beginning of the first radio signal to the end of the time offset for the first
15 radio signal. But in Xia, the second radio signal is the first signal to the
16 response of the first beam former response. In other words, there is an offset
17 disclosed in Liu with some additional time in the middle, with the dot-dot-
18 dot line, a dot -dot -dot, whereas in Xia, it's arbitrary. There could be a long
19 time offset. There could be other signals sent in the middle. It just doesn't
20 disclose where they are, and it's not clear from the petition where the end of
21 the second time window is and that it is related to the time offset of the first
22 signal or the first signal at all. Instead, they've related it to the response to
23 the signal, which is not the time resource occupied by the first radio signal.
24 Additionally, --

25 JUDGE RAEVSKY: So, I'm just trying to understand. So, you're

1 saying that in Xia, let's just focus on Xia, you're saying that it's a second
2 time window and is not taught because it's not related to the first beam
3 failure recovery request in Xia? Is that where you're going with this?

4 MR. RUBINO: I think that's where I'm going, yes, Your Honor.

5 JUDGE RAEVSKY: Okay. So, it looks to me if I just look at
6 their annotated Figure 6B on page 6 of the petition in the '601 case, that
7 they've drawn the second time window starting at the same time as that first
8 beam failure recovery request from the PUCCH channel.

9 MR. RUBINO: That's right, Your Honor.

10 JUDGE RAEVSKY: So, that seems to directly address the
11 argument that you're making. So, I don't understand why they're inaccurate
12 in that mapping. Can you help me understand your argument?

13 MR. RUBINO: Yes, Your Honor. So, let me just make sure I'm
14 looking at the right petition, 602-601. So, in the '601, because they have
15 both figures in the '601, so we could use that one. So, in the '601 petition,
16 the first channel, the first signal, first radio signal, is sent at time one. The
17 time domain resource for the first radio signal has to define the second time
18 window. Not the response to the first signal, not the second signal, not the
19 response to the second signal, but the time domain resource of the first radio
20 signal has to determine the entirety of the second time window. But the
21 second half of the second time window is determined by the second beam
22 failure request, which could be twice as long, three times as long, ten times
23 as long. It doesn't have to be within any particular time window determined
24 by the first time domain resource. And the response to the first time domain
25 resource isn't tied to that limitation. So, in fact, the second time window is

1 determined here by the start time of the first time window -- sorry, the start
2 time of the first beam failure request here, and the end of the second beam
3 failure request. That's not what the claim requires under our construction.

4 JUDGE RAEVSKY: I guess why I'm struggling with this, because
5 I also don't see this argument in your papers. When I'm looking at page 21
6 of the POR, it seems that the crux of your argument is that Petitioner's
7 proposed second time window from Xia completely ignores when the
8 second radio signal is transmitted. But now you're focusing on the endpoints
9 of the second time window, which I don't see clearly argued as a reason for
10 distinguishing over Xia in your papers.

11 MR. RUBINO: So, the transmission of the second radio signal,
12 which is the second beam failure request that they're pointing to in Xia,
13 necessarily defines a second -- the period of time for the second beam failure
14 request and the second radio signal to exist. And that is what we've said in
15 the petition -- in our response is being relied upon by Petitioner and is not
16 within the scope of the claims, is that the second radio signal does not define
17 in the claims the second time window, and that Petitioner is using the second
18 radio signal to define the second time window. Sure, there's an overlap
19 that's required later, but the definition of the time window, where it starts
20 and where it ends, is defined by the first radio signal in the claims, and
21 Petitioner is relying on the second radio signal to define this time window.
22 And just to be clear, the reason why we're saying these time windows are
23 important, you know, we're saying that they have to have some importance
24 and that the purpose of those radio signals has to be in the claims. You
25 know, I don't think we're trying to import a purpose into the claim

1 limitations. We were just saying that the structure and the pattern of the
2 radio signals is the claim. That is the purpose of the claims, is that there is a
3 pattern and structure to the radio signals, which is why the system of the
4 patent knows when the response to the request is coming and can handle two
5 responses to the same threshold, as opposed to Xia, where there are other
6 means for figuring out whether there was a relationship between the
7 responses. I would also point out, this is just sort of strange, I'm looking at
8 the two next to each other that there are definitely other distinctions between
9 Xia and Liu which are not really addressed by Petitioner. For example, the
10 beam failure recovery response, the third signal, is the response to the
11 second signal in Xia as opposed to Liu where it is the response to the first
12 signal. You know, and that's just because of where they've drawn the box
13 for the second time window. You know, if we look at Liu, because the
14 second time window is defined by something other than the first time
15 domain resource, the first radio signal, we have to wait until -- or we get the
16 first response as the third radio signal. And the same thing happens in Xia
17 because it is not -- the second time window is not exclusively defined by the
18 first radio signal. They have to point to the second response, the beam
19 failure recovery response.

20 But getting back to the crux of our argument, the crux of our
21 argument is what the Board just, which Your Honors just identified. I think
22 it's all the same argument, which is what is the purpose of the second time
23 window? What is the structure of the second time window? Is it the second
24 signal or is it just the first signal? And I think that we have in our papers
25 said that Petitioner has relied on the second radio signal to in part define the

1 second time window when that is not what is required by the claims.

2 If the Board has no additional questions with regard to the second
3 time window argument, I can move on pretty quickly to the Jover argument.

4 So, the Jover argument is pretty simple. It is Ground 2. As
5 Petitioner pointed out, it is not -- it is something the Board has to reach if the
6 Board does not find that Xia or Liu explicitly or obviously teach the
7 thresholding. But the argument is very simple for the Jover reference, which
8 is merely that Jover describes determining a null, and the claims -- or sorry,
9 and Liu and Xia describe determining the threshold for a beam. Now, we
10 have some disclosure -- or we have some discussion about teaching away,
11 but really this is not necessarily a teaching away argument. I mean, maybe it
12 rises to that level, but that's not necessarily where we need to get to for our
13 argument. It's also not a bodily incorporation argument. The argument is
14 just that Xia, Liu, and Jover teach two totally different kinds of beams. One
15 is, you know, a beam. The other is a null. And the Petitioner doesn't
16 address at all why one of skill in the art would look at a null and use the
17 thresholding from the null to apply to a beam. And that's not a bodily
18 incorporation, all right. We're not saying it wouldn't work. We're not saying
19 that you can't take the null and put it into a beam. It's just an argument that
20 that is a clear distinction between the references that Petitioner didn't
21 address, and that one of skill in the art should have had to address in
22 determining that it would have been obvious to combine the two references.
23 And based on that failure to address the fact that Jover describes a null,
24 Petitioner's argument must fail for inadequate motivation to combine and
25 hindsight. And with that, that's the crux of our three arguments.

1 I can reserve the rest of my time for rebuttal unless the Board has
2 any additional questions.

3 JUDGE RAEVSKY: Okay. Thank you, counsel. Seeing no
4 questions, you have 45 minutes remaining.

5 MR. RUBINO: Thank you, Your Honors.

6 JUDGE RAEVSKY: So, we'll go back to Mr. Goldberg. And you
7 also have 45 minutes simply because we only allow reserving half the time
8 for rebuttal. So, when you're ready, you may proceed.

9 MR. GOLDBERG: Thank you, Your Honor. I don't think I'll need
10 45 minutes. I will start in reverse addressing his last point. We just heard
11 that Jover is about looking at a null instead of looking at a beam for doing
12 whatever evaluation it's doing. If you look at paragraph 40 of Jover, this is
13 Exhibit 1005. And this is actually the same paragraph that we looked at
14 earlier where it discusses looking at the bit error rates. When you're looking
15 at a bit error rate, it's measuring something. It's measuring a signal. It's
16 measuring a beam. If you look at the beginning of paragraph 40, it talks
17 about that. So, it says the wireless channel sensing engine 320 is for
18 determining the SNR, SNIR, RSSI, BER, and the like as the beam forming
19 engine sweeps a beam around an imaginary sphere surrounding the endpoint
20 device 300. It's not looking at that beam as how it's determining the issues
21 that it's determining. It's not measuring a null. A null is the absence of
22 things. So, I don't think that the argument that he was making really carries
23 any weight, particularly given that Dr. Bims opined about how this very
24 thing would be simple to incorporate into both the Xia and the Liu
25 references, to be needed, and provided the extended motivation for doing so

1 that was not rebutted by evidence, contrary evidence, from Apex's expert,
2 Mr. Gomez.

3 Turning to the first issue, the triggering discussion, and the new
4 argument that we heard today that somehow it's two different beams causing
5 two different triggering events that are leading to what ultimately happens.
6 As Your Honor recognized, that's -- today is the first time that that's been
7 articulated, so we think that that argument should be disregarded. But as
8 Your Honor also recognized for the Xia ground at paragraph 91, and this is
9 on slide, our slide 20, the Xia reference expressly recognizes that more than
10 one BFRQ, for example, a PUCCH-BFRQ, and PRACH-BFRQ that's
11 transmitted by a UE 404 for a single beam failure event. So, there's not
12 multiple events causing this to happen.

13 The same is also true if you look at our slide 19, and you look at
14 figure 7A and 7B. We see in step 708, send a second BFRQ for the same
15 beam failure event. So, it's one detection of one beam failure that's causing
16 the sending of both the first BFRQ and the second BFRQ. And additionally,
17 as Your Honor also recognized, the claim, it just says, a target threshold, and
18 that could be more than one that's there, that's then driving everything to
19 happen. That's just basic Federal Circuit law and claim construction, that a
20 can be more than one.

21 Finally, if we go to their last argument about the time windows, the
22 second time window, again, that was a new argument that we heard today
23 focusing on the end point being defined by the first radio signal. That's not
24 something that's come out before then. It's also not even in the claim
25 construction, so it's strange to hear them arguing for that, and basically as

1 claim construction, even though that's not even in the claim construction that
2 they articulated, the claim does not say anything about needing to figure out
3 the end point of the first radio signal for determining the second time
4 window. All the claim says is that a time domain resource occupied by the
5 first radio signal is used for determining a second time window. It doesn't
6 say that the entire second time window is determined by the time domain
7 resource occupied by the first radio signal, which is one of the things that he
8 kept saying over and over again. So, and a lot of completely new arguments
9 today, but I think even as new arguments, they fail in the face of the
10 evidence that we've discussed in the face of the patent, in the face of the Xia
11 reference and the Liu reference and the Jover reference.

12 And unless there's any other questions, I'll stop there.

13 JUDGE RAEVSKY: Thank you, counsel. We have no further
14 questions. So, we'll turn back to Mr. Rubino.

15 MR. RUBINO: Thank you, Your Honors. The only thing I really
16 think we'd like to address here is the allegation that this argument about
17 thresholding is new. Petitioner squarely addressed it in its reply in response
18 to our discussion of triggering. And Patent Owner, or sorry, Petitioner
19 rather, explicitly described and discussed that Xia sends two BRF cues after
20 one, quote, event, and they discussed that. In our sur-reply we address that
21 additional evidence that Petitioner was able to respond to and had adequate
22 time and ability to respond to on pages seven through nine of our sur-reply.
23 And we discuss, for example, you know, sending a BFRQ in response to a
24 beam failure event does not disclose a target measurement value used for
25 triggering a transmission. And then we also disclose, we also say the second

1 figure 7A and 7B of Xia do not show triggering the transmission of the first
2 radio signal and, and we bold and italicize and, the second radio signal. So,
3 I think it's pretty clear that that was an issue and, you know, the Petitioner
4 had a chance to respond to it and, and we had a chance to put a sur-reply in
5 on that issue. You know, by definition, I guess everything I say today,
6 maybe some of the words I've used or support I've cited to have been more
7 than the words in our papers. But that is -- that is a pretty clear description
8 of this argument that the triggering the transmission of the first radio signal
9 and the second radio signal is what must be accomplished in the triggering.

10 And then we go on to say, sending a second BRFQ for the same
11 beam failure event is not related to send a first beam failure request in
12 response to detect the beam failure event, and therefore is not using a
13 measurement value trigger for transmission of the second BRFQ, let alone
14 the same measurement value trigger as the first BRFQ. And then we go on
15 to site Figure 7 and describe it. The Petitioner doesn't seem to try to see to
16 strike that. We had that evidence in our slides. They didn't try to exclude
17 that from today's presentation. So, I think that that's kind of beyond the pale
18 to say that that is not somehow in the proceeding or has been waived. Does
19 the Board have any questions, the additional questions about the triggering
20 argument?

21 Again, one last thing I would leave the Board with is just that the
22 Board has to take into consideration all of the evidence, including all the
23 disclosures of Xia, all the disclosures of Liu, how the petition has laid it out.
24 And the Petitioner simply did not make the right arguments with regard to
25 the triggering causing two requests. And all the evidence points out that it

1 could be two separate thresholds, as Petitioner just admitted in his argument,
2 that it could be two thresholds. And if the disclosure could be two
3 thresholds, that is not an explicit or inherent teaching. And Petitioner should
4 have gone to obviousness to explain how the teaching of two thresholds
5 would render one threshold obvious. They didn't do that. They haven't
6 carried their burden. They had the opportunity to address it. They did
7 address it. And we've seen the extent of how they've addressed it in their
8 Patent Owner reply, and how they've addressed it here at this hearing, which
9 is just to say somehow it's not in the proceeding and that the disclosure
10 simply can disclose two thresholds or one threshold. But that does not rise
11 to the level of an explicit teaching as required by the Federal Circuit to meet
12 a teaching for this case. And I know we're in obviousness, but there would
13 have to be some disclosure of that difference between the claims and how
14 one of skill in the art would have arrived at the claimed one threshold
15 causing two signals.

16 And with that, unless the Board has any additional questions, we
17 will rest.

18 JUDGE RAEVSKY: Thank you, counsel. We have no further
19 questions. We appreciate both parties' participation in the hearing today. I'd
20 also like to thank our court staff and court reporter for your excellent work.
21 And with that, this hearing is adjourned. The panel will leave the hearing
22 now, but we'd like to ask both parties to remain on the line in case the court
23 reporter has any questions. And with that, I hope you'll have all have a good
24 day.

25 MR. GOLDBERG: Thank you, Your Honor.

1 COURT REPORTER: Thank you, Your Honor. I was able to
2 keep up with the demonstratives. I don't need any spellings at the moment.
3 Thank you.

4 MR. RUBINO: All right.

5 MR. GOLDBERG: Okay. Have a good one.

6 COURT REPORTER: Have a good day.

7 MR. RUBINO: Nice job, Josh. Good to see you.

8 (Whereupon the above-entitled matter went off the record at 12:35
9 p.m.)

IPR2023-00601
IPR2023-00602
Patent 10,568,113 B2

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