

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioners,

v.

APEX BEAM TECHNOLOGIES LLC,

Patent Owner.

IPR2023-00571 and IPR2023-00747
Patent 10,951,271 B2

Record of Oral Hearing
Held: August 22, 2024

Before JUSTIN T. ARBES, JOHN D. HAMANN, and SCOTT RAEVSKY,
Administrative Patent Judges.

APPEARANCES:

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The above-entitled matter came on for hearing Thursday,
August 22, 2024, commencing at 9:00 a.m., at the U.S. Patent and
Trademark Regional Office, 1961 Stout Street, 14th Floor, Denver,
Colorado.

P-R-O-C-E-E-D-I-N-G-S

8:59 a.m.

JUDGE RAEVSKY: Good morning, everyone. My name is Judge Raevsky. Welcome to the Patent Trial and Appeal Board. Joining me today are Judges Arbes and Hamann. We're here today for oral argument in Inter Partes Review Numbers 2023-00571 and 747, in which Samsung Electronics Co. and Samsung Electronics America, Inc. are the petitioners, and Apex Beam Technologies LLC is the patent owner.

At issue today in both cases is U.S. Patent Number 10,951,271. Before we begin, I'd like to thank the parties for agreeing to join us today for this in-person hearing as we celebrate the 10th anniversary of the Rocky Mountain Regional Office. And we also welcome the members of the public who have joined us today. And let's start with appearances. Petitioner, who do we have appearing for you today?

MR. RODKEY: Good morning, Your Honors. This is Kevin Rodkey for Petitioner Samsung, and with me is Joshua Goldberg, Leap Counsel for Samsung.

JUDGE RAEVSKY: Thank you, Mr. Rodkey. And for Patent Owner?

MR. RUBINO: Good morning, Your Honors. This is Vincent Rubino from the law firm Fabricant LLP for the Patent Owner. And along with me presenting today will be my colleague, Jacob Ostling, a resident of the Rocky Mountain Area.

JUDGE RAEVSKY: Welcome. Each party will have 90 minutes of argument time today, and you may allocate that among the two cases however you wish, and we'll have a single consolidated transcript covering

1 both cases.

2 If this hearing goes the full length today, it could be quite long to sit
3 here, and so we will gauge accordingly and plan for a comfort break
4 sometime in the middle. We'll first hear from Petitioner, followed by Patent
5 Owner, and then we'll hear any rebuttal from Petitioner, followed by any
6 surrebuttal by Patent Owner. Mr. Rodkey, would you like to reserve any
7 time for rebuttal time?

8 MR. RODKEY: Fifteen minutes please, Your Honor.

9 JUDGE RAEVSKY: Okay. Mr. Ostling?

10 MR. OSTLING: Also 15 minutes for surrebuttal, Your Honor.

11 JUDGE RAEVSKY: Okay, thank you. So when you're ready, Mr.
12 Ostling, you may begin. I'm sorry, Mr. Rodkey.

13 MR. RODKEY: I thought we were switching the order again.

14 JUDGE RAEVSKY: Just keeping you on your toes.

15 MR. RODKEY: And, Your Honors, we have paper copies of the
16 demonstratives, if you would like them.

17 JUDGE RAEVSKY: I'm okay with electronics. Do either of you
18 want paper?

19 JUDGE HAMANN: I'm fine.

20 JUDGE RAEVSKY: We're fine. Thank you so much.

21 MR. RODKEY: Good morning, Your Honors. Kevin Rodkey for
22 Petitioner Samsung, and this proceeding covers, as you've already
23 mentioned, the 571 IPR and also the 747 IPR. For the convenience of the
24 transcript and the board, I will refer to them in that manner. Beginning with
25 slide 4 of Petitioner's demonstratives, there are two grounds of
26 unpatentability asserted across these two IPR proceedings.

1 In the 571 IPR, Petitioner has shown that claims 1 to 20 of the '271
2 Patent are obvious over the Liu and Park references, and in the 747 IPR,
3 Petitioner has shown that the '271 Patent claims 1 to 20 are obvious over the
4 Kim and Chen references.

5 Patent Owner has argued only limitations of independent claim 1
6 related to the patent owner's response and surreply, so I intend to limit my
7 arguments to claim 1 unless there are specific questions from the board on
8 other elements or other claims.

9 Turning to slide 9 of Petitioner's demonstratives, there are really only
10 two issues in this consolidated proceeding, and they relate to two claim
11 elements. One is what the parties have styled element 1d1, that is wherein K
12 antenna port groups of the base station are used to transmit the first wireless
13 signal. The other is what the parties have styled element 1d5, which is a first
14 proportional sequence corresponds to a ratio, parentheses ratios, plural,
15 among the K1 channel quality values.

16 For each of these, there are really two sub-issues. One is an issue of
17 claim construction that Patent Owner has put forth. The other one is
18 comparison of the prior art to the proper interpretation of the claims.
19 Regarding claim construction for both issues, it's actually fairly simple. No
20 construction is necessary, and I will talk about that very shortly.

21 As far as the comparison to the prior art, again, there are two simple
22 issues. For element 1d1, the prior art teaches the exact same example as in
23 the '271 Patent for this element. Therefore, no construction is necessary, and
24 the prior art renders it obvious.

25 For the comparison of prior art for 1d5, both of the petitions show that
26 the prior art teaches a reference signal received power, abbreviated RSRP,

1 ratio to the maximum RSRP value that's been measured by the user
2 equipment, or UE, which is under Patent Owner's construction. Because
3 Patent Owner's construction is taught, again, you don't need to construe the
4 claim term.

5 As far as the ordering of the arguments today, I will begin with the
6 claim construction of 1d1, then talk about the prior art for 1d1, claim
7 construction of 1d5, and then the prior art for element 1d5. Beginning with
8 the construction of element 1d1, slide 11 shows the parties' various
9 positions. As I mentioned, Petitioner's position is that no construction is
10 necessary. Patent Owner has proposed an explicit construction, which has
11 two errors.

12 In Patent Owner's construction, it says that this term should be
13 construed to mean K groups of antenna ports of the base station are used to
14 collectively transmit the first wireless signal.

15 Those two errors are that K groups of antenna ports is not the same as
16 the claim language K antenna port groups, and the second error is that
17 collectively, which doesn't appear in either the patent specification or any of
18 the intrinsic record or any of the extrinsic evidence actually, renders the
19 claim term ambiguous and cannot really be explained by either Patent
20 Owner or its expert.

21 Regarding K antenna port groups, Patent Owner has tried to make two
22 nouns plural on this. It makes groups plural, which is the same as the claim
23 language, and it tries to make ports plural. Patent Owner's arguments are
24 really that you need K groups where K is more than one, so two or more
25 groups.

26 As you can see in the bottom right of slide 12, we don't dispute that.

1 In our footnote in our reply briefs at page 3, footnote 2, or both of those
2 briefs, we agree. There have to be two or more port groups. The problem
3 with Patent Owner's construction is that they try to make ports plural and say
4 that you need two or more ports.

5 But as you can see in the two excerpts on the top right of slide 12, the
6 '271 Patent says that an antenna port group is composed of one antenna port
7 in one embodiment, or in another embodiment, the antenna port group
8 includes only one port. So there's no reason to construe this claim. It seems
9 pretty clear you need more than one group, but each group can have only
10 one port or more than one port.

11 Turning to slide 13, regarding collectively, this is a problem because it
12 really adds ambiguity. Nowhere in the '271 Patent does the term collectively
13 appear. And the claim construction sections of both the patent owner
14 response and also the surreply, Patent Owner doesn't cite any part of the
15 intrinsic record for this addition of a claim term. They're just trying to add a
16 word to the claim, and that's a problem.

17 The other problem is that Patent Owner's expert cannot explain what
18 this means. On slide 13, we have three quotes from Patent Owner's expert,
19 Mr. Gomez, which is at Exhibit 1037. In the top left, he was asked, what
20 does collectively mean? And he said, together. And then he was asked,
21 what does together mean? And he said, collectively. It's a circular
22 definition that doesn't aid in understanding the claim term, so it can't be the
23 right construction. There's no reason to add this to the claim.

24 JUDGE RAEVSKY: Counsel, I'd like to explore this a bit more.

25 MR. RODKEY: Sure.

26 JUDGE RAEVSKY: How do you understand transmit the first

1 wireless signal? In other words, is it that pieces of the first wireless signal
2 are sent on separate antenna ports? Is the first wireless signal transmitted
3 serially, first on one and then on the other? Could it be the same signal on
4 all of the ports together? How do you understand it to mean?

5 MR. RODKEY: Sure. Let's go to actually slide 21 of Petitioner's
6 demonstratives. And we can get what we need from the '271 Patent itself.
7 What the '271 Patent says in the top left of slide 21 is, the K antenna port
8 groups respectively correspond to K reference signal groups. The K
9 reference signal groups are respectively transmitted through the K antenna
10 port groups. And the first wireless signal, this I believe gets your question,
11 is composed of the K reference signal groups.

12 Breaking that down, it says you have K antenna ports transmitting K
13 reference signals. K has more than one. For example, two ports
14 transmitting two reference signals. Four ports transmitting four reference
15 signals. As far as whether they are all the same reference signal or parts of
16 the same reference signal, nothing in the claim says that. What we do know
17 is that what Petitioner's expert has testified in both proceedings is that these
18 are conventional reference signals. The same type that was known in the
19 prior art.

20 The way that those work is typically you have what's called a CSI-RS,
21 a Channel State Information Reference Signal. That is transmitted in what's
22 called a resource block. And I believe I have an example of one of those. If
23 we look at slide 19, you can see an example of a resource block from the
24 Kim reference. And the blue squares in this resource block are the CSI-
25 RSes.

26 When the art refers to something like a CSI-RS or a reference signal,

1 you have the group reference signal, which is the big block. That's the full
2 square. That is transmitted as individual reference signals across the
3 individual ports. That's exactly what is in -- that's the numbers 1 to 8 in the
4 blue.

5 So the art refers to both of those as a reference signal. What we know
6 from slide 21, particularly the quote in the top left, is that you can have a
7 one-to-one correspondence between ports and reference signals when
8 transmitting the first wireless signal. Does that answer your question? So,
9 five ports, five reference signals.

10 JUDGE RAEVSKY: But the patent is silent as to whether it's the
11 same signal in each reference signal.

12 MR. RODKEY: Yes.

13 JUDGE RAEVSKY: Okay.

14 MR. RODKEY: What we also have is in claim 4. It talks about the
15 reference signals being on the same carrier. The petition has shown that
16 claim 4 is disclosed by the prior art and rendered obvious. There is no
17 dispute about that. To the extent the board is inclined to find that you need
18 to be on the same channel or same carrier, that's undisputed that the prior art
19 teaches that as well.

20 JUDGE HAMANN: Counsel, this is Judge Hamann. You say the
21 same carrier. Are you referring to the same channel?

22 MR. RODKEY: Channels and carriers are an interchangeable term in
23 the art.

24 JUDGE HAMANN: Sure. But I'm just trying to understand the
25 context. Obviously, although not limited to LTE, for example, I think a lot
26 of the terminology used in the specification is LTE terminology. And, for

1 example, are we talking about the same grouping of subcarriers? For
2 example, resource block has, what, 12 subcarriers, I believe? Or are they
3 different resource blocks?

4 How does it sort of relate when you say channel and carrier to the
5 actual LTE terminology that the patent uses? As well as just because
6 obviously they're potentially within the same carrier, same resource block or
7 whatnot, there's different temporal aspects of that, including different slots
8 or whatnot. How does that relate to whether it's the same reference signal
9 being transmitted?

10 MR. RODKEY: So the patent is silent on all of that. And so I don't
11 know if that needs to be actually resolved by the board because it's not a
12 limitation of any of the claims. When you look at claim 4, it even allows for
13 different carriers, if you were to do that, because it requires only that K1 be
14 on one carrier and K2 be on a carrier. Same or different, it doesn't specify
15 one or the other.

16 But as far as your question about temporality and resource blocks, the
17 prior art shows a single resource block. That's in K. So if you're inclined to
18 think that that's part of it, which is not reciting the claim, it's not reciting the
19 specification, it's not discussing the prosecution history or any of the
20 intrinsic record. So it's not a limitation of the claim. The prior art still
21 teaches that.

22 JUDGE HAMANN: Well, counsel, obviously the claim does say
23 transmit the first wireless signal. So I'm trying to get an understanding of
24 what the first wireless signal is. And I think the parties have sort of
25 approached that without clearly defining that, just sort of pointed to what
26 sort of is covered by that limitation. And there's some, you know, obviously

1 some speech that I think obviously you point to Kim, and I think that's clear
2 from the petitioner, what the petitioner alleges.

3 But Liu, for example, in the other case when Petitioner points to it, I
4 think it's not as clear as to what Petitioner contends is the first wireless
5 signal. And sort of that, you know, us understanding what that term is in the
6 context of the overall claim is really what's behind my questioning.

7 MR. RODKEY: Sure. So let me go to actually an excerpt from the
8 '571 petition, and I'm going to read part of it as well. So this is from the '571
9 petition at page 13. I think we are actually very clear. It says -- sorry, page
10 16. The very first sentence of the discussion is, Liu's space station transmits
11 the first wireless signal using M individual antenna ports. And then it goes
12 on to explain that those M ports transmit M reference signals.

13 We know the reference signals because the user equipment measures
14 the reference signal received power, or RSRP. That's how we know the
15 reference signals. We know from the '271 patent that a number of ports
16 respectively transmitting a number of reference signals is sufficient to meet
17 the claim language.

18 JUDGE HAMANN: This is Judge Hamann again. What exactly does
19 Liu teach about what those reference signals are? What exactly is being
20 transmitted?

21 MR. RODKEY: It's, for example, a CSI-RS is one example. So that's
22 just a conventional reference signal in any of this type of our LTE, 3G, 4G,
23 5G.

24 JUDGE HAMANN: Is that an example reference signal that
25 Petitioner identifies in the petition for the Liu reference?

26 MR. RODKEY: Yes, I believe we cite to, and you can see it at the

1 bottom of the quote on the left, we refer to Dr. Kakaes's testimony at
2 paragraph 103. He then refers back to other paragraphs and says these are
3 conventional reference signals in the art. And those discussions in his
4 declaration talk about CSI-RS.

5 We also point that out in the reply as well. But the '271 patent is not
6 limited to CSI-RS. They're simply reference signals. In fact, it gives other
7 examples of reference signals that can be used. So while we've pointed to
8 something like a CSI-RS, the patent's not limited to a CSI-RS.

9 JUDGE HAMANN: Thank you.

10 MR. RODKEY: If there are no other questions on the term
11 collectively, that should not be added because it is ambiguous. I will turn
12 back to how the references actually map. So --

13 JUDGE ARBES: Counsel, before you move on to the next point, can
14 I ask, what's your point -- Patent Owner focuses on the language "used to" in
15 the claims. Can you respond to exactly what that means? And isn't the plain
16 and ordinary meaning of the words "used to" -- if I have a claim that says
17 two components are used to perform a particular function, they both have to
18 be used to a degree, right?

19 MR. RODKEY: Yes, but what we know from the '271 patent, and
20 again I'm back on slide 21 of the demonstratives, is what does that mean?
21 And the patent says it's respectively done. So K antenna ports respectively
22 transmitting K signals or K reference signals. So you have one port
23 transmitting one reference signal, one port transmitting the next reference
24 signal, and those together are the first wireless signal, or that set is the first
25 wireless signal. That's how both get used, and that's how it's mapped in the
26 prior art.

1 JUDGE ARBES: Okay. So all of the reference signals are being used
2 together then. So what is the dispute then? The patent owner argues
3 collectively or together, and I believe in some of your briefing in the reply
4 briefs, you also use the term together. Do you disagree that together should
5 be in the claim interpretation for this?

6 MR. RODKEY: We do because Patent Owner's expert doesn't
7 explain what that means. They then go circular and say it's collectively, and
8 that word doesn't appear, which is why we're just relying on what the patent
9 says. As I understand Patent Owner's argument, they're saying that you can't
10 have more than one reference signal forming the first wireless signal, and
11 based on the quotes from the patent itself, which I will point out, Patent
12 Owner never discusses these.

13 They never point to the intrinsic record. They never talk about these
14 despite being identified in Petitioner's briefing. We know that we can have
15 multiple reference signals forming the first wireless signal. As I understand
16 their argument, they're saying you can only have one reference signal
17 forming the first wireless signal, and that's plainly wrong based on the
18 disclosure.

19 JUDGE ARBES: So is the dispute then really whether the first
20 wireless signal can be in parts or as a whole? Is that the dispute? I'm trying
21 to figure out what the difference is between your interpretation and Patent
22 Owner's.

23 MR. RODKEY: I think the difference is whether you can have
24 multiple reference signals forming the first wireless signal. In other words,
25 can you have three or four antenna ports transmitting three or four reference
26 signals respectively? We know you can from these quotes on slide 21.

1 Patent Owner appears to be saying that you need three or four ports
2 transmitting one reference signal, and that's plainly wrong given what we
3 have in the specification itself.

4 JUDGE ARBES: Okay.

5 MR. RODKEY: And Patent Owner's inability to actually address
6 these quotes or even acknowledge they exist.

7 JUDGE ARBES: One last question. On slide 21, do you disagree
8 that the word together would describe what is going on here? I mean,
9 certainly the first wireless signal is composed of the K reference signal
10 groups. So those reference signals are being used together, right?

11 MR. RODKEY: I don't think you need that together because I don't
12 think you actually need to construe the claim because we have this example,
13 and we know that the prior art teaches the example. I think together just
14 makes the claim language loose, and it doesn't actually need to be inserted to
15 resolve the issue.

16 JUDGE ARBES: Okay. So you have not offered an alternative
17 interpretation. You're just saying that this arrangement that's described in
18 the specification of the patent is encompassed by the claim language. The
19 claim language includes this, and this is what the prior art teaches?

20 MR. RODKEY: That's correct. It could include other things. In fact,
21 we know other types of reference signals are identified, right? But we know
22 that it has to include at least this example. This example is what's taught in
23 both the Liu reference and the Kim reference, and the Chen reference and
24 the Park reference. All of them teach this example, so we don't need to go
25 further.

26 JUDGE HAMANN: Counsel, this is Judge Hamann, again. You've

1 said we don't need to construe this term. My concern is, obviously, we can't
2 just say plain and ordinary meaning if there's a dispute between the parties
3 as to what that plain and ordinary meaning is. The Federal Circuit's been
4 clear on that. And so I think we have to construe it in some fashion, don't
5 we? Don't we at least have to say it covers or includes at least this teaching,
6 for example, from a reference or something else? We can't just not construe
7 it wholesale, can we?

8 MR. RODKEY: Yes, I do think you can not construe it. And the
9 reason for that is whatever that construction would be, it has to include these
10 examples, right? So whatever construction you have has to cover this.

11 We know that this example on slide 21 is in the prior art, so your
12 construction has to cover something that we know is there, and we know
13 from the Nidec case that I believe was cited in the decision on institution,
14 also in the petitions. You only have to construe to the example, you have to
15 resolve a controversy. There's no controversy to resolve because the prior
16 art teaches the examples of the '271 Patent.

17 JUDGE HAMANN: But patent owner disputes that.

18 MR. RODKEY: Patent owner disputes it, but I will also note that
19 they have never actually addressed this example of the '271 patent. The
20 briefing is entirely silent on it, despite it being identified in the petitioner's
21 briefing.

22 JUDGE HAMANN: I understand. Thank you.

23 JUDGE RAEVSKY: I know we've been here for a while, counsel, but
24 I have one more question about the plain language.

25 MR. RODKEY: Sure.

26 JUDGE RAEVSKY: So perhaps if you could go to a slide that shows

1 the claim. In the receiving step, the second receiving step, it says receiving
2 by the UE a first wireless signal. I haven't seen this addressed in the briefing
3 to my recall, but "a" typically means one or more under our controlling case
4 law. What's your view on that here?

5 MR. RODKEY: Yes, so "a" does mean one or more under the
6 controlling case law. That's correct, Your Honor. Receiving the first
7 wireless signal, as in the petition is receiving the various reference signals
8 from the M antenna ports in Liu or from the management set of CSI-RSes in
9 Kim. So you're still receiving each of those reference signals.

10 And maybe this gets to kind of the broader point, like what is -- we're
11 talking about two isolated parts of the claim here, right? Element 1d1 and
12 element 1d5. But if we step back, what does this claim really saying? You
13 have a base station. It transmits reference signals to a user equipment. The
14 user equipment receives those reference signals. It measures each one of
15 them to determine the RSRP.

16 By having multiple RSRPs, you are necessarily receiving multiple
17 reference signals and transmitting multiple reference signals. That's also
18 why Patent Owner's construction has to be wrong. The UE then looks at
19 those and says, okay, how strong are these relative to each other? And it
20 decides which ones are above a certain threshold and then says, these are the
21 ones that I want the base station to send me the data on, sends those back to
22 the base station, and then the base station starts sending the data.

23 That's what this entire claim is about. That's why we know there also
24 have to be multiple reference signals because you can have multiple RSRPs.
25 And I guess I'll just turn to slide 17 quickly. The '571 petition does show
26 that Liu discloses element 1d1, and it talks about having M individual

1 antenna ports transmitting M reference signals or M wireless signals. And
2 as you can see on the left, from the '571 petition at pages 13 and 14, it talks
3 about that first wireless signal being those M signals that are sent from the
4 M antenna ports.

5 JUDGE ARBES: If you could go back to slide 17 for a moment.

6 MR. RODKEY: Yes, Your Honor.

7 JUDGE ARBES: I have this question both about Liu and Kim. The
8 petition is a bit confusing to me. At the bottom of the figure on the left,
9 where you say Liu's wireless signals are the conventional reference signals.
10 And a number of times you refer to wireless signals plural, but what we're
11 talking about in the claim is a first wireless signal that is maybe composed of
12 multiple reference signals.

13 So can you point to where in the petition, and I guess this applies both
14 to Liu and to Kim, you argued that theory, that the first wireless signal is
15 made up of the multiple reference signals?

16 MR. RODKEY: Yes, Your Honor. And if you look at the top right of
17 slide 17, it's a quote from the '571 petition at page 16. The first highlighted
18 part says, Liu's base station transmits the first wireless signal using M
19 individual antenna ports. It then goes on to explain that Liu's base station
20 transmits signals of the M antenna ports to the UE, which receives the
21 signals of the M antenna ports.

22 So we say the first wireless signal is what is sent by those M ports.
23 There's more than one in M. And then we say that what is sent as that first
24 wireless signal are the M signals from the ports. So one from each port.
25 Again, that's exactly what's in the quotes that we saw from the '271 Patent.
26 K antenna ports respectively transmitting K signals. Here it's just M. The

1 art is very loose as far as using M, K, and X. But it's the same theory.
2 Multiple ports sending multiple signals.

3 JUDGE ARBES: And can you do the same for Kim, please?

4 MR. RODKEY: Yes. So if we're looking at Kim, on slide 19 for the
5 record. And for Kim, you can see in the bottom left, this is an excerpt from
6 the '747 petition at page 19, footnote 7. We've identified K from the '271
7 Patent claim as N for the management set of Kim. And you can see in the
8 quote on the top right from page 13 of the '747 petition, Kim describes
9 multiple antenna ports transmitting CSI-RS wireless signals, plural,
10 according to the number of antennas at the base station. And then it gives an
11 example of numbers.

12 And then it says in the quote on the bottom, again from page 16 and
13 17 of the '747 petition, figure 6 shows an example of how the base station
14 identifies K. Again, that will be shown in a second to be the N or the
15 management set. CSI-RS antenna port groups using configuration
16 information, and then CSI-RSes, multiple, are mapped to the resource
17 elements. That's the eight numbered blue boxes in figure 6 on the left there.

18 And then if we go on, you can see it again in the petition at page 24.
19 It says the antenna port groups specified for the CSI-RS measurements,
20 plural, may include a management set of the transmitted signal. The
21 management set is shown in figure 9 as CSI-RSes number 1 to 7 in the white
22 oval.

23 So it's the bottom right is figure 9 on slide 20 of Petitioner's
24 demonstratives. That management set, or the first wireless signal, is the
25 white box. And then that -- sorry, the white oval. And then the yellow oval
26 is the K1 or the subset that's -- it's set back.

1 JUDGE ARBES: Counsel, I see in the portions of the petition that
2 you've pointed to, and some other portions as well, where you refer to CSI-
3 RS signals plural. But what is your best support in the '747 petition for
4 where you argued that the CSI-RSes together comprised the first wireless
5 signal? Where did you make that argument in the petition?

6 MR. RODKEY: Your Honor, that's the entire argument in elements
7 1b and 1d1. It's that group where we say that this forms K. That's the first
8 wireless signal. It's that collection. Those entire sections say that.

9 JUDGE ARBES: Well, perhaps if we could go back to the -- if you
10 have the petition available, the '747 petition, page 12. So the second
11 paragraph, Kim's UE receives a first wireless signal, for example, a pilot
12 signal or reference signal, for example, CSI-RSes. And then about halfway
13 down you say the CSI-RSes are wireless signals. What I'm looking for, I
14 don't see in the petition there, where you say that the first wireless signal is
15 the CSI-RSes together.

16 MR. RODKEY: Yeah. So, Your Honor, the language in the prior art
17 can be a little loose sometimes. I will point you also to Kim where it talks
18 about figure 6. Just bear with me one second.

19 JUDGE ARBES: I mean, the reason I'm asking this is Patent Owner
20 has obviously made the argument that what you're saying in the reply brief
21 detailing this argument is an improper new argument, that it was not in the
22 petition. So I'm looking for where exactly you made this argument in the
23 petition.

24 MR. RODKEY: One moment, Your Honor. So we're pointing to
25 figure 6. In paragraph 28 of Kim, which is Exhibit 1027, says, figure 6 is a
26 conceptual diagram illustrating a channel state information reference signal.

1 Again, that's like what I said earlier. Sometimes it calls the big block the
2 reference signal, and then each of the individual little numbers in blue the
3 reference signal.

4 It's the same thing. We're pointing to the big block in figure 6. We
5 point to that multiple times. That describes the management set, or N, of the
6 signals to be measured, which are the numbers 1 to 8 in the little blue boxes.
7 So it's all the same. But even if this were somehow a new argument, which
8 it's not, because we pointed to multiple reference signals being transmitted
9 by multiple antenna port groups. Again, same example in the '271 Patent.
10 We've talked about that on slide 21.

11 The Federal Circuit's Axonics case says, we have to be entitled to
12 respond to Patent Owner's new argument. So this is the first time we've
13 gotten this claim construction and the Patent Owner response. The Federal
14 Circuit said we must be able to respond to it by arguing, based on that
15 construction, that the claims are still obvious. And we've done that. And
16 we're pointing to the exact same thing. We're pointing to that group of
17 reference signals, 1 to 8, in figure 6 that was in the blue boxes that we just
18 saw.

19 JUDGE ARBES: And you're saying that, together, they make up the
20 first wireless signal?

21 MR. RODKEY: The first wireless signal. And we know that because
22 they're in one resource block.

23 JUDGE HAMANN: Counsel, could you explain what you mean by
24 that? Why do we know based on that they're in one resource block? I
25 recognize they're all in one resource block. But I want to understand your
26 reasoning for why we know it's all part of the same first signal.

1 MR. RODKEY: So that paragraph was paragraph 28 from Kim that I
2 just read, as I was answering Judge Arbes's question. And I'll go back to it
3 again, is referring to figure 6. And what it says is, figure 6 is a conceptual
4 diagram illustrating a channel state information reference signal, CSI-RS.
5 And what this is, again, I think it's helpful not to lose the forest for the trees,
6 right? In what this is really about.

7 So reference signals are coming from a base station. They're a signal
8 that is transmitted in different directions. That's how it works. That's what
9 each of these antenna ports does, is it sends it out, and then the user
10 equipment, it measures them and says, these are the ones that are pointing
11 towards me. Use those to send me data. That's what each of these blocks
12 does. So it's the same thing, just in different directions.

13 JUDGE HAMANN: And each of the individual blocks within this
14 resource block, like each of the blue ones, for example, are resource
15 elements? Is that correct?

16 MR. RODKEY: Yes. Each individual blue square is a resource
17 element. Yes, Your Honor.

18 JUDGE HAMANN: Thank you.

19 MR. RODKEY: I also want to point out that we have 21 pages of
20 undisputed expert testimony from Petitioner's expert's deposition, which is
21 Exhibit 2005. Again, identifying how the Liu reference and the Kim
22 reference teach the example in the '271 Patent. Patent Owner has said, well,
23 you shouldn't look at this because it doesn't use a particular word, but the 21
24 pages of testimony haven't been disputed by anyone. And so that, again,
25 shows that Kim and Liu teach element 1d1.

26 I do kind of want to address something briefly before patent owner

1 stands up and argues, and that's on slide 25 of Petitioner's demonstratives.
2 In both of the surreplies, Patent Owner has said that Petitioner is trying to
3 use the '271 Patent for unpatentability. I just want to be clear on the record.
4 That is not the case. We are not relying on the '271 Patent as a basis for
5 unpatentability.

6 What we have done is exactly what the Federal Circuit Phillips en
7 banc case says to do. When you're trying to understand the meaning of a
8 claim term, you look at the specification, right? And that's what we did.
9 That's what was on slide 21. What does the specification tell us element 1d1
10 means? It tells us it means exactly what is taught by the Liu and Kim
11 references.

12 JUDGE HAMANN: So, counsel, in other words, you're using the
13 specification to construe this term, even though I think you told us not to
14 construe it earlier. That's what's confusing me.

15 MR. RODKEY: Not to construe it. To understand it. We don't need
16 to construe it because we know it has to cover the examples. So whatever, if
17 the board is inclined to give a construction, that construction has to cover the
18 examples on slide 21.

19 JUDGE HAMANN: Yeah, it may just be a different way of thinking
20 about it, but I think by saying something covers something that is in some
21 fashion, some level of interpretation. But I understand what you're saying
22 now. Thank you.

23 JUDGE ARBES: Counsel, let me play devil's advocate for a moment
24 on that point. If I have a specification that discloses 20 different examples, I
25 don't -- my claim does not need to encompass all of those examples, right?

26 MR. RODKEY: It doesn't, but there's a presumption that unless

1 there's a reason to exclude it from the claim language, that it should cover
2 the examples. You should not construe a claim to exclude an example
3 unless the claim clearly excludes the example.

4 JUDGE ARBES: Okay. And do you understand Patent Owner to be
5 making that argument here?

6 MR. RODKEY: I don't. I think they just haven't addressed these
7 examples because they're not anywhere in the briefing. And nowhere in
8 their claim construction sections do they actually cite to the '271 Patent. So
9 they haven't looked at what the patent says when they're trying to provide
10 this construction. So I think they're trying to make arguments in isolation,
11 divorced from the specification, which is improper.

12 JUDGE ARBES: And what, in your view, should Patent Owner have
13 included in the claim to include the concept that they are arguing now?
14 Should they have included that exact interpretation, the word collectively, in
15 the claim itself?

16 MR. RODKEY: I don't know that I can really answer that question
17 because it hasn't been briefed and it's not really in front of us. And I don't
18 know that the board needs to decide what should have been included to
19 cover construction that is improper.

20 JUDGE ARBES: I'm trying to figure out why their interpretation is
21 wrong. If you're saying that we do not need to interpret the claim language
22 at all, but theirs is wrong, what should they have included in the claim if it's
23 not already there?

24 MR. RODKEY: Well, I think they're trying to get through it because
25 the prior art teaches the claim, right? And they're trying to get around the
26 prior art. That's pretty clear. I think they're also trying to construe it, again,

1 in isolation without, again, ever citing to the '271 Patent. So they haven't
2 actually done what's required to provide any sort of proper construction,
3 which is to look at the patent itself.

4 As far as what they should have included to put in a construction that's
5 not in the examples of the '271 Patent, I can't really say that because the
6 question is, is what they actually did claim taught by the prior art? And that
7 is definitely taught by the prior art and we know it from these examples on
8 slide 21.

9 If there are no other questions on element 1d1, I'd like to turn to
10 element 1d5. And I've gone to Petitioner's slide 28 to address element 1d5.
11 And again, Petitioner's position is that no construction is necessary because,
12 as we'll discuss, the prior art teaches at least Patent Owner's constructions.
13 And Patent Owner has offered, actually, two separate constructions in this
14 proceeding, apparently recognizing that the first one was wrong.

15 So in the patent owner's response, Patent Owner offered a
16 construction, again, for the first time and never attempted to construe this in
17 the district court or another proceeding, and argued that 1d5 should be
18 construed as a sequence of K1 proportions, where each of the K1
19 proportions is a ratio between one channel quality value to itself or another
20 one of the K1 channel quality values.

21 And Petitioner's reply pointed out that this is wrong. In particular,
22 one of the reasons it's wrong is by limiting to K1 proportions, and Patent
23 Owner changed course in its surreply. It eliminated that K1 proportions
24 limitation but kept the specific ratio at the end of its construction. So it's no
25 longer limited to K1 proportions.

26 Again, no construction, district court, but the court doesn't really need

1 to construe this because in the 571 IPR, the Liu and Park reference, the
2 combination of those, teach at least Patent Owner's surreply construction,
3 and the Kim reference in the 747 IPR teaches at least the surreply
4 construction, which is what I understand Patent Owner to now be arguing.

5 Addressing the first issue of K1 proportions, nothing in the patent
6 limits the size of the proportional sequence. And you can see this at least in
7 dependent claim 2, where dependent claim 2 lists a number of different
8 examples as far as what can be used to meet the claim. And one of those is,
9 the first proportional sequence comprises K1 positive real numbers less than
10 or equal to one. So it comprises K1 numbers.

11 We know, basic tenet of patent law, right, comprises means must
12 include this but can include other things, right? So it can have more than
13 that. Further down in the second highlighted portion on slide 29, as an
14 alternative, it says, or the first proportional sequence comprises K1 minus
15 one positive real numbers. So it can be less than K1.

16 So Patent Owner's original construction to require K1 can't possibly
17 be right if you can satisfy claim 2 by having less than K1. And again, it
18 comprises to, you have to have at least K1 minus one, but you could have
19 more than that. You could have K1 plus two, K1 plus three, et cetera.

20 And then on the right are just excerpts from the '271 Patent that say
21 the same thing and confirm that the construction is incorrect. Regarding the
22 second problem with Patent Owner's construction, that specific ratio at the
23 end. Patent Owner says that the proportions are a ratio of one channel
24 quality value divided by another channel quality value. For example, one
25 RSRP divided by another RSRP.

26 Again, we know this is wrong. The claim is not so limited. Claim 1

1 doesn't say anything about what those proportions are. But when we look to,
2 again, we can look at claim 2, one of the alternative embodiments in
3 dependent claim 2 is highlighted on the right of slide 30. It's the last element
4 of claim 2. It says, or the first proportional sequence comprises quantized
5 values corresponding to $K1$ minus one positive real numbers. Quantized is,
6 of course, stepped, right?

7 So it's not the value itself. It is not is the value, right? It's another
8 value somewhere around there based on the number of steps. So Patent
9 Owner's construction that says is the ratio can't be correct because we know
10 from claim 2 that it could be some number other than the ratio itself.

11 JUDGE RAEVSKY: I think I understand Patent Owner's point to be
12 that quantized values could be quantized ratios. So you can have a ratio and
13 then quantize it and then it's still a ratio, if I understand that correctly.
14 What's your response?

15 MR. RODKEY: Yes, Your Honor. That was one of Patent Owner's
16 arguments in its surreply. It's saying that your quantized values could be a
17 ratio. So for example, zero, one quarter, one half, three quarters, one, right?
18 Those could be quantized ratios, right? Because they're fractional.
19 However, the problem is when you look at the construction, it says is a ratio
20 of one value to another.

21 If I have the value two thirds and it quantizes to, I'm just going to pick
22 one of the two around it in my example, three quarters. Three quarters is not
23 that ratio, which is required by Patent Owner's construction. It's another
24 number similar to that ratio that is in the steps, but it's not the ratio itself that
25 is a problem. But again, you don't need to construe the claim actually
26 because as I'll talk about in just a moment, the Park reference teaches an

1 RSRP ratio of one signal divided by the maximum RSRP ratio of all the
2 received signals.

3 That is a ratio of one channel quality value to another in Patent
4 Owner's construction. Kim teaches the same thing. It teaches the actual
5 RSRP value divided by the maximum RSRP value for each of the received
6 signals. Again, that is the ratio of one channel quality value to another in
7 Patent Owner's construction. So we don't disagree that the claim covers this
8 interpretation. This is one example of what the claim covers. We disagree
9 that the claim is limited to this interpretation.

10 All right. So I'll turn first to the Park and Liu references and the 747
11 IPR -- I'm sorry, the 571 IPR on slide 33 of Petitioner's demonstratives.
12 What we have on slide 33 is two excerpts from the Park reference. On the
13 left we have paragraphs 371 to 373, and on the right we have an excerpt
14 from figure 12, which has been annotated by Petitioner's expert for clarity of
15 the discussion. And this gets to the heart of why Park teaches the element
16 1e5.

17 So what Park does is, as we've discussed earlier, it receives various
18 reference signals. That's one example, CSI-RS. It measures the reference
19 signal received power, RSRP, and then it does what is called -- it aligns
20 those reference signal received powers and then it divides them by the
21 maximum to see which ones are above a certain threshold.

22 It gives two alternatives. It says a ratio, which is division, or a
23 difference, which is a subtraction. We are pointing primarily to the ratio,
24 which is the division version. And so that is what is shown in figure 12.
25 Those are all of the RSRP values in the example for ports 0 to Port 31, so it's
26 getting a lot of signals here.

1 And then what it does is it just goes down the line and it divides them
2 by the highest one, which is Port 13. And it says, okay, which of these are
3 above a threshold? The example it gives is a 5 dB threshold difference, or
4 31 percent. And then it reports those ports back. So it takes Port 0, divides
5 by Port 13's RSRP, Port 1 RSRP divided by the Port 13 RSRP, all the way
6 down the line.

7 And it determines that Port 13 divided by itself is of course above the
8 threshold. It's the highest number there is, so it's the maximum ratio. And
9 then ports 24, 25, and 26 are also above that threshold.

10 JUDGE RAEVSKY: So just to clarify for the record, you're saying
11 that it divides the values, but it's a subtraction in this slide that you have
12 here. Is there explicit teaching of dividing, or are you relying on the fact that
13 subtraction of a logarithm is equivalent to dividing in the linear scale?

14 MR. RODKEY: We are not relying on that equivalence, although I
15 believe there is some testimony to that fact. But if you look at paragraph
16 372, right here at the bottom, it says threshold value expressed as an RSRP
17 ratio or a dB scale.

18 JUDGE RAEVSKY: I understand.

19 MR. RODKEY: Two alternatives. The dB scale is that subtraction,
20 and then Petitioner's expert testified that that RSRP ratio alternative is the
21 division, and that testimony is undisputed at this point.

22 JUDGE RAEVSKY: Speaking of division, conspicuously missing
23 from your argument is any reference to obviousness over Liu alone. Is that a
24 concession that the denominator in Liu, the RSSI value, is not a channel
25 quality indicator?

26 MR. RODKEY: It is not, Your Honor, no. Again, we agree that

1 RSRP divided by RSRP can be encompassed by the claim, but we have not
2 foregone the argument that RSRQ could be another ratio, because we know
3 that RSRQ is actually just a definitional term in the art of RSRP, which is a
4 channel quality value in the claim, right, divided by the RSSI, signal strength
5 indicator, which is another type of channel quality indicator. Even if it's not
6 RSRP, it is a type of channel quality indicator, and this is by definition a
7 ratio as well.

8 Patent Owner has said that this doesn't meet the construction because
9 the denominator is not an RSRP channel quality indicator, but we aren't
10 necessarily agreeing, again, because we don't think it's limited to Patent
11 Owner's construction, that both the numerator and the denominator have to
12 be that RSRP value.

13 JUDGE RAEVSKY: I understand. But under Patent Owner's
14 construction, you'd agree that this does not meet the claim.

15 MR. RODKEY: Yes, Your Honor, under Patent Owner's
16 construction, it does not meet the claim.

17 JUDGE HAMANN: Counsel, this is Judge Hamann. I think earlier
18 you gave, I think, sort of a holistic or a broad overview of how you
19 characterize what claim 1 is sort of directed at, or the invention. Obviously,
20 we looked at the words of the claim, but you sort of, I think, gave a
21 reasonable characterization.

22 I'm trying to understand how this limitation, I guess it's been denoted,
23 1d5, a first proportional sequence corresponds to ratios among the K1
24 channel quality values. How does the limitation really relate to that
25 characterization or, to be frank, any other part of the claim?

26 MR. RODKEY: Sure. So I think we can go to the prosecution history

1 to help understand that, right? And what the prosecution history in Exhibit
2 1002 says is when distinguishing over the prior art, and in another part of the
3 claim, there's a target threshold term, right? And so the Patent Owner, I am
4 in Exhibit 1002 at pages 471 going on to 472, is distinguishing the prior art.

5 And what it says on page 472 is the purpose of the target threshold in
6 the present application and claims is a restriction of the channel quality
7 report, that's what gets sent from the user equipment back to the base station,
8 i.e. to restrict the difference between the largest and smallest channel
9 qualities in the UE report.

10 The '271 Patent also says that the whole purpose of the invention is to
11 provide these proportional signal strengths so that the base station is
12 transmitting on a way of calculating the strongest signals. Petitioner's expert
13 has testified when explaining motivation to combine and expectation of
14 success for the Liu and Park references that when you have multiple signals
15 transmitting data like this, again, this is MIMO, right? Multiple input,
16 multiple output. It's multiple antennas to multiple antennas.

17 So we have in the data transmission that comes after the claim ends,
18 different signals being transmitted for that data. When all of those are
19 strong, you get better data throughput. When you have one strong one and
20 four weak ones, you get worse data input. So this is just one way to measure
21 the stronger signals. That's what the sequence is.

22 But as far as how it relates to the claim, that's exactly what Park is
23 doing. You're running down the line of all of your received signals to figure
24 out which ones are strongly received. That's one of Park's terms. And you
25 do that by figuring out, based on the division, which ones are above a
26 threshold.

1 JUDGE HAMANN: Doesn't claim 1 relate that threshold to the first
2 channel, the second channel characterization at the end that comes after this
3 limitation? I don't believe the threshold is directly tied to the 1d5 limitation.

4 MR. RODKEY: The threshold is not directly tied to the 1d5
5 limitation. But the parties have been treating the claim as encompassing the
6 option that when you take this proportional sequence, the entire point is to
7 find those that are above the threshold. That's what the '271 Patent says.
8 And I'll get you a quote if you bear with me, Your Honor.

9 JUDGE HAMANN: If you are referring to parts of the specification,
10 I'm familiar with that. I'm just trying to --

11 MR. RODKEY: Okay.

12 JUDGE HAMANN: To a certain degree, this limitation seems a little
13 out of place in the claim. Yet, as you said, the parties are just sort of treating
14 it as tethered to other aspects of the claim. And I was just trying to
15 understand that better.

16 MR. RODKEY: Yeah, and I think it can relate to other aspects.
17 Again, this is one of those -- the claim covers the proportional sequence
18 being used to figure out which ones are above the threshold. We know that
19 from the specification and the prosecution history. Are there other things
20 that are covered by the claim or maybe those two things are untethered from
21 one another? I don't think we need to resolve that issue, whether it's broader
22 than that or not.

23 JUDGE HAMANN: Thank you.

24 MR. RODKEY: Are there any other questions about the Liu and Park
25 combination with respect to 1d5? If not, I'll move on to Kim. Turning to
26 slide 37 of Petitioner's demonstratives, it's the same for Kim. So Kim

1 receives a number of CSI-RS signals, as we've talked about. And then on
2 slide 37, we have two excerpts from Kim, one from paragraph 136 and one
3 from paragraph 149.

4 And both of these describe, again, exactly what Patent Owner was
5 talking about in its construction, a ratio or a measurement report value of the
6 -- and I'm reading from paragraph 136 right now, the measurement report
7 value for the nth CSI-RS being defined as the ratio, the division, of the n-th
8 CSI-RS average received, Rx is a received designation, received power level
9 to the best CSI-RS average Rx received power level. So one received power
10 divided by the best received power.

11 Average received power level is RSRP. It's just another way of
12 saying it, and that is, again, shown on slide 37 in undisputed testimony from
13 Petitioner's expert, Dr. Kakaes, at the 747 IPR Exhibit 1003, paragraph 132.
14 Kim is even more explicit about this in paragraph 149.

15 In 149, it says the UE, user equipment, may report not only the
16 indexes of a maximum of M CSI-RSes, the RSRP ratio, and now it's real
17 clear what it means by RSRP ratio. $RSRP_n$ divided by the maximum
18 RSRP, of which is higher than a predetermined threshold.

19 So again, it reports those after going through each of the received
20 signal RSRPs and dividing by the best, it sends back exactly as what the '271
21 Patent is trying to accomplish, those that are above a particular threshold
22 based on that division. And again, that covers Patent Owner's construction.

23 JUDGE RAEVSKY: So just so I understand a little better, when
24 you're talking about sequence and mapping to a sequence in the prior art,
25 you're looking at a collection of values and saying that collection of values
26 constitutes the sequence, is that correct?

1 MR. RODKEY: That's correct. So as each of -- the Park reference
2 that we saw in figure 12 goes down the line from Port 0 to Port 31 and
3 divides by the maximum, that creates the sequence of ratios trying to figure
4 out which ones are above the threshold. Kim does the same thing.

5 JUDGE RAEVSKY: I'm not sure if Patent Owner is emphasizing
6 this, but they do it in their main brief on page 15 give several definitions of
7 the term sequence, one of which refers to an ordering. So is it your position
8 that there's an ordering in the prior art or is there no evidence for that?

9 MR. RODKEY: So, yeah. So let's go back to first Patent Owner's
10 definition and then we'll spend some time on the ordering question. So I
11 think it's important to note that although Patent Owner put those dictionary
12 definitions in, they never actually discussed those dictionary definitions.
13 Their construction actually says a sequence. It doesn't say what that
14 sequence is.

15 But to your point, Judge Raevsky, yes, there is an ordering in the prior
16 art and that's what we talked about in Park first, and then I'll turn to Kim in a
17 moment. Park takes this aligned RSRP set in figure 12 and divides all of
18 those by the maximum to figure out the strongly received ones. So that
19 creates a sequence of ratios when you take Port 0 divided by Port 13, Port 1
20 divided by Port 13, Port 2 divided by Port 13.

21 JUDGE RAEVSKY: So I see that it's a comparison to the max and a
22 threshold, but I don't see any ordering. Can you help me see what I'm
23 missing?

24 MR. RODKEY: Sure. Port 0 to Port 31 in figure 12 is an order of the
25 RSRP values.

26 JUDGE RAEVSKY: Now I see what you're saying.

1 MR. RODKEY: Yeah. It just goes down the line, Port 0, Port 1, Port
2 2, Port 3, Port 4, et cetera.

3 JUDGE RAEVSKY: I expected to see an ordering of largest to
4 smallest, but you're saying the ordering is the antenna port.

5 MR. RODKEY: The ordering is the antenna port and that makes
6 sense because you're measuring those ports coming in, right? And then once
7 you've collected all that data, it's easiest to keep it in the order it comes in.
8 Kim is the same and we know that from, again, paragraph 136 and 149
9 where it talks about dividing the n-th port, right? Either Port 1, Port 2
10 divided by the maximum, the highest port value. So it does it by port
11 number, not necessarily ranking of signal strength.

12 JUDGE RAEVSKY: Thank you.

13 MR. RODKEY: And if there are no other questions on the merits, I
14 do just want to spend a few minutes talking about why Petitioner's declarant,
15 Mr. Gomez, is not qualified as an expert. I know this has come up in other
16 proceedings, but we'd like to maintain the record here. So the parties have
17 competing definitions for the person of ordinary skill in the art.

18 One thing that we both agree on is that in one way to satisfy person of
19 ordinary skill in the art, you can have a master's degree in electrical
20 engineering with at least two years of experience working with
21 telecommunication systems. Where the parties differ is that Petitioner
22 would require MIMO experience for the declarant, whereas Patent Owner
23 excludes that MIMO experience and allows for any telecommunication
24 system experience.

25 The problem is we know the '271 Patent is directed towards MIMO.
26 It's kind of the core, it's in the technical background, it's in the related art

1 description. All of this is about sending information from multiple antenna
2 ports, and receiving them, and sending them back. Any telecommunications
3 experience, right, if you're designing a power inverter, that's not going to be
4 the same field as the '271 Patent.

5 And so what we know is that Petitioner's expert doesn't have a
6 master's degree. He can't meet either of these definitions because he only
7 has a bachelor's degree in electrical engineering. He also doesn't have any
8 MIMO experience.

9 He was asked specifically about do you have experience with 4G?
10 No. Do you have experience with 5G? No. And then asked if he's ever
11 worked on MIMO, he says I haven't actually specifically built any product
12 related to that technology. So he doesn't have that MIMO experience. He
13 can't be a qualified expert.

14 JUDGE HAMANN: Counsel, this is Judge Hamann. I'm referring to
15 the petition page 9, which is the recitation of ordinary skill. I got a couple, I
16 guess, comments and questions about that.

17 MR. RODKEY: Sure.

18 JUDGE HAMANN: The way it's drafted, it's been submitted to the
19 board, is experience working with telecommunications systems, comma,
20 including multiple output MIMO technology. To my reading, that doesn't
21 necessarily mean that those two years of experience need to be fully MIMO
22 for those two years. It's just an aspect of it. Mr. Gomez certainly has
23 telecom experience.

24 I'd also point out that it doesn't say massive MIMO. It doesn't say
25 MIMO in the context of 4G, for example, or LTE, or anything else. As
26 you're aware, MIMO's been around a long time, even if it's just in the

1 simplest form to deal with multipath fading or something else to help
2 diversity. So I'm trying to understand why Petitioner is sort of baking these
3 arguments in about sort of a particular massive MIMO experience in the 4G
4 context.

5 MR. RODKEY: Yeah. Again, it doesn't say massive MIMO. You're
6 correct on that. But it does have to be some MIMO experience. And he
7 doesn't have any MIMO experience. He says, I haven't actually built those
8 technologies when asked specifically about MIMO. But you need some
9 MIMO experience. And I guess I would analogize this to the Federal
10 Circuit's Kyocera v. ITC decision from 2022, where they said that an expert
11 has to meet the definition of a person of ordinary skill in the art.

12 And in that case, the expert, or purported expert, had worked with
13 power fastener drivers for a number of years. I think it was over a decade.
14 But the definition required power nailers, so nail guns, essentially. And he'd
15 never worked with a nail gun despite his years and years of experience with
16 very similar technology, in fact, in the same genre. It's the same here.

17 You need the MIMO experience because this is about those signals
18 being sent from a MIMO base station to a MIMO user equipment and back,
19 and how that interplay selects the best of the signals being transmitted. By
20 having adjacent experience, he's missing that core that's necessary, just like
21 in Kyocera, that expert was missing that core for power nailers, even though
22 he had power fastener driver experience for years.

23 JUDGE HAMANN: Thank you.

24 JUDGE ARBES: Counsel, if you can go to slide 42 for a second. I
25 see the testimony you're pointing there, that he hasn't actually specifically
26 built a product related to those technologies. But the portion of the

1 testimony before that, where he says that he's familiar with all of the
2 technologies involved in MIMO, is that not enough? In your view, although
3 he has not specifically built a product, is that not some experience with the
4 technology that would be sufficient to at least make him a person of ordinary
5 skill in the art?

6 MR. RODKEY: No, because both of the definitions are part of the
7 work experience, not just knowledge.

8 JUDGE ARBES: Does your definition mean --

9 MR. RODKEY: I'm familiar with the technology in MIMO, but I'm
10 clearly not an expert.

11 JUDGE ARBES: But he does have work experience in the
12 telecommunications industry in general, 35 years of experience, I believe.
13 Why is the fact that he has not specifically built a product, why does that
14 mean that he is not a person of ordinary skill in the art?

15 MR. RODKEY: So let's go back to the definition, which is two years
16 of work experience, or two years of experience working with
17 telecommunication systems, including MIMO technology. So two years of
18 experience working with MIMO technology. He says, essentially, I've heard
19 of MIMO, not I've worked with MIMO. And you need to have worked with
20 MIMO in order to meet the definition of a person of ordinary skill.

21 JUDGE ARBES: Okay. Maybe I'm misreading your definition then,
22 that included -- it said at least two years of experience working with
23 telecommunication systems, including MIMO technology. So your view is
24 that that's at least two years of experience working with telecommunication
25 systems in general, and at least two years of experience working with MIMO
26 technology. Is that how you're reading that?

1 MR. RODKEY: No. Of those two years of telecom, some of it has to
2 be working with MIMO.

3 JUDGE ARBES: Some of it.

4 MR. RODKEY: Right.

5 JUDGE ARBES: Okay.

6 MR. RODKEY: I don't think it needs to be the full two years, but
7 some of it. But what we know is he hasn't done any. He's never actually
8 worked with that technology.

9 JUDGE ARBES: Well, he hasn't built a product. But has he worked -
10 - he's familiar with the technology?

11 MR. RODKEY: I would say familiarity, he hasn't pointed to the work
12 experience which is necessary. I've heard of MIMO, but I've not worked
13 with MIMO. If there are no other questions, I'll reserve the rest of my time.

14 JUDGE RAEVSKY: Thank you, Mr. Rodkey. You have about 29
15 minutes remaining.

16 MR. OSTLING: Good Morning, Your Honors. Jacob Ostling for
17 Patent Owner.

18 JUDGE RAEVSKY: One moment, let me set your time for you. It
19 was 15 minutes, right, for rebuttal?

20 MR. OSTLING: Yes, sir.

21 JUDGE RAEVSKY: Thank you. All right, now you may begin, Mr.
22 Ostling.

23 MR. OSTLING: Thank you, and I know that Your Honors had
24 mentioned a break, but I am happy to proceed now if that's good.

25 JUDGE RAEVSKY: Thank you. While I was setting the clock, I
26 meant to say since we went a little short, then I think we'll go ahead and

1 jump right into your time if that's okay?

2 MR. OSTLING: Perfect. So, Your Honors, my argument will focus
3 on two main points common to both proceedings, and that is that with
4 respect to the first limitation, K antenna port groups of the base station are
5 used to transmit the first wireless signal. The lack of disclosure of antenna
6 port groups, plural, that transmit any first wireless signal, singular.

7 And second, with respect to the limitation, the proportional sequence
8 corresponds to a ratio of ratios among K1 channel quality values. Really,
9 the lack of disclosure of any sequence, which corresponds to a ratio or ratios
10 among the K1 channel quality values.

11 So, jumping in to the claim construction issue of K antenna port
12 groups of the first base station are used to transmit the first wireless signal.
13 The dispute here really centers on whether Petitioner has identified any
14 single first wireless signal that is transmitted by multiple antenna port
15 groups.

16 And Patent Owner has proposed that this term be construed as K
17 antenna port groups of the base station are used -- excuse me, strike that. K
18 groups of antenna ports of the base station are used to collectively transmit
19 the first wireless signal.

20 And the use of the word collectively there is really intended to give
21 meaning to the plain claim language, that multiple K antenna port groups are
22 used to transmit the signal. So we disagree that this injects any ambiguity.
23 This is really there to resolve the dispute that the parties are having over this
24 term.

25 JUDGE RAEVSKY: I think part of the problem we're having with
26 the ambiguity is the word collectively itself seems unclear. I don't see

1 anything that really explains what you mean by collectively. Could you
2 clarify this for us?

3 MR. OSTLING: Yes. So collectively here means that we know that
4 there are at least two groups of antenna ports. This is just to clarify that both
5 groups of antenna ports have to be used in some way to transmit the first
6 wireless signal. So if you have two or three or four groups of antenna ports,
7 the claim limitation is not satisfied if you're only using one of those groups
8 to transmit one first wireless signal. It has to be that all of the groups of
9 antenna ports are used to transmit that first wireless signal.

10 JUDGE HAMANN: Counsel, this sort of begs the question of what
11 Patent Owner intends is the first wireless signal, and sort of as the discussion
12 we had with Petitioner, that seems to be a large part of the dispute. In the
13 simplest form, I think your argument, at least as to the first part. In the
14 simplest form, I don't think Patent Owner disagrees that a group can have
15 one port. And I think Patent Owner says there needs to be at least two
16 groups, so we could have theoretically just two separate ports, maybe for
17 two groups, one port a piece, for example.

18 But what is the first wireless signal? For example, it seems that
19 Petitioner would contend that each group has its own reference signal, for
20 example, its own CSI-RS, which makes some sense since they're different
21 antenna port groups. Why isn't that -- those, I think as the spec was pointing
22 to, comprise the first wireless signal. There's two separate reference signals.

23 MR. OSTLING: So, Your Honor, I think that -- and this gets into a
24 little bit of the next argument that I was going to make. But just to preview
25 that, Petitioner, on reply, raised a slew of new arguments under the ambit of
26 the CSI-RS burst, and part of that seems to be assuming that certain

1 embodiments discussed in the specification are within the scope of that
2 claim. And it's our position, and we want to make this very clear, that a first
3 wireless signal is an individual signal.

4 So in the context of a reference signal, we would say that that is a
5 reference signal being transmitted.

6 JUDGE HAMANN: So Patent Owner is suggesting that the same
7 reference signal needs to be transmitted for each group?

8 MR. OSTLING: Yes, and that's not to say that you could not have a
9 second wireless signal, that is, a second reference signal being transmitted
10 across the groups. But in the context of the specification, these are signals
11 that are being processed by a MIMO processor before they are sent to the
12 antennas to be transmitted. And here, a first wireless signal, or the first
13 wireless signal, clearly refers to an individual signal.

14 JUDGE RAEVSKY: When you say that, it almost sounds like we're
15 back in the days of BPSK, binary phase-shift keying, where you've got a
16 zero and a one just 180 degrees ahead of phase, and you're just sending zeros
17 and ones over a single carrier, but this is more complicated. So are you
18 saying that the first wireless signal does not cover the CSI-RS burst
19 disclosed in the specification?

20 MR. OSTLING: I mean, it would include it, but it doesn't require it. I
21 think that the CSI-RS burst would include a number of CSI-RS signals being
22 transmitted, and we're looking here at, I mean, what is essentially a specific
23 CSI-RS signal being transmitted from at least two antenna port groups.

24 JUDGE RAEVSKY: So since it includes a CSI-RS, and why does --
25 and I'm getting ahead of myself in your presentation because you just want
26 to talk about claim construction. But just briefly, why would a reference of

1 record that discloses CSI-RS not disclose the first wireless signal?

2 MR. OSTLING: Well, the issue is an individual CSI-RS signal is a
3 first wireless signal. However, what these references don't disclose is any
4 instance where multiple groups of antenna ports, or really, multiple antenna
5 ports, period, are being used to transmit a CSI-RS signal.

6 JUDGE RAEVSKY: Are you saying that that CSI-RS, the same one,
7 has to be transmitted over each antenna port group?

8 MR. OSTLING: Yes, collectively together. However you would like
9 to phrase it, you have to use more than one antenna port group to transmit
10 that signal.

11 JUDGE RAEVSKY: So collectively means like duplicating that same
12 signal in your mind over each of those port groups?

13 MR. OSTLING: I think that that is likely one way that it is going to
14 be done, in the context of massively MIMO beam forming. But, yes, Your
15 Honor.

16 JUDGE RAEVSKY: Is there support for that in the specification, for
17 that interpretation?

18 MR. OSTLING: I think that under embodiments 4 and 5 discussed in
19 the specification, there is a fairly lengthy discussion of how you use the
20 MIMO processor in this context of transmitting the signals across antenna
21 port groups. Yes, Your Honor.

22 JUDGE RAEVSKY: It would be interesting to see on rebuttal if you
23 could point to a specific pinpoint for us. Unless you have it now.

24 MR. OSTLING: I will point to that on rebuttal.

25 JUDGE HAMANN: And, counsel, I want to slightly change the
26 focus, but keep it in the same vein in what we're discussing. I do think what

1 you're saying is, for example, if you have just two port groups, a port each,
2 they would need to have the same CSI-RS to be the first wireless signal. So
3 that's my understanding of the argument. I think that's generally fair, is that
4 correct?

5 MR. OSTLING: Your Honor, I wouldn't exclude that you could
6 break up the single CSI-RS across both port groups, but, yes, in essence, you
7 need an individual signal, I mean, not just a carrier or resource block
8 generally, which is -- I'll get to that, but it seems like that's sort of a new
9 claim construction argument that Petitioner is raising here.

10 It has to be a signal that is being transmitted across those antenna port
11 groups, whether you're splitting it up and dividing it between them, or
12 whether you're duplicating it across them and adding some directional
13 informing element to it.

14 JUDGE HAMANN: But the signal's meant to represent, to be a
15 reference signal, to represent the channel or the path for that particular port
16 group, right?

17 MR. OSTLING: Yes, Your Honor, that's correct.

18 JUDGE HAMANN: But if we have two different port groups, then
19 we have two different paths for those port groups?

20 MR. OSTLING: I think that's possible, Your Honor, but I think that
21 in that case, if you're looking at two CSI-RS signals corresponding with two
22 port groups as claimed here, what you really need is both of the -- I mean,
23 those would be different wireless signals. Only one of them, from the
24 perspective of the claim here, is the first wireless signal.

25 JUDGE HAMANN: Let me try it this way then. What's the
26 difference, if anything, between the port groups in claim 1 if they have the

1 same reference signal, the same singular first wireless signal?

2 MR. OSTLING: I think that what the patent contemplates is that
3 there may be different reference signals corresponding to different port
4 groups, but that you're using the port groups collectively or together to
5 transmit each of the reference signals. At least that's what's claimed here.

6 JUDGE HAMANN: That response seems to have said that you'd
7 have different reference signals, but yet, from my understanding of your
8 earlier argument, it has to be the same reference signal that's transmitted to
9 be the first wireless signal.

10 MR. OSTLING: It has to be. If you have two antenna port groups
11 and two reference signals, what the claim here would require is that some
12 reference signal, if that is the first wireless signal, is being transmitted by at
13 least two of the port groups.

14 JUDGE HAMANN: The same signal?

15 MR. OSTLING: Yes.

16 JUDGE HAMANN: I understand that.

17 MR. OSTLING: Thank you, Your Honor.

18 JUDGE ARBES: Counsel, can I ask about some of the language in
19 the specification that the Petitioner pointed to from their slide 21, in
20 particular column 3 of the patent that says, column 3, line 25, the first
21 wireless signal is composed of the K reference signal groups.

22 Petitioner made the argument that that language and a number of other
23 places in the specification, that the claim encompasses that arrangement
24 where there are multiple reference signals that make up the first wireless
25 signal. Do you disagree with that, and is that not the ordinary understanding
26 that the claim should at least encompass that? You can exclude that, but it

1 has to be clear. Have you really excluded that arrangement in the
2 specification?

3 MR. OSTLING: Your Honor, my first response would be that today
4 is really the first time we're seeing that argument. That really seems to be a
5 step beyond even the CSI-RS argument that was in their reply papers. But
6 on the substance there, I think there's just nothing in the record to support
7 that that particular embodiment is a required part of claim 1. And on the
8 other hand, I think when claim 1 is drafted, it's very clear that the first
9 wireless signal is an individual signal.

10 JUDGE ARBES: But the language at column 3, it uses almost the
11 exact same terminology, that the first wireless signal is composed of the K
12 reference signal groups. That seems to mirror, in large respect, the language
13 that's used in the claim. I understand your point that it's maybe not required,
14 but why does the claim not encompass that embodiment?

15 MR. OSTLING: Well, Your Honor, I think that this is just -- the
16 claim as written, the whole structure of the claim is looking at a massively
17 MIMO beam forming embodiment, where you are really -- I mean, it is a
18 requirement that you have multiple transmitters in order to add the
19 directional component to the beam. So you are necessarily using at least two
20 groups of antenna ports for each transmission.

21 JUDGE ARBES: Maybe we can come back to that on reply and
22 rebuttal.

23 MR. OSTLING: Sure. Thank you, Your Honor. So to take a step
24 back to just -- I mean, I think that that essentially covers Patent Owner's
25 claim construction. This is -- at rock bottom, this claim requires using
26 multiple groups of transmitters to transmit a single individual first wireless

1 signal.

2 Moving on to the '571 petition in Liu, the petition really advanced two
3 arguments, and notably, nowhere in the petition did they even use the words
4 CSI-RS signal. That only came into the picture on reply. But, first off,
5 Petitioner argues that M antenna ports in Liu transmitting M signals satisfies
6 this limitation. And again, there is just no disclosure in Liu of multiple
7 antenna ports or antenna port groups transmitting any individual signal.

8 JUDGE RAEVSKY: I have a question about this, because in our
9 institution decision, we noted that Petitioner had pointed to disclosure in the
10 specification of the challenge patent, including, I believe, column 13, line
11 64, where it says that in one embodiment, the antenna port group includes
12 only one antenna port. And I was surprised to see no discussion of this in
13 your claim construction that says there has to be multiple ports and multiple
14 groups. Can you help me understand?

15 MR. OSTLING: Your Honor, so we're not disputing that a group can
16 be a group of one. The petition and the argument here is a little different.
17 It's that even if a group is a group of one, there have to be multiple groups.

18 JUDGE RAEVSKY: So, if a group is a group of one, and there are
19 multiple antenna ports in the reference, doesn't that disclose multiple
20 groups?

21 MR. OSTLING: The issue with the reference is that it never discloses
22 -- it discloses a one-to-one mapping of antenna ports to signals. It does not
23 disclose multiple antenna port groups being used to transmit the same signal.

24 JUDGE RAEVSKY: So you're not really distinguishing based on the
25 first part of your claim construction, where you say the K groups of antenna
26 ports have to be multiple ports in multiple groups. You're really focusing

1 your argument on that term collectively.

2 MR. OSTLING: Yes, Your Honor.

3 JUDGE RAEVSKY: Okay. I understand.

4 JUDGE HAMANN: Counsel, I just wanted to make sure it's clear for
5 the record and in my mind, at times you use the phrase individual signal,
6 other times you use the phrase same signal. Are they synonymous, or what
7 do you mean by individual signal?

8 MR. OSTLING: I've been using those terms synonymously, Your
9 Honor.

10 JUDGE HAMANN: Thank you.

11 MR. OSTLING: So that's really the first argument over Liu. The
12 second argument over Liu, which suffers from a couple of deficiencies, is
13 what I'll refer to as the code book argument, that configuration of a code
14 book for antenna ports in Liu somehow disclosed this limitation. But the
15 problems with that are that firstly, the codebook configuration that Liu
16 discusses is on the user equipment side, not the base station at all. And
17 secondly, there's no transmission associated with that configuration that Liu
18 discloses.

19 For all we know in Liu, you could have one antenna port that's
20 sending all the codebook information. Liu is just silent on that, and so is the
21 petition. So to get into this CSI-RS burst issue, this is a term that appeared
22 for the first time in Petitioner's reply after the deposition of their expert. The
23 '571 petition does not use the term CSI-RS burst. It doesn't even refer to a
24 CSI-RS signal in the context of this limitation. Neither of the cited
25 references use the term CSI-RS burst.

26 Dr. Kakaes's declaration doesn't use the term CSI-RS burst at all.

1 What we really have here is that Petitioner saw that the '271 Patent
2 specification uses the term CSI-RS burst in connection with some
3 embodiments, and is trying to work backwards from that and say that
4 whatever that is, is the same thing that's in these references.

5 JUDGE RAEVSKY: Just to clarify, you're talking mostly about the
6 '571 petition, correct? Because I believe in '747, the petition did mention
7 CSI-RS.

8 MR. OSTLING: Yes. Your Honor, I believe that the petition itself
9 does not reference CSI-RS burst in the '747 petition.

10 JUDGE RAEVSKY: I understand.

11 MR. OSTLING: And notably, in that petition, Dr. Kakaes's
12 declaration does refer to CSI-RS burst in the context of the first signaling
13 limitation. He doesn't refer to that anywhere for the first wireless signal.

14 JUDGE RAEVSKY: Okay. And you may be getting to this, but I
15 didn't see it in your surreply, so I'll ask. What's your position on Petitioner's
16 claim that the Axonics decision permits them to make this argument in
17 response to your claim construction?

18 MR. OSTLING: Your Honor, I think this is just a very different
19 situation from Axonics. Here, the dispute is really over the plain meaning of
20 the claim term. I mean, it's our position that this construction is only
21 necessary because of really Petitioner's attempt to read out the plural groups
22 used to transmit the first wireless signal. So this really comes down to a
23 dispute over what is required on the face of the limitation. And this
24 argument was totally foreseeable to Petitioner.

25 This is not an issue where we're really raising any substantive new
26 requirements for this claim term. This is what is already required on the face

1 of the claim term, and the point of our construction is just to make sure that
2 what is required on the face of the claim term is clearly being required when
3 looking at the petition.

4 JUDGE RAEVSKY: No question. You can proceed.

5 MR. OSTLING: Thank you, Your Honor. So with the CSI-RS first
6 argument, Petitioner essentially adopted the position for the first time that
7 multiple CSI-RS signals are part of some first wireless signal. But Petitioner
8 doesn't offer any competent or timely evidence for that. That argument just
9 comes up for the first time in the reply.

10 And for that proposition, beyond their citation to the '271 Patents, the
11 argument is just totally based on conclusory testimony from Dr. Kakaes's
12 deposition. Moreover, there's no reason to believe that a burst of CSI-RS
13 information in Liu would happen over multiple antenna port groups. The
14 entire purpose of Liu is to really pick the best antenna port and use that one.

15 So there's just no evidence in the record that a CSI-RS burst is
16 disclosed in Liu at all, or that that would actually satisfy what's claimed
17 here.

18 And I also want to talk about what appears to be another new
19 argument that was made for the first time today. And that is Petitioner now
20 appears to be advocating for some claim construction, implicit or otherwise,
21 that a first wireless signal would include everything on a carrier or
22 everything in a resource block. And again, that's just not in the papers. And
23 there's no evidence in the record to find that.

24 So turning now to the '747 petition. Petitioner has essentially a
25 similar set of arguments. The first argument is that this is somehow
26 disclosed by mapping CSI-RS signals to antenna ports or antenna port

1 groups on a one-to-one basis. And again, there's just nothing to support that
2 multiple antenna port groups transmit the same signal, an individual first
3 wireless signal.

4 Petitioner also raises an alternative argument regarding configuration
5 of CSI-RS information with respect to a resource. And again, similarly to
6 the '571, there's just no disclosure of transmission in connection with that
7 configuration. The petition doesn't point to any.

8 And then finally, Petitioner argues that the combination of Kim in
9 view of Chen discloses this. But the disclosure in Chen is really duplicative
10 of the disclosure in Kim here. It's another one-to-one mapping. And there's
11 just nothing to support that Chen remedies any of the issues in Kim. It
12 doesn't somehow take what is a one-to-one mapping and turn it into a system
13 where you have multiple antenna port groups transmitting an individual first
14 wireless signal.

15 JUDGE RAEVSKY: One question I have. I'm right now looking at
16 the surreply, pages 7 and 8 of the '571 case, is you say that Petitioner
17 miscasts your argument as relying entirely on his claim construction, then
18 that's incorrect. And then you go on to say that the term groups requires on
19 its face more than one group and they're all used to transmit the wireless
20 signal, which if I understand that correctly is really getting at your
21 collectively construction.

22 MR. OSTLING: Yes, Your Honor.

23 JUDGE RAEVSKY: So it seems to me that your argument does rely
24 entirely on your claim construction. Do you disagree?

25 MR. OSTLING: Well, I disagree, Your Honor, in that the full claim
26 term is K antenna port groups. Other limitations in the claim require that K

1 is at least two. So on its face, the claim requires at least two antenna port
2 groups of the base station are used to transmit the first wireless signal. I
3 mean, we are trying to make very clear that when you say you're using at
4 least two antenna port groups, you can't satisfy that limitation if you're only
5 pointing to one antenna port group that transmits the signal.

6 JUDGE ARBES: But counsel, that relies on what you view as the
7 signal. If Petitioner has argued, I believe, that the first wireless signal can be
8 composed of multiple things, if that is the case -- I believe you agreed at one
9 point that the signal can be broken up. If that is the case, are not all of the K
10 antenna port groups used if I send one signal that is broken up into different
11 parts?

12 MR. OSTLING: If you are actually breaking up an individual signal
13 into different parts, yes. But I don't think that is what Petitioner has
14 identified here with respect to Kim of just pointing to individual CSI-RS
15 signals mapped on a one-to-one basis.

16 JUDGE ARBES: Okay. So why does Kim not teach that
17 arrangement? Can you explain that a bit more?

18 MR. OSTLING: So in Kim, I mean, and really this is outside.
19 Firstly, Kim is not in the context of a massive MIMO beam forming system.
20 So all that Kim says is that you have some number of antenna port groups, n ,
21 and you have n CSI-RS signals. Kim doesn't give any more specific
22 disclosure on how you're transmitting those. Petitioner adopted the position
23 that it's a one-to-one transmission.

24 But in that context, and I mean, Petitioner has not proposed a
25 competing claim construction for first wireless signal to encompass that. I
26 mean, I think that there might have been sort of an implicit claim

1 construction argument based on a carrier or a resource that was made for the
2 first time today. But there's just nothing in the record to support that a first
3 wireless signal is so broad as to include all those distinct CSI-RS signals in
4 Kim.

5 JUDGE RAEVSKY: So is the dispute then really over how to
6 interpret the term first wireless signal?

7 MR. OSTLING: I mean, I think it's intertwined with the issue of how
8 are you using or how are collectively multiple antenna port groups
9 transmitting that signal. But part of the issue there I think is what is the first
10 wireless signal? And I think the issue that we're now seeing is that stepping
11 beyond the CSI-RS first argument, Petitioner is now advocating for a
12 construction that the first wireless signal can include everything. And I just
13 don't think that's a reasonable interpretation of the first wireless signal,
14 singular.

15 JUDGE RAEVSKY: So you say singular, but I'll pose the same
16 question I did to Petitioner. Under Federal Circuit case law, a first wireless
17 signal would be presumptively one or more first wireless signals. So do you
18 agree or disagree? And if you agree, how does the prior art not teach one or
19 more first wireless signals?

20 MR. OSTLING: As an initial matter, I think that for this claim
21 limitation, it's not saying just a wireless signal. It is referring to the first
22 wireless signal, that kind of identity here. I mean, it's entirely possible that
23 you could have multiple first wireless signals, but as claimed here, it
24 requires the first wireless signal, which denotes a singular signal.

25 JUDGE RAEVSKY: But if “a” means one or more, and “the” is
26 referring for antecedent basis back to one or more, wouldn't “the” mean one

1 or more?

2 MR. OSTLING: I think that even if “a” first wireless signal,
3 antecedent, could include one or more, I think that the way that the first
4 wireless signal is claimed specifies one. However, even under the
5 alternative interpretation, you still require that multiple antenna port groups
6 are transmitting the first wireless signal that has the same identity. And it's
7 just that they haven't even gotten to that point in these references, or at least
8 there's no argument to support that in the petitions.

9 JUDGE RAEVSKY: I understand.

10 MR. OSTLING: So the remaining arguments in the '747 are very
11 similar to the '571. Petitioner raises essentially the same new CSI-RS burst
12 argument. I do want to point out that on reply at page 10, the reply refers to
13 Liu, not to Kim. So I think it's just very clear that this burst argument is not
14 supported in those references. I mean, they're pointing to references outside
15 of the petition, or at least that they've not relied on in the grounds for the
16 petition.

17 You know, to the extent that Petitioner is now calling for some
18 implicit broadening construction of first wireless signal, we just don't
19 believe that it's supported or timely on the record here. So, unless Your
20 Honors have any other questions with respect to this claim term, I'll move to
21 the proportional sequence term.

22 JUDGE RAEVSKY: Please proceed.

23 MR. OSTLING: Thank you, Your Honor.

24 JUDGE HAMANN: And counsel, if you could identify a slide
25 number and refer to the additional slides, that would make it easier and
26 clearer for the record.

1 MR. OSTLING: Thank you, Your Honor.

2 JUDGE HAMANN: Thank you.

3 MR. OSTLING: So moving on to Patent Owner's slide 22. I will first
4 say I'm going to focus today on really a threshold issue, which is whether
5 Petitioner has actually identified anything that constitutes a sequence in any
6 of the references. I'll stand on the papers for all the other subsidiary
7 arguments, unless Your Honors have any specific questions about those.

8 JUDGE HAMANN: Just before you dive into this particular
9 argument, you don't have to address it right now, but I have still sort of the
10 similar question I asked the petitioner. How does this limitation sort of fit in
11 with the rest of the claim? It seems a little bit untethered, although I think
12 Petitioner characterized it as the parties have treated it a certain way. I
13 certainly don't mean to misphrase what was exactly said. Can you sort of
14 talk to what this limitation is in the context of claim 1?

15 MR. OSTLING: Yes, Your Honor. So, in the context of claim 1, we
16 read this really as the sequence is the way that the channel quality report is
17 sent from the user equipment to the base station, and that's part of why it's
18 important that it's a sequence. That's minimizing the signal overhead that
19 you're using.

20 JUDGE HAMANN: How does it relate, if at all, to the last part of
21 claim 1 that gets into the discussion of the first channel, the second channel,
22 and the best and the worst in that type of comparison?

23 MR. OSTLING: Your Honor, let me pull up the recitation of claim 1
24 on slide 2. So I think that it relates to the extent that the sequence
25 corresponds with the channel quality values, and that is essentially the report
26 going from the UE to the base station of, at least in part, how the selection of

1 channels is happening. Does that answer your question, Your Honor?

2 JUDGE HAMANN: Thank you.

3 MR. OSTLING: Reverting back, Your Honor, the issue -- and I'm
4 going to pull up Patent Owners' proposed construction on slide 7. We
5 explain in that proposed construction that a POSITA would understand that
6 the term sequence in this claim is being used consistent with its plain and
7 ordinary meaning, which requires some ordered arrangement of things at
8 bare minimum. And both of the petitions really have the same deficiency
9 here.

10 Without even needing to get into the arguments over what the ratios
11 are between, Petitioners show at most that you have a collection of some
12 numbers, but they don't show that those numbers are arranged in a sequence.

13 JUDGE RAEVSKY: I'll just point out, it seems that the word ordered
14 snuck in to your presentation. I don't see it in the slide. I don't remember
15 you focusing on the ordering. Is that a position you're taking now?

16 MR. OSTLING: Well, Your Honor, I think that the first definition
17 that we pointed to here is an arrangement of two or more things, entities, or
18 events in a given order. And the second definition refers to a successive
19 order. Our intent was to clarify that that is at least a requirement of the plain
20 ordinary meaning of the term sequence.

21 JUDGE RAEVSKY: Okay. So we heard from Petitioner's counsel
22 that there is an order in the references. So it would be helpful to hear your
23 take on the positions they advanced today.

24 MR. OSTLING: Thank you, Your Honor. So I'll first say that, to my
25 knowledge, Petitioner never disclosed the position that any collection of
26 ratios that they point to in their papers has any order. Today they pointed to

1 a figure where there is some mapping of ratios to antenna ports by an
2 antenna port group. But there's no evidence in this record that when taken as
3 a collection, particularly of the type is going to be transmitted from a UE to
4 a base station, that those things are represented in any order.

5 There might be a correspondence with antenna port groups, but there's
6 just no support for finding that they're ordered based on antenna port groups.

7 JUDGE RAEVSKY: Yes, forgive me for asking the same question in
8 a different way, but I see again on page 16 of the response, and I'm referring
9 to the page numbering in the '571, obviously it's similar in '747. You say
10 that a POSITA would understand that the proportional sequence is a
11 sequence, i.e. arrangement of proportions. And so it doesn't seem to me that
12 your briefing focused on ordering either. And I don't remember seeing an
13 attempt to distinguish the art based on a lack of ordering. Am I
14 misremembering that?

15 MR. OSTLING: Your Honor, I think that this argument was sort of
16 folded in with the proportional sequence. I mean, in our surreply, you can
17 see that we bolded the term proportional sequence I think multiple times,
18 and pointed out that there's just no support for finding that that is in fact
19 what was in the prior art. And, I mean, it was our intent that those
20 arguments were reflecting the claim constructions proposed here, but I
21 apologize if that was not.

22 JUDGE RAEVSKY: Well, let me ask you in a slightly different way.
23 If we just say that a sequence is an arrangement, as proposed on page 16 of
24 your response, would that be sufficient to decide the issues before us?

25 MR. OSTLING: I would suggest an ordered arrangement, Your
26 Honor, because the arrangement has to be in some logical order.

1 JUDGE RAEVSKY: Okay.

2 MR. OSTLING: But I would agree that there is, I mean, whether you
3 characterize it as an arrangement or an ordered arrangement, this issue is not
4 addressed in the petition or the reply.

5 JUDGE RAEVSKY: Okay.

6 JUDGE HAMANN: And counsel, I'm trying to focus on this word
7 sequence, and I'm just looking at claim 1 again. Yeah, obviously claim 1
8 uses K and K1. I think K, in sort of an edge case, can be just two antenna
9 port groups. And I think the claim says that K1 is equal to or less. So if you
10 have two antenna port groups for K and you got one K1, what type of
11 sequence order does the petition need to show? It's just a single K1.

12 MR. OSTLING: Well, Your Honor, in any case, I think that the
13 significance of the sequence to this claim term is that the base station and
14 that we know the order that this report is going. So taking the edge case
15 where you have K1-1, you still need a recognized sequence that the base
16 station is going to understand. In most cases, I think that the base station is
17 going to really need to know. Let's say you have K1 is 8. You need to know
18 when this information is coming in, what information corresponds to what
19 port.

20 JUDGE HAMANN: Thank you.

21 MR. OSTLING: Finally, Your Honor, unless there are any other
22 questions on that point, I would just like to briefly address Mr. Gomez.
23 Petitioner -- let me just say, Mr. Gomez has 35 years of practical engineering
24 experience in telecommunications. He has a bachelor's degree in electrical
25 engineering from Yale. He has direct hands-on experience with OFDM and
26 RF transmissions within the scope of telecoms, which do overlap with my

1 own technology. So under any metric, Mr. Gomez is qualified to opine on
2 the issues here.

3 And I also want to point out that Petitioner's definition of a POSITA is
4 not limited to MIMO technology. It is telecommunications including
5 MIMO. So this is really moving the goalposts after Mr. Gomez submitted
6 his declaration. But under any interpretation of that standard, just the length
7 of Mr. Gomez's work experience gives him sufficient experience to testify
8 here.

9 JUDGE HAMANN: Counsel, if you would agree that Petitioner's
10 recitation of including MIMO, again, I'm probably slightly misphrasing it,
11 certainly conveyed that there needed to be some work experience with
12 MIMO. Is that fair?

13 MR. OSTLING: I interpreted that, and I think the plain reading of
14 that is saying that, clarifying that MIMO is under the umbrella of
15 telecommunications, not exclusive to radio communications. But whichever
16 way you read that term, Mr. Gomez's experience, especially with respect to
17 RF transmissions and OFDM, they overlap with that issue. They give him
18 sufficient experience to testify.

19 And it's really just not relevant that he has not himself built a MIMO
20 product. I mean, he's been in the industry for 35 years, and he's well aware.
21 And I mean, he's testified as an expert on these issues multiple times. So
22 he's more than qualified on MIMO, even if that were a requirement.

23 JUDGE HAMANN: If you were to seek out in the record specific
24 examples of where Mr. Gomez has any aspect relating specifically to
25 MIMO, is that something that's clear? I'm trying to understand exactly
26 what's fully in the record. I recognize some of, you know, obviously, what's

1 been cited, but there may be something I've missed as to that MIMO
2 experience.

3 MR. OSTLING: Your Honor, I don't think that Mr. Gomez's CV uses
4 the term MIMO. But he does describe within the scope of
5 telecommunications work with RF transmissions and OFDM symbols that
6 are very closely related to both MIMO and massively MIMO-informed.

7 JUDGE HAMANN: Thank you.

8 MR. OSTLING: Thank you, Your Honor. And if there aren't any
9 other questions, I will reserve the rest of my time for surrebuttal.

10 JUDGE RAEVSKY: Any other questions?

11 MR. OSTLING: Thank you, Your Honors.

12 JUDGE RAEVSKY: Thank you. So let's go ahead and take a 10-
13 minute break, approximately. And we'll see you shortly.

14 (Whereupon, the above-entitled matter went off the record at 10:49
15 a.m. and resumed at 11:00 a.m.)

16 JUDGE RAEVSKY: Mr. Rodkey, you may begin when you're ready.
17 You have 29 minutes remaining.

18 MR. RODKEY: Thank you, Your Honor. Would it be possible to get
19 the podium back on the screen?

20 JUDGE RAEVSKY: I don't see IT here.

21 MR. RODKEY: If you have the slides in front of you, I can just refer
22 you to the slides. We don't need to have them on the screen at this point.

23 JUDGE RAEVSKY: Sounds good.

24 MR. RODKEY: So I will begin with slide 21 of Petitioner's
25 demonstratives. And I'm just going to take this rebuttal in the order of
26 Patent Owner's arguments for simplicity. I think as Your Honors really

1 recognize, the dispute on 1d1 is really about what is the first wireless signal,
2 not multiple groups. And Patent Owner said that, you know, for the first
3 time today, we've pointed to these excerpts from the slide. But I'd like to
4 read from the, I'm using the '747 -- sorry. Hang on, let's get my paper.

5 The '571 reply brief, but it's identical in '747 as well. Identical in '747.
6 Apex's argument first wrongly assumes that the, quote, first wireless signal
7 cannot comprise multiple signals. But the '271 Patent discloses exactly that.
8 K antenna port groups respectively transmit the first wireless signal by
9 sending K separate reference signals e.g. channels information represents
10 CSI-RS the same as Liu.

11 For example, the '271 Patent explains that, quote, the first wireless
12 signal is composed of the italicized K reference signal groups, end quote,
13 that, quote, are again, italicized, respectively, transmitted through the K
14 antenna port groups. And each, quote, reference signal group may be only
15 one reference signal. The idea that we've never made this argument before
16 is simply wrong.

17 JUDGE ARBES: And counsel, your position is that that argument
18 made in the reply is proper because it was in response to the interpretation
19 offered in the patent owner response?

20 MR. RODKEY: Yes, Your Honor. And that's exactly what Axonics
21 says that we're allowed to do. This is just rebutting Patent Owner's incorrect
22 claim construction. And Patent Owner has, again, despite having this Patent
23 Owner response opportunity, despite having this surrebuttal opportunity, and
24 despite having today's hearing, never once addressed that language in the top
25 left of slide 21 that says the first wireless signal is composed of the K
26 reference signal groups. Three opportunities, zero response.

1 Again, I want to go back to -- let's just talk briefly about slide 19.
2 Patent Owner says there has to be one signal. Again, we know that that's
3 wrong from the disclosure of the '271 Patent, but Kim does teach that. It
4 says in figure 6 that this is a CSI-RS, and within the CSI-RS, you have the
5 individual antenna ports transmitting the signals 0-8 in the blue boxes that
6 are also the CSI-RS, which we talked about in the opening statements.

7 And again, even if you were to adopt that, the '271 Patent says you
8 can have multiple CSI-RSs. We just saw that on slide 21 from column 3.
9 The other thing is Patent Owner says they're not relying on the word
10 collectively, but every single argument they've made has referred to the term
11 collectively. If they don't have that word injected into the claims, they have
12 no argument to show that either the Liu reference or the Kim reference
13 teaches element 1d1.

14 Patent Owner said he would try to find examples from embodiments 4
15 and 5 of the '271 Patent. Those have never been raised before this particular
16 hearing. They're not in any of the briefing. In fact, there are no citations to
17 the '271 Patent for the claim construction in the Patent Owner response or
18 the surreply. So if they do point to this new evidence, we would request at
19 least a couple minutes of surrebuttal to address those because we think those
20 would be incorrect.

21 JUDGE RAEVSKY: As you stand here now, do you see any support
22 in the specification for the concept espoused that a single CSI-RS could be
23 duplicated across multiple antenna port groups?

24 MR. RODKEY: I don't know. In fact, we go back to 21. 21 tells us
25 what the first wireless signal says. It says K. We know that K is more than
26 one. So what it says is the first wireless signal is composed of two or more

1 reference signal groups. That pretty much rebuts the argument and they've
2 had no response despite three opportunities.

3 JUDGE HAMANN: Counsel, what's a reference signal group as
4 compared to a reference signal?

5 MR. RODKEY: Sure. So if we look at the top right on slide 21, it
6 says as a sub-embodiment, a reference signal group includes only one
7 reference signal. So it can be one reference signal.

8 JUDGE HAMANN: Thank you.

9 MR. RODKEY: You're welcome. Patent Owner said that there is no
10 CSI discussion in the '571 Patent. There is. It's in elements 1c and 1d6, but
11 generally we're talking about RSRP values. RSRP is a CSI value. It's a
12 reference signal received power. That is inherently talking about CSI-RS,
13 and that's also what Petitioner's expert explained in the technology
14 background, which we refer to when we cite to paragraph 103 and
15 paragraphs 58, 61 to 64, and several others in our briefing. That goes back
16 to discussion of CSI-RSs.

17 And even if there wasn't a specific discussion of CSI-RSs, it's still
18 appropriate under the Axonics case to respond to the reconstruction.

19 JUDGE ARBES: Counsel, there is responding to a claim
20 interpretation argument and then there is making arguments based on the
21 prior art. Axonics is just related to the former, right?

22 MR. RODKEY: No, that's not correct. So what Axonics said, and I
23 apologize, my pen was leaking. What Axonics had was in the petition, the
24 petitioner had a construction about one input limitation, and then Patent
25 Owner said, no, no, you need two inputs. Petitioner in reply said, okay,
26 here's the second input. Patent owner said that that was improper to

1 argument. The board agreed. It went up on appeal. Federal Circuit reversed
2 the board on that count and said, no, the petitioner has to be able to be
3 allowed to point to that second input.

4 JUDGE ARBES: But it was the new interpretation offered for the
5 first time in the patent owner's response that triggered that, right?

6 MR. RODKEY: Yes, and that's what we have here is their discussion
7 collectively, which I'm still not entirely sure what they're saying that term
8 means, because they're trying to exclude, again, the examples in the
9 specification without any justification for doing so.

10 JUDGE RAEVSKY: Just to clarify, you're relying on the same
11 embodiments in the reply that you relied on in the petition, in the prior art?

12 MR. RODKEY: That's correct, Your Honor. And I will -- we talked
13 about page 17 of the Liu petition before, the '571 petition, where we said the
14 first wireless signal is transmitted by N antenna port groups, and then M
15 signals if there's M antenna port groups. That's the same thing that we're
16 relying on in the reply brief.

17 For Kim, we again, we have the same where I'll point you to page 16
18 of the '747 petition for element 1d1. It says, as explained above, Kim's pay
19 station transmits the first wireless signal, singular, such as CSI-RS, using
20 antenna port groups, plural, identified by corresponding resource elements,
21 plural, of the transmitting base station.

22 JUDGE ARBES: I'm sorry, counsel, which page is that?

23 MR. RODKEY: 16, counsel. And then it goes on to say the CSI-RS's
24 wireless signals, again, plural, may be transmitted through 1248 antenna
25 ports. Each CSI-RS is, quote, mapped to the RE's, plural, on a per antenna
26 port basis. And then we go on to say K CSI-RS antenna port groups, et

1 cetera.

2 So it's clear that we're mapping the first wireless signal there to the
3 multiple CSI-RSs, exactly as we see from column 3, lines 22 to 96 of the
4 '271 Patent. So that's not -- it's not new in the reply. It's the same
5 embodiments. We're all fighting over the same language, quoting the same
6 language of the references.

7 Patent Owner said that we didn't use the word CSI-RS burst in our
8 papers, and that Dr. Kakaes didn't either in his petitions. That's just a
9 logically flawed argument. There's no requirement that we use the same
10 term as in the '271 Patent. It's whether or not we're disclosing the same
11 substance. And the substance is very clearly disclosed based on Dr.
12 Kakaes's testimony when he was cross-examined for 21 pages about this
13 very issue.

14 They said we should have been able to respond to their construction
15 collectively. They didn't propose a construction in district court, and so it's
16 not foreseeable that we could have figured this out. In fact, I still can't
17 figure out what it is if it's not what we see on slide 21.

18 JUDGE ARBES: Counsel, going back to the previous point, can you
19 describe exactly what makes something a burst? I see where you pointed to
20 the collection of CSI-RSs, but what makes that a burst or not a burst?

21 MR. RODKEY: Yeah, so let's look at what Dr. Kakaes said about
22 that. It's on slides 22 and 23 of Petitioner's demonstratives. So, on the left
23 from Exhibit 2005, which is Dr. Kakaes's transcript, page 21, line 21 to 22,
24 line 19, he says, so the M wireless signals that I'm discussing here, talking
25 about the Liu reference, are collectively what the first wireless signals are
26 required to be by the way.

1 And then at the bottom, you can see where he says, a CSI-RS burst is
2 a channel state information reference signal burst, meaning it consists of
3 several CSI-RSs, and that's what the M wireless signals form together a
4 burst, which is the first wireless signal consistent with the '271 Patent. So a
5 burst is just multiple CSI-RSs, exactly as we saw in that quote from the '271
6 Patent.

7 JUDGE ARBES: Could you transmit them in not a burst?

8 MR. RODKEY: I guess it's possible, but what we have is burst
9 because that's -- again, all of this testimony is undisputed. Patent Owner
10 says, well, he shouldn't have talked about this, but they don't say he's wrong.

11 JUDGE ARBES: But Liu does not use that term. And that term --

12 MR. RODKEY: Liu doesn't use the term, but we also know there's
13 no, pardon me for not knowing the Latin. It's an in haec verba test, right?
14 You don't have to use the same terms as long as you disclose the same
15 substance, and this is clearly the same substance.

16 JUDGE HAMANN: Counsel, I believe Petitioner points to burst
17 because of the '271 Patent discussion of burst. I don't believe in the '271
18 Patent there's sort of an explanation of exactly how that term is used.
19 Certainly it could be potentially the same CSI-RS just, you know,
20 transmitted over multiple REs or multiple slots, potentially, depending on
21 how the burst goes. I'm trying to understand the leap to, you know, it's
22 somehow supporting that the '271 supports having multiple different CSI-
23 RSs for a single signal.

24 MR. RODKEY: You're right. The '271 Patent just says the first
25 wireless signal would be a CSI-RS burst. What we have is 21 pages of
26 testimony from an undisputed expert in the field explaining what that term

1 means.

2 JUDGE HAMANN: Thank you.

3 MR. RODKEY: Patent Owner said that Kim is not MIMO. That is
4 also incorrect. If we look at the '747 petition where we're talking about Kim
5 being analogous art to the '271 Patent, we point out on page 6 of the '747
6 petition at the bottom, we say Kim is analogous art to the '271 Patent. And
7 then we have a citation, and we say it's because it's MIMO, and we compare
8 Kim paragraphs 102 and 174, talking about a MIMO base station, and 177
9 talking about a MIMO UE. Kim is clearly MIMO as well.

10 Patent Owner took issue with us citing to Liu in the '747 reply, but
11 again, that's because Patent Owner is making the exact same argument trying
12 to distinguish the Liu reference from the Kim reference. I'm on slide 24 of
13 the Petitioner's demonstratives. Patent Owner quite literally used the same
14 argument to try and distinguish the two. On the left side, we have Patent
15 Owner's '571 Patent Owner response, and on the right side, '747 Patent
16 Owner response.

17 Patent Owner said, when talking about Liu, rather, Liu discloses only
18 a singular antenna port for transmitting a singular wireless signal, i.e. a one-
19 to-one mapping of voice-to-signals. On the right from '747, rather Kim
20 discloses only a singular antenna port for transmitting each singular signal,
21 i.e. a one-to-one mapping of voice-to-signal. It's the same type of
22 technology according to Patent Owner.

23 Everything that Dr. Kakaes said about the Liu reference applies
24 equally to the Kim reference. That's why we're citing that testimony,
25 because we're talking about the technology itself. The disclosures of Liu are
26 relevant to understanding the disclosures of Kim.

1 Moving on to proportional sequence. For the first time today, we
2 heard Patent Owner say that the proportional sequence must be sent in the
3 measurement report. That argument has never been made before, and there's
4 nothing in claim 1 that requires the proportional sequence to be in the
5 measurement report. In fact, all that the first -- all the claim 1 says is -- and
6 let's just pull up Claim 1.

7 All that claim 1 says is that the first information is transmitted from
8 the UE to the base station. That is transmitting by the UE the first
9 information to the base station. The first information is never specified. All
10 we know is that the first information is used to determine the K1. It's used
11 in various forms, but nothing in the claim ever requires the first, the
12 proportional sequence to be transmitted to the base station.

13 But even if the first information would be required to be transmitted,
14 Kim discloses exactly that. If we go back to our Kim discussion, paragraph
15 136, on slide 37, the Petitioner's demonstratives, it says, the measurement
16 report value for the n-th CSI-RS may be defined as the ratio of the n-th CSI-
17 RS RSRP, I'll paraphrase, based on the expert discussion, to the best CSI-RS
18 RSRP.

19 Part of the measurement report value is sending them out there. So
20 even if, based on that new argument, that were somehow part of the claim,
21 which it's not, Kim discloses it.

22 JUDGE RAEVSKY: While we're on this sequence slide, I heard from
23 Patent Owner's counsel that sequence requires an ordering and that the
24 petition has no basis or no description of how the prior maps to an ordering.
25 What's your response to that?

26 MR. RODKEY: I'd say that's wrong for both petitions. And if you'll

1 bear with me, I'll hold up and I'll show you where on the record.

2 JUDGE RAEVSKY: Do you agree that sequence requires an
3 ordering?

4 MR. RODKEY: No. Well, I guess it depends on what you mean by
5 order. I don't agree that it does, but we have an order in both of them, as we
6 -- well, if I can read the record and then address how that shows the order.
7 So let's start with the '571 petition, and I'm on page 24. At the very top of
8 that says, a POSITA would have recognized that an RSRP ratio describes the
9 power ratio RSRP over max RSRP.

10 As explained above, the power P in watts is a non-negative real
11 number. Park's figure 12 confirms the comparison of each measured RSRP
12 to the maximum RSRP, which forms the proportional sequence of RSRP
13 ratios. That's the sequence. Again, that's what we talked about in the
14 opening, as Park is going down the line and measuring each of the values in
15 figure 12 against the best value in figure 12. So it's comparing each of these
16 four RSRPs to Port 13.

17 It seems like Patent Owner is trying to add some sort of persistence
18 and has to like all be saved in the end. But if I say 1, 2, 3, 4, 5, I've just
19 recited the sequence going down the line. That's what Park is doing, and
20 then Park actually takes all of them and tries to figure out which ones are
21 above a certain threshold value. So you do get that sequence, you do get that
22 ordering. You can see it in figure 12 from Port 0 to Port 31, and going down
23 that line gives you an order or an arrangement.

24 JUDGE RAEVSKY: Did you explain the petition, though, that
25 concept? I see figure 12 reproduced as annotated on the slide on page 26 of
26 the petition, but I don't recall seeing that you explained those port numbers

1 or the antenna port indices, are what constitute the ordering of that sequence.

2 MR. RODKEY: Your Honor, Park's figure 12 confirms that the
3 comparison of each RSRP to the maximum RSRP. We're talking about
4 figure 12, those are the RSRPs, comparing each of those to the maximum,
5 which is Port 13, forms the proportional sequence. So that's that language
6 from page 24.

7 JUDGE RAEVSKY: So we need to read between the lines and
8 connect those dots ourselves?

9 MR. RODKEY: No, I don't think you need to read between the lines.
10 I think it's right there. It's in Park's figure 12, and then the comparison of
11 each of those is the sequence.

12 JUDGE RAEVSKY: Okay.

13 MR. RODKEY: I think it's right there. Regarding '747 and Kim
14 teaching a proportional sequence, I'm on the '747 petition at page 28. A
15 POSITA would have understood that -- and I apologize, I'm right after that
16 equation in the middle of the page. A POSITA would have understood that
17 because each of the RSRP values of the reported antenna ports, parentheses
18 K1 antenna ports, satisfies the equation for threshold ratio.

19 The corresponding ratios comprise the first proportional sequence
20 among the reported, parentheses K1, channel quality RSRP values because
21 they wouldn't compare against the measured values to determine which are
22 above the threshold requirement to determine a maximum N to be reported,
23 thus creating the sequence. So we clearly did talk about where the sequence
24 is on both of the petitions. Patent Owner is simply just wrong about that as
25 well.

26 The argument about ordered is new. Nowhere in their papers did they

1 refer to an order in either the Patent Owner response or the surreply.

2 JUDGE RAEVSKY: Although it did come up in their claim
3 construction because they have a dictionary definition of ordering.

4 MR. RODKEY: They did, but as we pointed out in our reply, they
5 never actually discussed any of those definitions. And actually their
6 construction says this is a sequence, so they just go back to the original
7 work. They don't rely on any of those, let alone pick a particular one and
8 argue why that should be accepted. But as we've discussed, we have
9 ordering, we have arrangements in both the Kim and the Liu references. If
10 there are no other questions, all of the claims should be found invalid --

11 JUDGE HAMANN: I have just one quick question. I asked the
12 Patent Owner's counsel regarding the sort of the edge case where K was 2
13 and K1 was 1, for example. I do note that, you know, obviously the phrase
14 is, I think we were talking about the time as a first proportion of a sequence.
15 Does something about the word sequence preclude having a K1 of 1?

16 MR. RODKEY: No, Your Honor, I don't think we have anything in
17 the claims that would preclude a K1 of 1.

18 JUDGE HAMANN: Thank you.

19 MR. RODKEY: Thank you, Your Honors.

20 JUDGE RAEVSKY: Thank you. Mr. Ostling, I believe you have 44
21 minutes.

22 MR. OSTLING: Thank you, Your Honor. If I may proceed. So, first
23 off, I would like to address Petitioner's comments as to the CSI-RS burst and
24 clarify a statement that I made on dividing the signals that I think that they
25 were trying to respond to. And that is, when I say dividing, the requirement
26 still stands that in order to satisfy the claim, if you have three signals,

1 however you're splitting them up, you would still need to be transmitting all
2 three signals across all three port groups.

3 So, you know, I did not mean that you can have half of one on one
4 port and half of one on another. You still need, at the very minimum, if
5 there are two CSI-RS signals and two ports, which are members of two port
6 groups, both groups would still need to transmit both signals to satisfy the
7 claim.

8 JUDGE HAMANN: Counsel, that seemed to add ambiguity in my
9 mind. It's still the same signal, I think, is Patent Owner's argument, right?

10 MR. OSTLING: Yes.

11 JUDGE HAMANN: Both ports have to transmit the same CSI-RS
12 signal.

13 MR. OSTLING: Yes, Your Honor, that's right.

14 JUDGE HAMANN: Thank you.

15 MR. OSTLING: There was a citation to the specification that I
16 referred to in embodiment 4, and the part of the specification that I was
17 referring to really is embodiment 4 generally, but particularly column 18,
18 line 39, through column 19, line 14, which goes into a fair degree of depth
19 on how you are processing and transmitting reference signal groups with a
20 MIMO processor.

21 JUDGE HAMANN: I believe Petitioner's counsel cabined that as a
22 new argument. Does Patent Owner obviously disagree?

23 MR. OSTLING: Yes, Your Honor. That was directly in response to
24 Petitioner's counsel's statements regarding a carrier or a resource where they
25 seem to have characterized for the first time today that maybe everything on
26 a carrier is always part of the same signal, and that's just not supportable.

1 JUDGE HAMANN: So you're suggesting that both arguments may
2 be new?

3 MR. OSTLING: Yes, Your Honor. If our argument is new, it's in
4 response to what he said today.

5 JUDGE HAMANN: Thank you.

6 MR. OSTLING: Your Honor --

7 JUDGE ARBES: If I could ask one more question about that previous
8 point. Why should we look to columns 18 and 19, as you described, to
9 interpret the language of the claim, but not the language in column 3? I just
10 don't understand the position that the language in column 3 does not apply,
11 but this other language in columns 18 and 19 does. Can you explain why?

12 MR. OSTLING: Yes, Your Honor. So embodiment 4 is really the
13 core of the massively MIMO uniforming at the heart of this invention. And,
14 I mean, if you are looking at the discussion in column 3, you absolutely need
15 to read it in the context of what is being discussed in embodiment 4. Does
16 that answer your question, Your Honor?

17 JUDGE ARBES: Why? What language would you point us to in the
18 claims that says we should be looking primarily to embodiment 4 to
19 determine the scope of the claim? What language ties it to that in particular?

20 MR. OSTLING: I think that looking at the claim structurally as a
21 whole, the objective is to facilitate massively MIMO beam forming. And as
22 a physical property of beam forming, you require at least two groups of
23 transmitters to add a directional component to the signal. That would be my
24 best response, Your Honor.

25 Petitioner's counsel also made several statements to the effect that we
26 didn't dispute that what Liu discusses is the same as the '271. We absolutely

1 do dispute that. CSI-RS burst or otherwise, Liu has a fundamental problem
2 that it has a one-to-one mapping. And in no case do you have two antenna
3 port groups or more transmitting the same first wireless signal.

4 And finally on this issue with respect to the claim construction, we
5 just disagree that Axonics applies here. I apologize for mispronouncing that
6 name. This is not an issue where Patent Owner has proposed a construction
7 with a new requirement. This is an issue where in the petition, Petitioner
8 essentially read out a claim term. The claim on its face requires that where
9 K is two or more, you have K antenna port groups used to transmit a signal.

10 Petitioner essentially took the position that you could have one
11 antenna port group transmitting one signal to satisfy that claim. The only
12 thing that we have tried to do --

13 JUDGE ARBES: I'm sorry, counsel. Can you explain why that was?
14 I thought Petitioner was arguing multiple groups that are each composed of
15 one port. Am I misunderstanding that?

16 MR. OSTLING: Yes, Your Honor. That is also part of the argument.
17 But irrespective of whether the group is one port or not, there is, in
18 Petitioner's argument, a one-to-one mapping of antenna port groups to
19 signals. And all that we're trying to clarify with that claim construction is
20 what is on the face of the claim language. And that is that you must have at
21 least two antenna port groups used to do the transmission.

22 We've used the word collectively to try to clarify that requirement.
23 But there is no plausible reading of the claim language that does not include
24 that requirement.

25 JUDGE ARBES: But counsel, this scenario comes up quite often
26 where there is a dispute over what is the plain meaning of the claim

1 language. You said that Axonics does not apply. Why is that the case? You
2 obviously disagree with Petitioner's reading of the claim as they applied it in
3 the petition. You proposed an interpretation in Patent Owner's response.
4 They responded to that interpretation. Why does Axonics not cover that
5 situation?

6 MR. OSTLING: I think the distinguishing principle here is that there
7 is no plausible reading of the claim language on its face that supports the
8 implicit construction in the petition, that two or more groups can only be one
9 group.

10 JUDGE ARBES: Correct me if I'm wrong, but there was no
11 exception that was described by the court in Axonics where Petitioner's
12 interpretation or lack of interpretation was just unreasonable or there was no
13 plausible argument. Was there any exception in that case?

14 MR. OSTLING: I don't have a citation to that effect, Your Honor, but
15 I do think that the factual circumstances here are very different than that
16 case.

17 Next, Your Honor, just to briefly address the points made on the
18 sequence term. All that Petitioner did in rebuttal was point to conclusory
19 assertions in the petition that various collections of numbers are sequences.
20 They never had any articulated theory in the petition as to how or why any
21 of those things constituted a sequence under any interpretation of the word
22 sequence.

23 And I think that Your Honor had a good question about whether you
24 needed to read between the lines. I would just dispute that there are any
25 lines to read between in the petition for that premise.

26 Finally, I'd just like to briefly address some of the comments made

1 with respect to Mr. Gomez's qualifications. I made a statement that Mr.
2 Gomez's CV doesn't necessarily use the word MIMO. I actually do believe
3 that Mr. Gomez's CV specifically discloses expert testifying experience on
4 4G and 5G, which include MIMO. So I just wanted to make sure the record
5 was clear on that point. Unless Your Honors have any additional questions.

6 JUDGE RAEVSKY: Nothing further.

7 MR. OSTLING: Thank you, Your Honor.

8 JUDGE RAEVSKY: Thank you, counsel. Thank you all for
9 participating in the hearing today, including members of the public. We will
10 take this case under advisement and issue a decision in due course. This
11 hearing is adjourned.

12 (Whereupon, the above-entitled matter went off the record at 11:33
13 a.m.)

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