

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. AND NOKIA OF AMERICA CORPORATION,
Petitioner,

v.

XR COMMUNICATIONS LLC,
Patent Owner.

IPR2024-00868
Patent 8,737,511 B2

Record of Oral Hearing
Held: September 24, 2025

Before: MICHAEL J. STRAUSS, NORMAN H. BEAMER, and
KARA L. SZPONDOWSKI, *Administrative Patent Judges*.

APPEARANCES:

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The above-entitled matter came on for hearing on September 24, 2025, commencing at 10:00 a.m. at the USPTO headquarters in Alexandria, Virginia.

P R O C E E D I N G S

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JUDGE STRAUSS: Okay, we have our final hearing in IPR2024-00868 this morning. Let me introduce the panel. I'm Judge Strauss and joining me are Judge Szpondowski and Judge Beamer. Let's get started with the parties' appearances. Who do we have for the Petitioner?

MR. ANDERSON: Your Honor, on behalf of the Petitioner, I'm Kevin Anderson. I'll do the primary speaking, and with me, I have my colleague, Pat McPherson.

JUDGE STRAUSS: Okay. Thank you very much, counsel. And for Patent Owner?

MR. WANG: Good morning, Your Honors. This is Philip Wang for Patent Owner XR Communications.

JUDGE STRAUSS: Okay, thank you. Let me go over a little procedure here. We set forth the procedure for today's hearing on August 6, 2025. As a reminder, each party will have a total of 45 minutes to present arguments.

Petitioner has the burden of proof as to whether the challenged claims are unpatentable and will go first. Patent Owner will then present opposition arguments. Then, to the extent Petitioner has reserved time, Petitioner will present the rebuttal arguments. And then, to the extent Patent Owner has reserved time, Patent Owner will present sur-rebuttal arguments. I will set the clock for each party with a requested time allotment. We remind the parties that they are not to interrupt the other party while the other party is presenting its arguments. If a party believes that an argument

1 presented by the other party is objectionable for any reason, you should raise
2 that objection or any arguments relating to that objection only during your
3 own time.

4 A few additional items. We have the entire record. Judge
5 Szpondowski and Beamer can't see what you are putting on the screen here
6 in the hearing room, so please refer to the papers or exhibits clearly and
7 explicitly by slide or page number, so they can follow along with your
8 arguments. This also helps the preparation of an accurate transcript of the
9 hearing.

10 Finally, there is a public line, so please be aware that members of
11 the public may be listening as well. Does Counsel for Petitioner have any
12 questions before we get started?

13 MR. ANDERSON: No, Your Honor, I do not.

14 JUDGE STRAUSS: Okay, and does Patent Owner have any
15 questions?

16 MR. WANG: Not for Patent Owner, Your Honor.

17 JUDGE STRAUSS: Okay, for Petitioner, would you like to
18 reserve any time for rebuttal?

19 MR. WANG: Yes, Your Honor, I'd like to reserve 20 minutes,
20 please.

21 JUDGE STRAUSS: Okay. And I'll try to give you a five-minute
22 warning. Okay, so Petitioner, you may proceed when ready.

23 MR. ANDERSON: Thank you, your Honor. I'm trying to -- okay,
24 so I have just the opening of our slides here. Before I launch into any slides,
25 this is Kevin Anderson on behalf of Petitioners. I want to point out what I

1 think is really the primary dispute here. Patent Owner's position appears to
2 be that if a prior art reference discloses a configuration that doesn't meet the
3 claims, then there can be no invalidity, regardless of whether there are
4 configurations that do meet the claims. So their primary arguments are their
5 expert has opined largely without analysis that the primary piece of prior art,
6 the Trigui reference here, can be configured in a way that does not match the
7 claim limitations.

8 While that may be true, it's not relevant because if there is a
9 configuration that does meet the claim limitations, that's sufficient for
10 invalidity. I'm unaware of any law that says that a prior reference has to
11 teach only what's in the claims, and it can't teach a different configuration.
12 Now, I want to start by explaining Trigui. Trigui has two basic features.
13 The first teaching is that it wants to share this array among operators, for
14 cost reasons, for efficiency reasons, be able to share the tower space. It
15 wants to be able to define an architecture for allowing different, they call
16 some operators, and by operators, we interpret, and I think both sides do
17 fairly. An operator is effectively like a carrier like AT&T or Verizon.

18 So Trigui's goal is, because tower space is limited, we want to
19 allow for an architecture that would permit the carriers and the operators to
20 share the tower space thing. But sharing is the first thing. And when a
21 Trigui talks about sharing between operators, the simplest case, the base case
22 of sharing is two -- the base case of sharing is two, it has to be multiple
23 which means to share it needs to be more than one, but the base case is two
24 operators. The second thing that Trigui teaches throughout, and this is
25 primarily in the background there, and I'll jump to the background of Trigui,

1 I'm looking at paragraphs 6 through 15, which describe Figures 1A to 1D of
2 Exhibit 1004, which is Trigui.

3 And what Trigui is teaching there is we want our system to allow
4 for MIMO, multiple-input multiple-output. And what MIMO means, just as
5 it says, is multiple. And the base case, the simplest case of MIMO is two. I
6 have two outputs from my transmitter. I can have more, and it can still be
7 MIMO; it could be four, it could be any number of it. But the base case for
8 MIMO is two.

9 So, in the end, if you look at Trigui, the base case, the kind of
10 simplest case for Trigui is I have two operators, and they each want to have
11 two streams, two MIMO streams. The MIMO is basically an architecture
12 where I can send two separate streams out from the transmitter. I might send
13 them to the same handset, in which case maybe I can double my input to that
14 particular handset, or I might send them to different handsets. That doesn't
15 matter; it's that there's two streams, they call them streams out there, two
16 MIMO streams. And you can also call them MIMO branches. So in the
17 kind of most basic case of Trigui, I have two operators, each that want to
18 send a MIMO stream. In a MIMO stream, the basic case is two. That is the
19 configuration that the petition and our expert used and analyzed there.

20 Now how did we get there? Trigui has a -- switching back to the
21 slides, Trigui has an architecture. I'm looking at Slide 12 in Petitioner's
22 slides. Trigui has an architecture and a description where each of the figures
23 are intended to be used together to build different configurations. The basic
24 configuration disclosed in Trigui is one single MIMO branch, and that is
25 disclosed in Figure 2A. And in paragraphs I think it's 36 of Trigui, it says

1 expressly Figure 2A represents a single MIMO branch of a DIAA system, an
2 antenna system.

3 And then it goes on to say the other Figures 6, 7, 8, 9, 10, 11 build
4 off by using multiple iterations of the hardware that is in Figure 2A. So 6, 7,
5 8, 9, 10, 11 use multiples. So our expert starts with the fundamental MIMO
6 branch because that's what Trigui teaches and then explains how the
7 disclosure of Trigui, which throughout Trigui, it indicates that the teachings
8 are to be used together.

9 And I don't believe Patent Owner disputed that one can -- Trigui
10 has expressed motivations to use its teachings together. It says that in there.
11 This is an example in paragraph 36 where it's saying I'm using Figure 2A
12 and I'm folding it into the other figures. We look at Figure 6, what Figure 6
13 says is okay; Figure 6 says I made a 2xN MIMO antenna array. And that
14 says that in paragraph 36. And so it takes two of the individual MIMO
15 branches which were in Figure 2A and it puts them together. And I now
16 have one antenna array with two subarrays; each of those subarrays
17 represents a MIMO branch. So now I actually have something that's MIMO
18 --

19 JUDGE SZPONDOWSKI: Counsel, I have a question about that.

20 MR. ANDERSON: Yeah.

21 JUDGE SZPONDOWSKI: So why does Figure 6 show one
22 antenna array with two subarrays versus two antenna arrays?

23 MR. ANDERSON: Well, it expressly, I'm sorry, it expressly
24 describes Figure 6 as a DIAA, a Distributed Integrated Antenna Array. It
25 says it's one thing. The DIAA is an array. I mean, that's -- it's saying that it

1 can -- I'm sorry, go ahead.

2 JUDGE SZPONDOWSKI: But doesn't the 2xN, doesn't the 2
3 mean isn't that the antenna? The 2 in the 2xN?

4 MR. ANDERSON: No, the 2 in the 2xN is the number of MIMO
5 streams. And so each of those subarrays represents and is used to transmit
6 one of the MIMO streams, which corresponds to a beam in this situation, but
7 the two is actually the number of MIMO streams. In this situation, it ends
8 up corresponding to the two subarrays, but the subarrays are considered as
9 part of one integrated array.

10 JUDGE SZPONDOWSKI: Well, I'm looking at page 28 of your
11 Petition, and it says typically MIMO is referenced as A times B, where A is
12 the number of transmit antennas or sets of antennas.

13 MR. ANDERSON: Yes, it can be. Yes, that's exactly right. In
14 this situation, the sets of transmit antennas are each of the two subarrays.
15 And, for example, if one were to look at Figures 1A, B, C, and D in Trigui,
16 which the specification discloses, that those are 2x2 MIMO. Those Figures
17 show, at the top, a single antenna array.

18 So, in looking at Exhibit 1004 and at the top, Figures 1A, 1B, 1C,
19 and 1D, each of those shows a single array. And the disclosure in Trigui
20 corresponding to those describes those as being able to transmit a 2xN
21 MIMO. And so that would indicate that a single antenna array, and this is
22 part of the teaching of Trigui, a single antenna array with two subarrays
23 corresponds to two MIMO streams.

24 And I think even in the Figure -- description of Figure 2, 2A and
25 this -- I'm showing Slide 12 now which is quoting from paragraph 36 of

1 Triguí. It says Figure 2A represents a single MIMO branch of a DIAA
2 system. And so when I duplicate Figure 2A to get to Figure 6, I have two
3 MIMO branches which is enough for a MIMO system, right? I need a
4 multiple input. Well, I need at least two. And so Figure 6 is two copies of
5 Figure 2A, one for each subarray. Does that answer your question?

6 JUDGE SZPONDOWSKI: I think so. Thank you.

7 MR. ANDERSON: Okay. Okay. So the building blocks, I take
8 Figure 2A; I take two copies of it to arrive at Figure 6, which is one antenna
9 array. And then Triguí also teaches that I can take two copies of the Figure
10 6 and put them side by side. And those are shown in Figures, for example,
11 7, 8, 9, 10, 11, which show four subarrays, which are -- which Triguí can
12 disclose those, can be comprised of two separate instances of Figure 6. And
13 in the description of Figure 6, it says and this is in paragraph 81, that Figure
14 6 illustrates a two-body MIMO DIAA system. So Figure 6 is one instance
15 of an antenna.

16 And then it goes on to say Figure 6 illustrates two MIMO
17 branches. Each antenna subarray may provide a specific polarization, which
18 is one instance of beam point. In paragraph 77, it also points out that each
19 branch has one beam for transmit and receipt. And that relates to some of
20 the other arguments here today. Going from Figure 6 to Figure 10, which is
21 just explained on Slide 15, is merely taking two of the instances of Figure 6
22 and putting them side by side.

23 JUDGE STRAUSS: Council, could you just identify your slides as
24 you're going through them, your slide numbers, so that --

25 MR. ANDERSON: Certainly.

1 JUDGE STRAUSS: -- we'll follow along? Thank you.

2 MR. ANDERSON: Certainly, I'm on. Figure I'm on Slide 15. I've
3 jumped to Slide 15, which explains pictorially what the analysis is here,
4 where I take two instances of the antenna array in Figure 6, and I use it to
5 construct Figure 10, which then has two antenna arrays, each with two
6 subarrays, and each of those subarrays is doing a single MIMO stream.

7 On Slide 16, we have a quote from our expert opinion, Dr. Negus,
8 which is quoting Trigui at paragraphs 36 and 82, and Trigui discloses that I
9 can have a $4 \times N$ MIMO, as shown for example in Figure 10, can be
10 implemented as two independent $2 \times N$ arrays, and that's exactly what we're
11 pointing to is two independent instances of Figure 6. In the descriptions of
12 Trigui describing Figures 7, 8, 9, 10, 11, some of those Figures are described
13 as being more, I would say, integrated with the subarrays, the two sets of
14 subarrays. For example, in paragraph 83, it describes how Figure 8 is the
15 type of situation where integrated such that it may be necessary to pass
16 signals between the two $2 \times N$ DIAAs.

17 But for example, in Figure -- or in paragraph 82 of Exhibit 1004 of
18 Trigui, it points out that the system can be implemented as two arrays such
19 that communication between the two arrays is not necessary. The point
20 being is that Trigui's architecture allows for either considering, for example,
21 Figure 10 to be one big array with four subarrays, or it expressly says that it
22 can be two arrays each with their own subarray. And that's the configuration
23 that is the simplest case because it allows for a two -- it allows for MIMO
24 for each of the two operators. It allows two operators to each use two
25 streams, one stream from each of the antenna arrays. And that's the

1 configuration that we describe here.

2 Now, it is possible to look at Trigui's teaching and say, well, could
3 I connect both operators to all four? It's possible that you could do that.
4 There are some complications arising from that that I don't think are
5 addressed in the Patent Owner's citation of that. How would I be able to
6 decide which of the two operators is transmitting on a particular antenna at a
7 given time. Their signals could collide; like, there's some real problems with
8 that. But Trigui can be read to describe that, and a POSITA could work their
9 way through those problems.

10 Now, I do want to, as I'm going down on my time, I do want to
11 point to one of their arguments that is made in this sur--reply that we
12 obviously didn't address, so I do want to address it here: they state that
13 Figure 2A in Trigui mandates that every modem has to be connected to
14 every MIMO transceiver branch. That's not true. If you look at the
15 language that is in Figure 2A of Trigui and we blew it up in our petition but
16 it is -- it's the language that is to the right of the -- it's rightmost language
17 -- I'm sorry the leftmost language along the leftmost side. And what it says
18 is I/Q signals from modems A, B, and C to other branches. So it's describing
19 signals that can be sent to other branches. They interpret that.

20 JUDGE BEAMER: What page are you on?

21 MR. ANDERSON: This is in Figure 2A of Exhibit 1004.

22 JUDGE BEAMER: And what page are you on?

23 MR. ANDERSON: It's page 4 of Exhibit 1004. And they say that
24 this language on Figure 2A mandates that each modem must send to every
25 other MIMO transceiver branch. That is not at all what Trigui says. If one

1 looks at paragraph 41 of Trigui, the specific language describing Figure 2A
2 says, "similarly I/Q signals 215 from any of the modems, as well as the
3 beamforming weights 214, can be sent to other MIMO branches. It does
4 not, in any fashion, mandate that the signals from all of the modems must be
5 sent. It says the signals from any of the modems can. Can is permissive. It
6 would be, I think, error to construe that language to require each of the
7 modems to be connected to each of the MIMO branches, and that is kind of
8 the thrust of their sur-reply brief. They lead with it, and it is an incorrect
9 reading of Trigui.

10 JUDGE SZPONDOWSKI: I have a question for you. I'm looking
11 at your Slide 17, which shows the Figure 10 with the modifications that
12 you're proposing.

13 MR. ANDERSON: Yes, yes.

14 MR. ANDERSON: So you've added Modem B and there's
15 highlighted, we've got some blue and red arrows going into each of the
16 modems. And so there are some other arrows that are in original Figure 10
17 that I guess I'm wondering, that I believe were going into Modem A. So
18 what happens to those? Do those just get disconnected or rerouted?

19 MR. ANDERSON: Yeah, good question. So that relates to their
20 argument that one, that Figure 10A would mandate that each of the
21 transceiver branches be connected to each of the modems, which as I just
22 pointed out for Figure 2A, that is not the case. In our configuration, and that
23 would be a configuration that they're describing where there would be four
24 MIMO branches. So an operator would have four MIMO branches, and that
25 would be one permissible configuration.

1 But the basic case of MIMO is when each modem is connected to
2 only two MIMO branches. I only need two branches to become a MIMO
3 system. And that's what it teaches in the background section, where it's
4 talking about Figures 1A to 1D that are all two-branch MIMO systems. So
5 this is my point. That's exactly the point that they're raising, is that one
6 configuration one would look at Figure 10. I would connect all of the
7 modems to all of the branches.

8 Trigui does teach that there's going to be problems that you have to
9 address but a POSITA could probably address that. But whether I can teach
10 all of the MIMOs, whether I can construct a four branch connected to each
11 modem operator, does not negate that the basic teaching of Trigui is that I
12 would have two operators that each do a MIMO system. And those two
13 operators only need two branches to do a MIMO system.

14 JUDGE STRAUSS: Counselor, you have about a minute and a
15 half left.

16 MR. ANDERSON: Okay, thank you. Now, this goes to where I
17 started with, which is the fact that they can point and construct a
18 configuration that would not meet the claim elements does not negate that
19 the basic and simplest $2 \times N$ MIMO system for each of the operators is
20 sharing the antenna. And it's important to understand the bases of sharing
21 the antennas. Real estate's at a premium up there. And Dr. Negus explained
22 this at length, but it's important when I'm doing MIMO to have my two
23 branches, the transmitters for those, be separated physically. That is like a
24 basic physics thing. And that's described in our background section. It's
25 also described in some of the dependent claims.

1 But when I have the two MIMO branches, they have to be
2 separate. So Dr. Negus pointed out that if I have two of these $2 \times N$, I have
3 two of these antennas, each with two subarrays, the arrangement to ensure
4 that I get the best MIMO performance is to hook the operator to one of each
5 of those -- one subarray from each of those two antennas so that I get the
6 physical separation. That is like a physics thing. Like the physical
7 separation is important to get the best MIMO performance. I see I'm into
8 my rebuttal time. I'm happy to answer any further questions. Otherwise, I'll
9 reserve my remaining time.

10 JUDGE SZPONDOWSKI: I actually do have one more question.

11 MR. ANDERSON: Okay, good.

12 JUDGE SZPONDOWSKI: So one of Patent Owner's arguments,
13 as I understand it, and if I get this wrong, I'm sure they can correct me, but is
14 that Trigui doesn't disclose any relationship between the number of beams
15 and the number of transceivers. What's your response to that?

16 MR. ANDERSON: I'm glad you asked that because it's a point I
17 wanted to make and it's good I get to make it up front here. The Patent
18 describes, does say or claim this like I have two beams and I have two
19 MIMO transceivers. It provides no reasoning. It provides no benefit at all
20 for why one would do that. And in thinking about this, it is not dissimilar to
21 what one would see in a genus species context, right? They're kind of
22 basically saying that Trigui has pretty broad teachings and can teach a lot of
23 things but it doesn't teach my species. This particular one, the problem with
24 that is that in order for a species to be Patentable, you generally have to in
25 your Patent, you generally have to point out some advantage or some

1 criticality to what you're claiming.

2 Now, usually a genus-species is brought up in the unpredictable
3 arts, right, chemistry, where you have a broad range of different ingredients
4 that you're going to put into a chemical, your invention. And if you get just
5 the right mixture of, you know, carbon and all the different chemical
6 elements, then you get the cure for cancer, right? There's a critical
7 -- something critical about that. They don't have any such thing. And the
8 closest they have, I know I'm in my rebuttal time, but I do want to point this
9 out because it's really important, the closest they have to pointing to any
10 advantage in their invention has nothing to do with this relationship between
11 the beams and the MIMO transceivers.

12 They talk about this is in the '511 Patent, which is Exhibit 1001 on
13 page seven, which is in column 2, lines 16 to 22. They say that current
14 subject matter provides many advantages. And then they go on to list some
15 of those. None of those are linked in any way to the claim of having the
16 number of beams meet the number of MIMO transceivers. And more
17 importantly, I will point that immediately above where it talks about the
18 many advantages; it recites what it thinks is the invention there. And if one
19 looks at that above, it doesn't have the actual claimed invention. It doesn't
20 have N is greater than 2, meaning the beams and the MIMO transceivers is
21 greater than 2. And this is an artifact of what happened in prosecution.
22 They originally tried to get a claim, and we explained this in detail in the
23 petition in the prosecution history.

24 They tried to get a claim where I could have only one beam, and
25 they got a rejection, and then they had to amend. And that's the amendment

1 that you see in our -- described in our petition, where they had to amend
2 where N is greater than equal to 2. They had to move the number of beams
3 greater than equal to two. And that is not referenced in column 2, where it
4 describes the advantages. There's one more section. I know I'm well into
5 my rebuttal, but this is important because I want to use my time for this.
6 There's one other section where they talk about some usefulness of their
7 alleged invention. And I want to point that out too. That's in Exhibit 1001,
8 column 6, lines 1 to 12. There's a paragraph there. And what they say in
9 there, the communications range, this is starting at line 4.

10 In this example of column 6 in Exhibit 1001, in this example, the
11 communication range may be increased by enabling one transmit beam at a
12 time per antenna array. And then it goes on to say this is particularly -- in
13 column 6, lines 10 to 12. It says the benefit is further enhanced in certain
14 unlicensed bands for point-to-point transmission only one transmit beam is
15 used. So they don't have any criticality for anything at all in their claims.
16 And the brief doesn't cite anything. And that's because their Patent doesn't
17 teach anything. There's nothing critical about this particular configuration.
18 It falls well within Trigui, and Trigui at a minimum, Trigui renders it
19 obvious because there is at least one, and probably the simplest
20 configuration in Trigui to meet the sharing, and the MIMO meets exactly the
21 claim that it looks like. Unless there's further questions, I'll reserve my
22 remaining time.

23 JUDGE STRAUSS: Okay.

24 MR. ANDERSON: Thank you.

25 JUDGE STRAUSS: Thank you, Counselor. You will have 14

1 minutes for rebuttal.

2 MR. ANDERSON: Okay.

3 JUDGE STRAUSS: Patent Owner, would you like to reserve any
4 time?

5 MR. WANG: Thank you, Your Honor. Yes, I would like to
6 reserve 10 minutes, please.

7 JUDGE STRAUSS: Okay.

8 MR. WANG: And may I have a minute to set up?

9 JUDGE STRAUSS: Certainly.

10 MR. WANG: Good morning, Your Honors, Philip Wang for
11 Patent Owner, XR Communications. I'll adjust the microphone to avoid
12 interference. I want to begin my comments with the point that Mr. Anderson
13 started with, which was he argued that the main dispute in this IPR was that
14 Trigui allegedly teaches the configuration to claims, but that Patent Owner is
15 relying on the fact that it teaches other configurations as the reason, it's not
16 shown to be unpatentable. We disagree with that. The issue in this IPR is
17 that the '511 Patent teaches an arrangement as the Petitioner characterizes, a
18 very particular arrangement of these structural elements that do transceiving
19 and beamforming. And the whole dispute comes down to their annotated
20 version of Figure 10 from Trigui which is whether we have the structure or
21 the disclosures of Trigui, whether it's fair to label it in the way that they do
22 and to change it the way that they do.

23 We think based on using Claim 1 as a roadmap to change
24 connections, add connections, remove connections, or to characterize certain
25 units as one subarray or one beamformer and to say that that invalidates the

1 specific arrangement of Claim 1. And because the terms and the claims are
2 kind of complicated and hard to keep straight in one's head, I just want to
3 you know focus on that point that I started with but spend a little bit of time
4 going through the '511 Patent and then Trigui and then to discuss that figure.
5 So that's how I wanted to divide up my opening time.

6 So starting with the '511 Patent and I'm turning to XR's
7 demonstratives, Slide 2 where we have the '511 Patent Claim 1. So as
8 background, the Patent is assigned to my client, Patent Owner XR
9 communications, which is the assigner or successor in interest to the
10 intellectual property of a company Vivado Incorporated that did work in
11 this field and the two named vendors Mr. Edison and Mr. Chafee were
12 involved with Vivado Inc. And so the invention this work related to the
13 work that Vivado Inc. was doing and they were in the market of the field.
14 And so they applied for the claim, this specific claim, with numeric
15 requirements for each of the specific elements of M antenna rays and MIMO
16 transceivers and configured to process M different transmit signals.

17 And so, the claims require an equal number of MIMO receivers as
18 beams per array, and that exactly one beam from each of the plurality of
19 arrays is connected to each MIMO receiver or transceiver. Correspondingly,
20 each MIMO receiver has the same number of inputs as the number of
21 antenna arrays in the system, and Petitioner has actually provided a helpful
22 annotation. Let me find that in our slides, and I can point to it. Yes, so
23 turning to Slide 18 of Patent Owners demonstratives, which is Exhibit 2008,
24 this is an annotation provided by Petitioner in the petition, but this is a very
25 good illustration. I know it's a Figure but in terms of the numeric

1 requirements of the claim that's required by the claim language in terms of
2 the number of arrays corresponding to three inputs A, B, C to each MIMO
3 receiver, one per array, and also the number of beams, six beams A through
4 F per array, corresponding to six MIMO receivers.

5 So we think this is a fair description that Petitioner provided, and
6 it's a helpful one not necessarily in the exact numbers, but kind of the
7 relationships, keeping track of N and M and the number of beams in the
8 claim. And then so I would just like to flag that. And then, turning back to
9 the claim language, if one were to read this next to the claim language, I
10 think it would help make sense of the requirements of N and M. So, in the
11 example and in the claimed arrangements, like the three beams talking about
12 the figure, only the three beams are connected to MIMO receiver 258. Thus,
13 MIMO receiver 258 has access to those three beams but does not receive or
14 deal with the other beams because they point in other directions.

15 And this is reflected in the claim language, where there must be
16 exactly M arrays and N transceivers. Each array must produce exactly N
17 beams. Each transceiver must possess exactly M transmit signals and N
18 receive signals. And then, that helps to meet the subsequent limitations of
19 when it talks about I and J. So, for example, in the figure, MIMO
20 transceiver number one needs to be connected to beam number one of each
21 array. If there are three arrays, the transceiver needs three inputs and
22 outputs, with input 1 corresponding to beam 1 of Array 1, input 2
23 corresponding to beam 1 of Array 2, and input 3 corresponding to beam 1 of
24 Array 3. And so, this is also the arrangement that was discussed during
25 prosecution.

1 I'm going to show on my screen, and I think this is helpful to look
2 at in understanding the claim and the invention, which the prosecution
3 history is Exhibit 1002. And I would point to page 123 of Exhibit 1002
4 where the Applicant is discussing the claim and discussing the Adams
5 reference. And so, at the bottom of page 123 of Exhibit 1002, the applicant
6 recites the claim language that's in Claim 1 and then contrast that with the
7 prior art, and specifically, as to the numerology and the arrangement that
8 Claim 1 is limited to. And so, these comments are on page 124 of Exhibit
9 1002. And it talks about each of the antenna arrays comprises a beam form
10 or configured to produce N different bidirectional beams connected to M
11 multiple input output MIMO transceivers.

12 And then there were figures of the reference Adams, the prior art
13 reference that did not disclose this arrangement. For example, it disclosed
14 six beams, two for each of the three antenna arrays, and one MIMO
15 transceiver. And then it also mentioned Adams Figures 3, 5, and 8, showing
16 standard transceivers, not MIMO transceivers. And then it argues, the
17 Applicant argued that nowhere does Adams describe an implementation
18 where the number of beams per antenna array is equal to the number of
19 MIMO transceivers. And thus later on in that page, nowhere does Adams
20 describe an implementation where the number of inputs, outputs per MIMO
21 transceiver is equal to the number of antenna arrays.

22 And so since the beginning of prosecution, when the claims were
23 presented, there has always been the what I've been calling the numerology
24 requirements of the claims, and the Applicant further clarified them in this
25 office action. And so it's clear from the face of the claims and the

1 prosecution history that the claimed invention is limited to the requirements
2 of the numerology recited in the claims.

3 JUDGE BEAMER: Counselor, could you direct us to where in
4 your arguments in the record that this argument was made?

5 MR. WANG: So I am just describing the claimed invention in the
6 prosecution history, and both were discussed in our Patent Owner response.
7 I can provide a page number but -- and then counsel Mr. Anderson, so this is
8 the claim that we're analyzing for purposes of patentability. It's also what
9 Patent Owner is limited to in terms of infringement, to be able to meet the
10 numerical requirements that are set forth as limitations in the claim. That's
11 the subject matter claimed.

12 And then, I would point to column 2 of the '511 Patent, and I don't
13 think counsel's characterizations were fair regarding it. First of all, I have to
14 say I'm not aware of any authority that says a Patent claim needs to have
15 critical benefits in order to be patentable. That's just -- that's a separate
16 question, that's a separate argument. Maybe it goes to secondary
17 considerations, which is not at issue in this IPR. And so I would push back
18 on that assertion.

19 But the inventors, based on work that was done before, applied for
20 a patent based on an arrangement set forth in the claims and discussed the
21 prosecution history. And then they do describe in column 2 the benefits for
22 this specific structure. They say that MIMO beamforming, MIMO and
23 beamforming, can be combined to provide range extension and throughput
24 enhancement supported either or either of a base station and mobile
25 terminal. So this specific structure that they point out is a way of combining

1 MIMO and beamforming. And then it applies. The structure also applies
2 for both transmission and reception. And we see that in Claims 1 and 20,
3 which the parties have treated as representative of each other in terms of the
4 arguments. I think Claim 1 is transceiver and Claim 20 is receiver.

5 And so one of the advantages is that this exact same structure you
6 can use it on both ends. In that way, one can think of it as simple, or rigid,
7 or specific, you know, easy to implement. And then in the very next
8 sentence in column 2, line 21 to 22, it says the resulting solution is practical
9 and cost effective. And so that's just consistent with the invention before.
10 And this is an example of the benefits that are discussed.

11 Turning back to my Patent Owners demonstratives and the Trigui
12 reference. So, and I'm turning to Slide 6 of Patent Owner's demonstratives.
13 So Trigui, it's a little bit hard to understand, but it's a -- I think it's a patent
14 application. There's no indication it issued as a patent. And it does discuss
15 antenna arrays, but if one reads the specification and tries to understand, you
16 know, what the invention is or what it teaches, I think the thing that comes
17 from it is that it's intended to be flexible to allow communications with
18 everything, to allow communications with all the modems. And I think a
19 key part of this point is Figure 2A, which Petitioner uses as a building block
20 for the various claim limitations. And I think different Figures of Trigui are
21 duplicates of either two or four versions of Figure 2A.

22 And just looking at the figure, I think that both Trigui and
23 Petitioner characterize this as having one beamformer or one MIMO branch.
24 And it shows, like, multiple modems: Modem A, B, and C at the bottom.
25 And that's sort of what we get from the Figure. And then, when we go to the

1 disclosures of Trigui, and I would look at paragraph 41 of Trigui, that's
2 Exhibit 1004 on page 18. And we can look at the paragraph that Mr.
3 Anderson called out. It says although Figure 2 illustrates only a single
4 MIMO branch, the present invention mention contemplates the use of
5 multiple MIMO branches.

6 And so I think what Petitioner relies on as a beam or a
7 bidirectional beam is a MIMO branch. So the fact that this could be multiple
8 MIMO branches would also not work in their theory. If this were
9 considered multiple beams, it would not meet the numeric requirements of
10 the claim under their theory of duplicating it.

11 But then I understood Mr. Anderson's comment to be about the
12 modems. And this says that similarly, IQ signals from any of the modems
13 can be sent to other MIMO branches. I think there was a lot of argument
14 about the word 'can,' but I mean the way that we read Trigui and we don't
15 see anything to the contrary is that Figure 2A, both on its face and the figure
16 itself and the written description, is that if it's talking about one modem, like
17 the modem is connected to the array. I'm pulling back Figure 2A of Trigui,
18 and that's on Page 4 of Exhibit 1004. This is the full version of Figure 2A.

19 On its face, it shows three modems, and it's all connected to the
20 beamformer. It's all connected to the passive antenna array. If one were to
21 treat that as one modem, it would be connected to the array and the
22 beamformer, but there's no teaching suggestion of the modem not being
23 connected. I guess if we're talking about 2A, the modem would just have
24 nothing to do with the figure because it would not be connected to any part
25 of it. But to the extent Figure 2A talks about multimodal modems, the

1 teaching from the figure and the specifications is that it would be connected
2 to the elements: the beamformer and the passive antenna array. And we see
3 like the same thing I just consistent when we're talking about other figures,
4 whether it's Figures 6 or 10, or if it's different versions of Figure 2A.

5 We don't see any teaching suggestion that would depart from the
6 structure that's in 2A of the modems, which I think they rely on as the
7 alleged claimed MIMO transceiver or receiver would be selectively
8 connected to certain parts. And then I would turn back to Patent Owners
9 demonstratives and show again this figure. I'm looking at Patent Owners
10 demonstratives Slide 16. And on this slide, we have a Figure that was also
11 shown in Petitioners demonstratives, which is from page 39 of their petition
12 and is kind of their main theory and where I started with in terms of what the
13 parties' disputes are. And so there's a lot of annotations that were added in
14 various colors. And there's also a modification to figure in terms of Modem
15 A and Modem B.

16 And under their box drawing, I think they treat -- there's four
17 subarrays on the face of this figure. And so they group the two on the left as
18 a first antenna array. They group that together. And then they group the two
19 on the right as a second antenna array. So that's a grouping that they put
20 forward. And then also for each part of it, this figure in the aggregate it
21 shows four beamforming elements. I think the name is -- it's hard to read.
22 Let me look it up. Beamforming frequency translation. There's four boxes.
23 But I understand under their theory they're treating the two on the right as
24 one beamformer and the two on the left is one beamformer. So that's a
25 characterization that they've presented a kind of a box drawing.

1 And then to meet the claims they've added this Modem B. And
2 they've connected it in a certain way. So Modem A it's connected to the first
3 part or the subarray of the first antenna array and the first part of the second
4 antenna array. And then I think they call this the cross connect option. And
5 then they've done that the same with Modem B that that's added. And so this
6 is the theory that they've put forward. And at least one fundamental dispute
7 that we discussed in the surreply is that this really rests on an assumption
8 that one would take the teachings of Trigui and based on what I was
9 describing for Figure 2A and kind of disconnect it from certain arrays.

10 And I've shown that on demonstrative 17, Slide 17 of Patent
11 Owners demonstratives where if you have Modem A and B, as Figure 2A
12 teaches, it would be connected to each of the subarrays. And under
13 Petitioners they've disconnected it in their Figures 16. But that's why we put
14 under Slide 17 that this is further annotated, which is that we don't think
15 there's been sufficient explanation and justification for why you would
16 remove those as kind of the first step of their theory.

17 JUDGE SZPONDOWSKI: Does your expert provide any
18 supporting testimony in that capacity?

19 MR. WANG: Yes, Your Honor. And that was cited in our sur-
20 reply and our Patent Owner's response. I can get you the exact paragraphs.
21 I apologize, I don't have them right in front of me, but I can get those for
22 you.

23 And then, to kind of reorient and kind of take a step back in terms
24 of what we've been talking about. So, the box drawing that they've done is
25 how they've attempted to meet the numeric requirements kind of early on in

1 the claim element 1.A1-3. And then their expert does have quite a bit of
2 opinions at a certain point. And the point is that they assume in Slide 16,
3 they assume that -- let's assume that the Modem A and B do not have any
4 overlap and that one would be connected to two of the subarrays and the
5 other one would be connected to the other two. So assume that both are only
6 connected to two and that they have to be two different.

7 And they posit that there's two different ways. There's a direct
8 connect where they're both connected to the same left side. Modem A is
9 connected to the left side twice and Modem B is connected to the right side
10 twice or vice versa. And they say that that's I think they call it direct
11 connect. That's the only possibility compared to what they show on Figure
12 16. They call it the cross connect. And so the direct connect would not
13 meet the claims. And I can explain why, which might be helpful.

14 So on the direct connect way, transceiver number 1 is connected to
15 beam number 1 and number 2 of array number 1. And transceiver number 2,
16 or modem 2, is connected to beam number 1 and number 2, transceiver 2.
17 And this violates the requirement to be configured to process M different
18 receive signal or an i-th receive signal to j-th MIMO transceiver correspond
19 to the j-th beam in i-th antenna array. So that's kind of the end of the
20 limitation. If that's not completely clear, maybe take my word for it. I don't
21 think Petitioner disputes that.

22 So, they do have a fair number of motivation, argument opinions
23 from their expert on that last step. If one assumes that there were two
24 modems and that they're completely non-overlapping, and the only options
25 were between direct connect and what they call cross connect, which is what

1 they show on Slide 16.

2 The point that we emphasize in our sur-reply, and that I would like
3 to focus on today, is the premise before that, where you assume that there is
4 no overlap and that these components are different. And we see that, and we
5 reiterate that that's a deficiency of both the petition and their expert opinions,
6 given what Trigui discloses, when it talks about Figure 2A, and when it
7 shows multiple modems, it shows them all connected. It says that they can
8 be connected, but I think Mr. Anderson is reading too much into the word
9 'can.' It's what it's showing. There's no selective connection that's also
10 shown. And then --

11 JUDGE SZPONDOWSKI: But, Counsel, Petitioner, they're
12 modifying Trigui, right? And I think part of their reasoning is that it's a
13 design choice. So why isn't it a design choice?

14 MR. WANG: So thank you, Your Honor, for those questions. So
15 if the question were between the direct connect and the cross connect
16 options, I think that it is a modification of motivation analysis. They have
17 opinions, arguments about that. And I think they assert that there are two
18 options, and they go into detail into both. And if that were the only issue,
19 they may have a point, you know, about being a design choice and within
20 the abilities of a person of ordinary skill. The removing connections, that
21 premise we think is inadequately explained, developed, motivated,
22 supported. And I don't think it's fair to characterize that as a design choice
23 in view of Trigui when it doesn't disclose or suggest removing connections.
24 And again, a lot of -- the description of Figures 6 and 10 is very limited. It
25 just says this is a multiple system.

1 More detail is provided in about Figure 2A, which is they use as
2 the building block, which is the starting point, and I would just say that
3 Figure 2A, on its face, shows multiple modems all connected. The
4 description supports that. And it says, I think it says any of the modems are
5 connected to the antenna array. And then Trigui also talks about the purpose
6 of the system being flexible and sharing resources. I mean, the way we read
7 sharing is to be connected and to use the resources and be capable of using
8 it. And so that -- that's what we see, and that it's not sufficient to just say
9 design choice and kind of make the leap from the first practice.

10 JUDGE STRAUSS: Counselor, you have a little bit less than four
11 minutes.

12 MR. ANDERSON: Thank you. I mean, we would also point out,
13 Your Honor, that I mean in in obviousness and in accountability, it's
14 important to avoid hindsight, right? And we know when all of these IPRs,
15 you know, Petitioners have the claim, and so there is already, you know,
16 some box drawing in in this figure, like in terms of what they're
17 characterizing as a second array, first array beamformer? But just that this
18 from what Trigui teaches, you know, to remove connections and then to
19 cross-connect them, and then map that to the claim, which we think is not
20 proper in this case and not adequately explained that Modem A and B would
21 not be connected to the discern elements of the antenna array or subarrays.
22 Unless there were any questions, I'd like to reserve the rest. Thank you,
23 Your Honors.

24 JUDGE STRAUSS: Thank you. Petitioner, you have 14 minutes
25 for rebuttal.

1 MR. ANDERSON: Thank you, Your Honor. Again, Kevin
2 Anderson, for Petitioner here. I want to start by addressing this argument
3 that somehow our theory is to take Figure 10 and disconnect. I don't think
4 that that's a fair characterization. The theory expressed in the Petition and in
5 the expert opinion is that I take Figure 2A, I use it to build Figure 6, as
6 Trigui says, and then Figure 6 is an array with two subarrays, and then I take
7 two instances of Figure 6 to build two arrays, each with two subarrays. And
8 then our expert explains why, when I have two independent operators,
9 carriers, they would each have their own modem. And then our expert
10 explains why the base case for Trigui of two operators, which is required for
11 sharing, doing MIMO, which needs only two branches per operator, would
12 meet the instance in which Figure 6 is replicated side by side, so that I have
13 two of the independent DIAAs.

14 Figure 10 was used to illustrate what all of this analysis resulted in.
15 But our expert, it is not a fair characterization to say that our expert started
16 with Figure 10 and disconnected stuff. He explained the step-by-step
17 building blocks of how one would get to a system with two arrays, each with
18 two subarrays cross-connected to the modems, which it sounds like they
19 don't dispute. The cross-connect would be the way that a POSITA would
20 choose. And the expert then used Figure 10 because it's a Figure there to
21 annotate how this side by side of two of Figure 6 would look and meet the
22 claims. But there was nothing about disconnected.

23 The other thing I would say about that is, in looking at what the,
24 again, what I would characterize as the easy or the simple or the basic case
25 of Trigui, it is not a Figure 10 where I have four MIMO branches. I don't

1 need four MIMO branches. I don't need four branches to have MIMO; I
2 only need to have two.

3 Figure 10 is not the basic case. It is another configuration that's
4 there, but it is not a basic teaching of Trigui which I have MIMO two
5 branches for each of two operators. They mentioned the word like mapping.
6 I know this is in the brief; that is not what our expert did. Our expert took
7 the basic teachings of Trigui and its goals, which is, okay, if I'm going to
8 have two operators sharing something, I have two modems, how it -- and
9 Trigui teaches they're each going to do MIMO. Okay, so how would I most
10 naturally, as a POSITA, take Trigui and end up with two operators each
11 being able to have two MIMO streams? And that's what he built on is that is
12 the system that he built. It turns out that that exact system invalidates their
13 claim. We didn't take their claim; he doesn't need to take their claim and
14 start and work backwards.

15 He's taking Trigui's basic teaching of sharing a two-branch MIMO
16 system and building forward. And it turns out like the first and most basic
17 teaching of Trigui meets their claims. There are probably a large number of
18 other configurations consistent with Trigui that also would have met their
19 claims but we don't need to do that. We're using the most simple
20 implementation of Trigui to meet Trigui's goals meets their claims.

21 And I would say Your Honor asked about their expert. He did -- I
22 think if one looks at his Dr. Cooklev's report, he basically copied their brief
23 for me. I mean, it happens and maybe that's support, but he doesn't provide
24 any explanatory analysis for anything. He just says the example I use is you
25 have an expert that says the moon is made of cheese, and they don't really

1 explain why they think it's made of cheese. You're just supposed to just
2 accept that. And that's what Dr. Cooklev did. Dr. Negus, on the other hand,
3 and sometimes they have complaints about this, but he has pretty nauseating
4 detail of his conclusion and then the citations and the reasoning.

5 And the reason he did that is so that they could depose him and
6 they did and they didn't get anything out of it, which is why you don't see it
7 cited in their Patent Owner's response. But Dr. Negus, in contrast to Dr.
8 Cooklev, explained all this, how he started with Trigui's basic teaching. He
9 worked forward, and the very first and simplest configuration that a POSITA
10 would reach meets their claim dominance.

11 I would point out again, Counsel pointed in terms of like a benefit
12 or an explanation to why this particular configuration is claimed. They don't
13 have anything in their Patent that explains why this configuration is actually
14 in the claims, has any advantages. I really want to point out that the passage
15 that they checked on Figure in column 2 of the '511 Patent, which is Exhibit
16 1001. And they cited, as I did, lines 17 to 22, column 2, describing alleged
17 advantages. What I want to point out to the Court is in the immediate
18 paragraphs where they are describing the purported invention that does have
19 these advantages, they don't have the claim element of N is greater than
20 equal to 2. And that's what they had to add. And if one looks up at the -- for
21 example, on line it's either 14 or 15 of column 2. It says M , N , V , NZ are
22 integer number values.

23 That's in the claim, but what it doesn't have is N is greater than 2.
24 So one can't point to these advantages that are down here because those
25 advantages are not specific to what's actually in the claim. And, as I pointed

1 out in column 6, the advantages that they're talking about are at most when
2 there's a single beam. And there's nothing in any of these advantages,
3 whether it's column 2 or column 6, that explains or explains why a particular
4 relationship between beams and MIMO transceivers, why that number
5 matters. It could be, and even for the advantages that are listed, it could be
6 any of the claim elements. And Counsel did say, like, well, you don't have
7 to have critical benefits, and I generally agree with that, right? One doesn't
8 have to have critical benefits.

9 But what they are trying to say here is we know that Trigui
10 discloses lots of different things, but we get to come in and claim one of
11 those things out of Trigui. And my point is on the -- it isn't a perfect fit, but
12 that fits most naturally in the genus species analysis where if I'm going to try
13 to claim a species in the face of a reference that discloses the genus, I have
14 to come up with a critical benefit. Again, it's not perfect because genus
15 species is usually most applicable in the chemical/ biological arts where
16 there's some unpredictability here. There's no unpredictability really in this
17 art here. Like I know if I connect this particular electrical component to this
18 particular electrical component I know exactly how they're going to behave.

19 And so the genus species isn't perfect, but if there is anything that
20 helps to bring this to an analytical, reasoned basis, it would be that. And
21 they don't explain anywhere in their Patent why one would want this
22 configuration, why it would be beneficial. And then they criticize Trigui for
23 saying it doesn't disclose why one would want this configuration or why it
24 would be beneficial. Trigui doesn't have to disclose what they themselves
25 don't.

1 JUDGE SZPONDOWSKI: Counsel, I have a question. Patent
2 Owner made an argument that Trigui must be designed to satisfy the claims
3 with respect to these numerical requirements, rather than just being capable
4 of it. What's your response to that?

5 MR. ANDERSON: Yeah. And, Your Honor, I think the claim
6 language talks about configured, which we all know is more exacting, I
7 would say generally, than capable of. If it said capable of, I would concede
8 that.

9 That is addressed to our expert, not just pointing at Trigui and
10 saying, okay, well, it could do, you know, one to N of these and one to N of
11 these, so I get an N to N relationship. That is addressed by the specific
12 configuration that the expert analyzed from Trigui, using the goals of Trigui,
13 the two operators, and each from having at least two MIMO streams. That's
14 what they need, two streams for MIMO. And when I build that system, the
15 basic system, it is then configured to do exactly what the claim said.

16 So it's not as though the expert just said, well, I'm just going to
17 look at Trigui, and it's got lots of disclosures, and I can do X, Y, and Z. Our
18 expert gave a specific instance using the reasoning of Trigui that resulted in
19 an embodiment from that that a POSITA would understand. And that
20 embodiment meets the claims. It is configured to, at that point, that specific
21 embodiment meets the configured to language.

22 So that would be the kind of designed to, I think what they're
23 trying to hint at with designed to is that Trigui has to anticipate, right?
24 Trigui has to expressly say, well, one embodiment is this map; is this exact
25 numerology that we've been discussing. That's not the law, and that's

1 certainly not the law of obviousness. And one could argue that what we
2 showed wasn't anticipatory because we took one of the embodiments that a
3 POSITA would understand, but we didn't need to go there. That
4 embodiment that we described is the simplest way to meet Trigui's basic
5 goals of two operators, each having their own two MIMO branches so that
6 they can actually have a "MIMO system" which requires branches.

7 And then our expert and Petition explained the best way to do this
8 using the most simple amount of teaching from Trigui where I put one array
9 with two subarrays and another array with two subarrays, and I cross
10 connect. And the reason the cross connect works is if I directly connected
11 them, that would be exactly what's in the prior art. We know that in our
12 petition, but if I directly connect them, that would effectively be what's
13 disclosed for Figure 1A and Figure 1B, C, 1D, where they -- each modem
14 had its own array. I see I'm out of time. I'm happy always to respond to
15 questions, but I recognize I'm out of time.

16 JUDGE STRAUSS: Okay, thank you, Counselor. Patent Owner
17 has 12 minutes for your surrebuttal.

18 MR. WANG: Thank you, Your Honor, I hope not to use the full
19 12 minutes. So just to begin with on the claims, there has always been a
20 numerology requirement in the claims from when they were originally
21 presented to the Patent Owner. I don't recall the amendment that Mr.
22 Anderson talks about where it said N is greater than or equal to 2. I think
23 that that was a clarification, but I mean always it had the variables N, M, I, J.
24 So this has always been, you know, the balance of dimension and even the
25 examples given in the spec, you know, talked about N equals 2 or N equals 3

1 and gives that as specific examples. So any implication that dimension was
2 directed to the case of 1 and has nothing to do with the specific arrangement
3 is not supported.

4 And I do think that Counsel continues to discount the specification,
5 the column 2 that we've been talking about. At the risk of repeating myself,
6 it's not required, you know, to have an exhaustive list of benefits or to show
7 that something is, you know, groundbreaking, entitled to Nobel prize. But
8 the Patent does concisely describe this. It teaches an arrangement, and it's
9 borne out in the claims. This is, you can call it simple or specific, but it
10 allows you to do the exact same thing on the transceiver and receiver, to
11 duplicate the components no matter how many units that you have, to
12 combine MIMO and beamforming to provide range extension and
13 throughput enhancement at either or both the base station and mobile
14 terminal. And that's why Claims 1 and 20 are almost identical except for
15 transmit versus receive.

16 And then the resulting solution is practical and cost-effective. So it
17 doesn't necessarily say that, you know, this is completely different or has,
18 you know, completely unexpected benefits, but this is a good way, this
19 arrangement, and it's you can duplicate on both sides and it's practical and
20 cost-effective. And, to the extent benefits are even relevant to what we're
21 doing today, we think this is a little insufficient.

22 I mean, Counsel to the chemical arts or genus or species. I don't
23 think that those arguments have been developed in any of the briefing, nor
24 do I think that that's really quite accurate or quite applicable because you
25 know the chemical arts have their own set of rules.

1 I mean, there are computer types of claims or circuit claims when
2 you can claim an arrangement, you can claim a circuit that has, you know, x
3 number of transistors, capacitors, and so on, and that -- that's fair if it's
4 something that, you know, is not disclosed in the prior art or rendered
5 obvious, that's something that you can get a claim on. And that, I think, that
6 the claims here would be more, more analogous to that where it describes,
7 you know, a system and it describes these components not quite at the size
8 or the detail of a transistor but we are talking about hardware elements of,
9 you know, beamformers and receivers, antenna elements and so forth. So I
10 think that that's a fair way of thinking of the claims, and then the traditional
11 obviousness analysis would apply.

12 Counsel says that they weren't changing Trigui where they were
13 just talking about the base case. That's not correct because what we get from
14 the figures and the written description is that Figure 10 shows one modem.
15 So there's one modem connected to everything. And so at least they're
16 adding a second modem. And multiple modems aren't shown in Figure 10.
17 If multiple modems are shown anywhere, it's in Figure 2A, which is the
18 opposite of what they need because it has three modems and it's connected
19 to everything. Figure 10 shows one modem that's connected to everything.
20 And so I don't get how you start from what Mr. Anderson called it the base
21 case, as what they were alleging from. If we start with the base case of
22 either Figure 10 or Figure 2A, all of those suggest that any existing modems
23 would be connected to everything.

24 And then Mr. Anderson mentioned MIMO, and it's also in their
25 briefing, but I don't really understand that point, how MIMO helps them to

1 get separate connections or cross-connections. I mean, multiple -- MIMO
2 just stands for multiple-input and multiple-output. And if anything, that
3 supports it being connected to all of the different components, not selective
4 connection or disconnecting a connection that would otherwise be there.

5 And then finally, my last comment, unless there are any questions,
6 is one of Your Honors asked about the opinions in Dr. Cooklev's declaration.
7 And I did pull them up. So I would point to paragraphs 122 to 123 and
8 possibly the next paragraph of Dr. Cooklev's declaration, who is Patent
9 Owner's expert. And this is Exhibit 2003. And I will say at the outset that
10 it's fair that Dr. Cooklev's declaration is more concise than Dr. Negus's, but
11 Dr. Negus's declaration is very hard to read. It's long and kind of repeats
12 things, has a lot of underlining and bolding. It's hard to understand. So, I
13 think that Dr. Cooklev is concise in offering opinions and providing us
14 evidence. And I mean, to the extent Dr. Negus's declaration is longer, it's
15 just longer and it's not necessarily easier to understand. I would also point
16 out that Dr. Negus has opinions that aren't even grounds in the IPR. I think
17 he, you know, presents obviousness theories based on the Rudrapatna
18 reference as a primary reference, but that's not even relied on or preserved in
19 the scope of the IPR. So, there's different issues of it.

20 But turning it back to Dr. Cooklev, he says here he's talking about
21 Figure 10 and he's talking about the two different ways that Dr. Negus,
22 where he devotes more of his opinions to the cross connect or the direct
23 connect, but Dr. Cooklev explains that in Figure 10, there's only one modem
24 in paragraph 122 connected to all four subarrays. And then he says this is
25 different from the two ways that Dr. Negus describes. And then he explains

1 that Trigui teaches flexibility, which is achieved by connecting the modem
2 in Figure 10, the one modem that's shown, to all four subarrays. And the
3 two ways that Dr. Negus is talking about, Dr. Cooklev finds this
4 incompatible with Figure 10 because the Figure shows four identical MIMO
5 branches and separate OBSAI CPRI interface to each branch.

6 Then he goes on, and this is all to support his opinion that none of
7 the direct and cross connect techniques is correct. And so Dr. Negus does
8 have opinions. If you're assuming, if you're starting with the premise that
9 direct connect and cross connect are the only options, I think he lists six
10 reasons, but the focus on our Patent Owner response for the motivation point
11 was about the previous step of not connecting them or disconnecting one of
12 the modems from the two points. And that's why we didn't feel the need to
13 cite Dr. Negus' deposition, because we wanted to emphasize this point that
14 we felt was a deficiency.

15 JUDGE SZPONDOWSKI: Counsel, would you mind just
16 speaking briefly about your lack of coordination argument regarding the
17 addition of the second modem?

18 MR. WANG: Sure, Your Honor. I mean, we acknowledge that
19 coordination is not explicitly a claim requirement, and so we did discuss that
20 point, I think in the context of motivation combined. And if you would just
21 give me a minute.

22 JUDGE SZPONDOWSKI: If you don't have it in front of you,
23 that's okay.

24 MR. WANG: I apologize. It hasn't come up directly in what we're
25 talking about, but yeah, I acknowledge that, and that's why I haven't made an

1 argument that it's not an express claim requirement. What I've focused on is
2 one aspect of their motivation to combine theory. And so, I do recall us
3 mentioning coordination, but I think it was in a subsidiary context. And I
4 apologize, I don't have it before me right now.

5 And since my time is running out, I guess the last point is it's not
6 correct that Dr. Cooklev, you know, copied the Patent Owner response. In
7 many of these proceedings, we work with the expert to develop and draft the
8 expert declaration first, and then we, you know, base the Patent Owner
9 response on the declaration and cite to that.

10 JUDGE STRAUSS: Okay, thank you, Counselor. And I want to
11 thank everyone for appearing today, for answering our questions. We will
12 take this case under advisement and issue a decision in due course. I'll ask
13 the parties to stay to answer any questions the court reporter might have.
14 Thank you.

15 (Whereupon, the above-entitled matter went off the record at 11:35
16 a.m.)

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