

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

IPR2024-00613
Patent 10,715,235 B2

Record of Oral Hearing
Held: July 9, 2025

Before MIRIAM L. QUINN, NORMAN H. BEAMER,
and KARA L. SZPONDOWSKI, *Administrative Patent Judges*.

IPR2024-00613
Patent 10,715,235 B2

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The above-entitled matter came on for hearing on July 9, 2025,
commencing at 1:00 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE SZPONDOWSKI: So we have our final hearing in IPR2024-00613. I am Judge Szpondowski and joining me are Judge Quinn and Judge Beamer, and we'll start with the parties' appearances. And who do we have here for Petitioner?

MR. ANDERSON: Yes, Your Honor. For Petitioner, this is Kevin Anderson from Duane Morris, and I am joined by my colleague, Pat McPherson.

JUDGE SZPONDOWSKI: Okay, thank you. And for Patent Owner?

MR. WANG: Good morning, Your Honor. This is Philip Wang of the law firm Russ August & Kabat on behalf of Patent Owner. I'm joined by my colleague, Christian Conkle.

JUDGE SZPONDOWSKI: Okay, thank you. Well, welcome everyone. Obviously, our hearing today is over video, so I just want to start by clarifying a few items. If you encounter any technical difficulties, please let us know immediately. Second, when you aren't speaking, please mute yourself. Third, please identify yourself each time you speak in order to help the Court Reporter prepare an accurate transcript.

Fourth, we have the entire record. I didn't see any demonstratives filed by either party, so I assume you'll just be referring to the papers and the exhibits. So when you do so, please just refer to them clearly and explicitly with the exhibit number and the page number, as is relevant. This will help the preparation of an accurate transcript of the hearing. Finally, there is a

1 public line, so be aware that members of the public may be listening, as well.

2 We set forth the procedure for today's hearing in our June 10th,
3 2025, order. As a reminder, each party will have a total of 45 minutes to
4 present arguments. Petitioner has the burden of proof as to whether the
5 challenged claims are unpatentable and will go first. Patent Owner will
6 present opposition arguments. And then to the extent Petitioner has reserved
7 time, Petitioner will present rebuttal arguments. And to the extent that
8 Patent Owner has reserved time, Patent Owner will present surrebuttal.
9 Does Counsel for Petitioner have any questions before we get started?

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

11 JUDGE SZPONDOWSKI: Thank you. And does Counsel for
12 Patent Owner have any questions?

13 MR. WANG: I do have one, Your Honors. I was wondering if
14 Your Honors prefer or are amenable to screen sharing in these proceedings.
15 I haven't seen that in prior hearings, but I don't know if practices have
16 changed.

17 JUDGE SZPONDOWSKI: We are fine with screen sharing, as
18 long as it's something that's in the record, if you want to share an exhibit or a
19 paper. That's fine, as long as it's part of the record.

20 MR. WANG: Understood, Your Honor. Thank you.

21 JUDGE SZPONDOWSKI: Okay. Okay, I think we're ready to
22 begin. Would Petitioner like to reserve any time for rebuttal?

23 MR. ANDERSON: Yes, Your Honor. I'd like to reserve 20
24 minutes.

25 JUDGE SZPONDOWSKI: Okay. Judge Quinn will be running
26 the clock. You should be able to see it pretty clearly behind her on the wall.

1 So if she could set the clock for 25 minutes. All right. Looks like we're all
2 set, so you may begin whenever you're ready.

3 MR. ANDERSON: Yes, Your Honor. My name is Kevin
4 Anderson. I'm Counsel for Petitioners. I'm going to explain a little bit about
5 our approach to this IPR, about the record that is shown, that we have here,
6 and then I'm going to address some of the arguments in the Patent Owner's
7 response and I'm happy to answer questions on any of the other arguments.

8 In this IPR, we have the advantage of a significant record, both in
9 the prosecution and in the subsequent statements to this Board in earlier
10 IPRs, and we discuss those at length in our Petition. And the reason those
11 are important is that, for example, in the prosecution, the Applicant made
12 very clear statements about what technology provided examples of the
13 claimed limitation here. And similarly, in the subsequent other two IPRs
14 that were filed and referenced in our papers, XR, the Patent Owner, adopted
15 those statements and reiterated those statements about what in the intrinsic
16 record were examples of the claimed -- corresponding to the claimed terms.

17 So we have a patent here, the '235 patent, that was filed about 15
18 years after the application -- after the priority application -- and the '235
19 patent relies upon a series of terms that are either not in the specification or
20 used maybe once or twice in the specification, and we explain that in our
21 Petition repeatedly. During prosecution, the Applicant was faced with a
22 prior art reference, which was substantively identical. It was by one of the
23 inventors and it was -- it had largely the same language with the exception of
24 one embodiment that in our papers, we called the '235 weight embodiment.
25 So most of the disclosure was already in the prior art reference.

26 The Examiner applied that prior art and there was some back and

1 forth on some terms. In particular, the term "simultaneously", which has
2 been a big part of the previous IPRs. Ultimately, the Examiner issued a final
3 rejection. The Applicant came back then and sought to pre-date the prior art
4 reference. And during the course of trying to pre-date the prior art reference,
5 the Examiner said, okay, for each of these claim elements, I want you to
6 identify where in the priority document is an example of that where you
7 have written description support, and that's what the Applicant did. So the
8 Applicant came back and cited to some very specific passages.

9 Now, the import of those passages is they provide examples of
10 what corresponds to the claim elements. We are not asserting that this is a
11 lexicography case, we're not asserting it's a disclaimer case. Those are
12 different concepts. What we're saying here is the Applicant gave examples
13 and then our prior art has exactly what the Applicant said corresponded to
14 the claim elements there. And so based upon those representations about
15 what was in the priority document, and that's the "Littlejoe" document that's
16 referenced throughout our papers, the Examiner allowed the claim. He
17 basically -- I don't know if explicitly, but implicitly allowed for the pre-
18 dating of the prior art reference that had been applied and allowed the
19 claims.

20 In subsequent proceedings, there were two -- I would say two
21 substantive IPRs. There were some "me too" IPRs that were joined, but
22 there were two substantive IPRs. One of them made its way to oral hearing
23 like this one before the parties settled. And substantively, the arguments
24 primarily in those previous IPR proceedings revolved around the term
25 "simultaneously." And you'll note that in the Patent Owner's response, there
26 isn't really any arguments about simultaneously as there had been previously

1 and that's because what we took was prior art that operated in largely the
2 same fashion as the priority document to the '235 that had been identified as
3 corresponding to the claims.

4 So that prior art, like the '235 patent and the claim, operates at a
5 high level the following way. The base station will receive various signals,
6 including a pilot signal. Those are received on what's called a Butler matrix
7 in the prior art and in the priority document. The Butler matrix -- and we
8 have a section in our brief that explains this, and I can maybe highlight that,
9 or I'll just share to explain that.

10 What's shown here are two figures from -- that reflect the Butler
11 matrix, and these are from a patent by Mr. Butler that dates back to I think
12 the priority date is -- filing date was 1962. Exceedingly well-known
13 technology in the industry. And the way a Butler matrix operates is it will
14 have multiple antennas that are shown at the top of the bottom figure, which
15 is Figure 3 from the Butler patent, which is Exhibit 5, and this is annotated
16 and I'm showing page 15 out of our Petition.

17 At the top, the antennas will be sampled simultaneously, which is
18 where the simultaneously aspect of the claims come from. And those -- the
19 phases -- the amplitudes and the phases of the different antennas go through
20 a set of circuitry that show up ultimately at the bottom. You have a
21 combined signal reflecting different combinations of the phases and
22 amplitudes from the signals sampled on the antennas. And you'll see at the
23 bottom -- I don't know if this is very clear -- but those feeds that are at the
24 bottom that I'm highlighting there, which are -- it looks like 1L, 4R, 3L, 2R,
25 2L, 3R, 4L, 1R -- those correspond directly to the pattern of the beams that
26 the Butler matrix has been designed to create, as shown in Figure 4 of the

1 Butler patent, which is shown both, in Exhibit 1005 or just the Butler patent,
2 as well as on page 15 of our brief.

3 And so ultimately, what you have is after measuring and
4 combining the various signal transmissions that are received on the different
5 antennas, there is signal information that is output to the feeds below. This
6 reflects the reception. The transmission to create beams for transmitting is
7 exactly the inverse.

8 Below, at the bottom of Figure 3 there, one would apply different
9 signals on the different feeds that are shown at the bottom of Figure 3 from
10 the Butler patent, and then those go through a series of -- I guess it's splitters
11 and dividers on the way out that ultimately then apply different signals to
12 each different antenna, and when those signals are then transmitted, they
13 combine either constructively or destructively to form the beams that are
14 shown in Figure 4. And that's how kind of Butler matrix being formed
15 works and it goes back quite a long ways there.

16 And so for our -- the bulk of our primary prior art reference
17 operates exactly the same way the '235 patent operates. It receives signals,
18 as were shown there on the different antennas. Those are combined into the
19 feeds, which are the outputs on the receive end, and then those -- the signal
20 information there is taken by the beam forming algorithm and used to
21 construct weights. And those weights are then used to be able to transmit
22 back out signals along the beams here. And that is, as we showed in our
23 Petition --

24 JUDGE SZPONDOWSKI: So --

25 MR. ANDERSON: I'm sorry. Is there a question?

26 JUDGE SZPONDOWSKI: I do have a question.

1 MR. ANDERSON: Sure.

2 JUDGE SZPONDOWSKI: I wonder if you get a little more into
3 how that signal information is used to calculate the weights. I believe you're
4 relying on the strength of the signal for the signal information; is that --

5 MR. ANDERSON: So --

6 JUDGE SZPONDOWSKI: Is that accurate?

7 MR. ANDERSON: So ultimately, what is measured on the
8 Butler -- on the antennas, is the strength and the amplitudes of the different
9 signals, and there's lots of different signals because it's a wave form that's
10 going there, and what is being measured on each antenna is the -- what we
11 call the -- what's referenced as signal strength, but it really means the
12 amplitude of the wave at that time and we show that -- I can share my
13 screen, again.

14 JUDGE QUINN: Before you get to that, can I ask --

15 MR. ANDERSON: Sure.

16 JUDGE QUINN: -- you a question here?

17 MR. ANDERSON: Certainly.

18 JUDGE QUINN: But the Butler matrix, it looks like you're relying
19 on it for receiving the signal, but also making some other calculations the
20 processor has to do. I want to make sure that I understand. What's the
21 demarcation between the claim processor and the transceiver? Because the
22 transceiver is the one transmitting the signals, and the processor is receiving
23 the first signal transmission, but it's also determining the weighting values.
24 So where is the Butler matrix in the system here?

25 MR. ANDERSON: So the Butler matrix, it is implemented as part
26 of the overall system that can be implemented either in hardware or software

1 as we explained in the Petition. And so the Butler matrix is the component
2 that is receiving the antenna phases and amplitudes off the antennas. It's
3 combining those in a way that is explained in the Butler patent and which
4 can be in different ways. And then on the outputs, what's the feeds, on the
5 Butler matrix, that's where they claimed signal information.

6 JUDGE QUINN: So you're saying --

7 MR. ANDERSON: It presumes --

8 JUDGE QUINN: Are you saying the Butler matrix is the
9 processor or part of the processor?

10 MR. ANDERSON: The Butler matrix processing can be
11 implemented in either hardware or software.

12 JUDGE QUINN: Okay. And are you also contending something
13 else is a processor in Agee?

14 MR. ANDERSON: In Agee, there is -- all of the algorithms that
15 are described in Agee are described as being implementable in processors
16 and so --

17 JUDGE QUINN: And so what are --

18 MR. ANDERSON: The --

19 JUDGE QUINN: What are the --

20 MR. ANDERSON: I'm sorry.

21 JUDGE QUINN: So what are the signals from which you are
22 taking the information? Is it the output? Is it the combiner? Is it the output
23 of the Butler matrix, which is input to the algorithms or is it the signals that
24 are input into the Butler matrix?

25 MR. ANDERSON: The claimed signal information that are where
26 the claim says, determine a set of weighting values based on the first signal

1 information and the second signal information, it's primarily the output of
2 the Butler matrix, but I would say because the Butler matrix, those outputs
3 are reflective of the signal transmissions that are hitting the antennas, it can
4 be inclusive there. But primarily, it's the output of the feeds from the Butler
5 matrix that are being used to determine the weights. Does that --

6 JUDGE QUINN: So the --

7 MR. ANDERSON: -- answer your question?

8 JUDGE QUINN: Right. And that's instructive, thank you. So
9 what is the information, as my colleague asked you, that is output from the
10 Butler matrix, from which you're determining information?

11 MR. ANDERSON: It is the combined signals off that have been --
12 that were present on the different antennas, that were combined in the way
13 that it's defined by the Butler matrix. And that is kind of the way that basic
14 reciprocity beam forming works and that's what Agee -- and we cited this --
15 that's what Agee teaches, which is I'm measuring the signal as they come in
16 to my antennas, and then they're -- the Butler matrix combines those in a
17 certain way and then I'm using that as signal information that I have received
18 from the different combinations there to calculate the weights.

19 And that weight calculation, I'm explaining the processing as
20 though only a single frequency was being analyzed, but as we noted in the
21 Petition, Agee is an OFDM system that does this same processing for
22 multiple different tones or different frequencies. I think one embodiment is
23 32 different frequencies. Another one has either 12 or 13 different
24 frequencies. So one can think of the basic processing as being effectively
25 replicated for each different tone that is being processed in Agee.

26 JUDGE QUINN: So how is a weight value that your contending

1 happens at the processor or the algorithms pertain to that combined signal
2 that is output out of the Butler matrix? What is specifically happening
3 there? Because Agee is very vague as to how that is computed and what are
4 the characteristics from which the weights are developed, and your Petition
5 is very confusing and I'm sorry to tell you that it doesn't elucidate a lot as to
6 exactly what is the information that turns into value, so it would be useful
7 for you to explain that --

8 MR. ANDERSON: Sure.

9 JUDGE QUINN: -- a little further.

10 MR. ANDERSON: The information is -- the signal information is
11 the combined signal strength and phases that are present on each of the
12 antennas that are then combined by the Butler matrix into the output feed
13 and the output feeds are reflective of those different combinations of signal
14 strengths and amplitudes, and then those different combinations of signal
15 strengths and amplitudes are used in the figures, I think it's Figure 30 and 37
16 in Agee to -- as inputs into the weight calculation algorithm. I think Figure
17 37 shows that.

18 So I'm concerned that some of the confusion is that there is an
19 understanding that the signals actually coming in have content that
20 comprises the -- or content that is the weights. Meaning like I have to
21 process everything and then I decide what those bits are, and I use those bits
22 for the weights. That's actually not how reciprocity beam forming works, it's
23 not how Littlejoe works, and it's not how Agee works.

24 What happens is I'm looking at the different -- I'm trying to look at
25 how the different signal strengths and amplitudes are being combined and
26 then the way the algorithm works that's in Figure 37 -- I think we explained

1 this in the Petition -- is I compare the overall signal that I received on those
2 different feeds from the Butler matrix against a known version of that signal
3 and the delta there is used then to calculate the weights, because then once --
4 if I know how the receive signal differs from the reference signal, that
5 allows me to calculate the weights so that when I go to transmit back, I can
6 pre-adjust -- I can use those weights to adjust whatever I need to adjust in
7 order to account for the properties of the channel, how it changed when it
8 was being transmitted to me. Is that --

9 JUDGE QUINN: So Figure 37 is used for the pilot signals?

10 MR. ANDERSON: Correct.

11 JUDGE QUINN: So the pilot signal -- or rather the output of the
12 Butler matrix, which would be combined signals --

13 MR. ANDERSON: Um-hum.

14 JUDGE QUINN: -- that's where you say there is some calculation
15 of differences and then those calculations --

16 MR. ANDERSON: Correct.

17 JUDGE QUINN: -- would then be input into some algorithm that
18 is reflected in Figure 37; is that accurate?

19 MR. ANDERSON: Correct, and Figure -- so Figures 30, 35, and
20 37. Figure 30 shows an overall view of it with the signals coming from the
21 left, from the Butler matrix for the different tones, and that's shown on page
22 59 of our Petition. And then Figure 35 explains that for each tone that I have
23 received, I obtain that tone from the feeds, from the Butler matrix -- so I
24 obtain the signals for that frequency, from the Butler matrix, and then for
25 that frequency, I go down and I look if it's a pilot signal, which is box 593 in
26 Figure 35, and if it's a pilot signal, it says yes, I go to the left in Figure 35.

1 And I run my -- it's called FFT-LS compute and that's where the combiner
2 weights are calculated, and the combiner weights are the inverse of the
3 transmit weights.

4 And so Figure 37 shows the details of Figure 35, primarily in block
5 594, but Figure 37 is where it's explaining how I take a reference signal and
6 based upon that reference signal, the outputs of the other matrix are then -- I
7 say compared. That comparison is difficult in the analog world. It requires
8 an FFT, but at a high level. It's compared against the reference signal and
9 the differential to those is then, again, through a lot of math, explained in
10 Figure 37, ultimately results in the weights that are then used both for future
11 reception and for future transmission.

12 JUDGE QUINN: Thank you for that, but I wanted to ask you
13 something further. I don't see anywhere in Figures 35 or 37 where the signal
14 strength in phases, as you said, are used to calculate the combiner weights.

15 MR. ANDERSON: So if one looks at Figure 35 -- I'm sorry,
16 Figure 30 and Figure -- which is shown on page 59 of our Petition and if I
17 can -- let me get that up.

18 JUDGE SZPONDOWSKI: You are about at your 25 minutes.
19 You're obviously free to continue into your rebuttal time.

20 MR. ANDERSON: Sure. I'll answer this question and then I'll
21 reserve my time. Figure 30 shows that the feed data is -- this is the data that
22 is coming from the output of the Butler matrix, and then that feed data serves
23 as inputs into the multi-length adaptation algorithm. The multi-length
24 adaptation algorithm is then what is shown in Figure 35, which is on page 66
25 of our Petition. And each time it frames, it'll start where it will get the
26 current OFDM symbol.

1 So it's taking one of the frequency bins, the outputs for the feeds
2 from the Butler matrix for one of the frequency bins. It then determines if
3 it's a pilot symbol and then either runs the algorithm to calculate an updated
4 pilot symbol, which is on the left-hand side, or if it's not a pilot symbol, it
5 applies the previously calculated weights to properly receive that data.

6 And then Figure 37 where it's calculating the -- I'm trying to find
7 the specific symbol. I believe it's this lambda symbol here. I think we've
8 referenced that in our brief -- that explains that is where it's calculating to
9 these mathematical operations defined in Figure 37 are being used to take
10 the signal information that is from the feeds and compare it with the
11 expected signal information or the known signal information. Oh, and I see
12 that I am into my rebuttal. So I'm happy to answer any further questions and
13 I'm also happy to reserve the remainder of my time for rebuttal.

14 JUDGE SZPONDOWSKI: I do have one more question. So is it
15 your position that using a Butler matrix satisfies limitations 1.3, 1.4, and
16 1.5?

17 MR. ANDERSON: Let me make sure what the -- yes on 1.3. 1.4
18 and 1.5 on the determines the first signal information, we pointed to the
19 passages in the prosecution history where the Applicant said that using the
20 output of a Butler matrix corresponds to those determines elements and I can
21 point to that.

22 So it's on page 61 of the Petition where we cite to that and then we
23 also discuss that exact, which is citing to Exhibit 1002, 000131, where for
24 the determines first and second information, the Applicant cited to the
25 quotation that says the beam forming application uses the signal strength
26 information derived from the packet receptions by the search or receivers,

1 and that's exactly what Agee does. The beam forming algorithm uses the
2 combined signal information on the output of the other matrix, and so Agee
3 does the determining in exactly the same way as the exemplary determining
4 cited by the Applicant to the Examiner.

5 JUDGE SZPONDOWSKI: So I think the answer to my question is
6 yes?

7 MR. ANDERSON: Yes. I'm sorry. I'm sorry. Yes, I should've
8 started with that. The answer is yes on 1.3, and 1.4 and 1.5, they are met by
9 the subsequent processing of the output from the signal strength -- the output
10 of the Butler matrix just as it was cited in the prosecution history when the
11 beam forming algorithm, which is the multi-weight adaptation algorithm in
12 Agee uses the output. That meets 1.4 and 1.5. That's for that. Yeah.

13 JUDGE SZPONDOWSKI: Okay. Okay, thank you.

14 MR. ANDERSON: Okay. And unless there's any further
15 questions, I'll pass the baton.

16 JUDGE SZPONDOWSKI: Okay.

17 JUDGE QUINN: I stopped the clock.

18 JUDGE SZPONDOWSKI: Okay, thank you. So we will turn to
19 Patent Owner. Would you like to reserve any time for rebuttal?

20 MR. WANG: Yes, Your Honor. I would like to reserve 15
21 minutes.

22 JUDGE SZPONDOWSKI: Okay. So we'll have Judge Quinn put
23 30 minutes on the clock, and you may begin whenever you are ready.

24 MR. WANG: Thank you, Your Honors, and good afternoon. And
25 I'll happily take the baton from my friend, Mr. Anderson. At a high level --
26 and I think this just came out in the last question -- Petitioner's theory is that

1 a Butler matrix itself -- a conventional structure that has been known for 40
2 years described in the Butler reference -- merely anticipates Claim 1 of the
3 '235 patent.

4 I think through their mapping and through annotations, they allege
5 that the Butler matrix itself, whenever it receives this signal, it would meet
6 element 1.2, 1.3, 1.4, and 1.5, and then subsequently, if there's any
7 determination of weights based in any way on the output of the Butler
8 matrix, then that would meet 1.6, as well. So it would meet, essentially, the
9 claim. We don't think that that's how a person of skill would understand
10 with this conventional Butler matrix and the way that it's mapped in the
11 claims.

12 And then the '235 patent, the challenged patent, does mention
13 Butler matrices, but not in the way that aligns with their theory. So first, I
14 would note that the term "Butler matrix" it doesn't appear in any claims,
15 even dependent claims. And really when it's discussed, it is in Column 25.

16 And just to back up for a second, a Butler matrix is just a circuit
17 that takes analog inputs and gives an analog output, and it can be used to
18 form beams, beam forming, perhaps beams with directions, but it's a purely
19 passive kind of circuit component. And in some ways, we can even think of
20 it -- it's more complex, but we can think of it as a multiplexer or a combiner.
21 Something that takes two has two inputs and then combines that into one.

22 And I did want to share my screen and to show just briefly the
23 patent, and let me attempt that now. So I'm showing right now on my screen
24 just the '235 patent, Exhibit 1001, page 36, and really as an optional
25 embodiment, it discusses Butler matrices at the end of the patent and it
26 describes in a way consistent with what I've explained it, which is it's a

1 circuit or a component used for beam forming. It can be next to the antenna
2 and it says in this embodiment 13, it talks about antenna array and then
3 implement as a beam forming network and it says an exemplary Butler
4 matrix, it's conventional. It's a passive device that forms in conjunction with
5 the antenna array communication beams using the signal combiners, signal
6 splitters and/or signal phase shifters, and that's kind of the extent of it.

7 The patent never describes the Butler matrix itself as a processor or
8 doing processing or doing determinations, and importantly, neither does the
9 Petition. I think there were some questions about this, but I don't think that
10 there's ever -- I don't think the Petition calls the Butler matrix a processor or
11 it says that the inputs and outputs are processing steps.

12 JUDGE QUINN: So Counsel, can I ask you a question then?

13 MR. WANG: Yes.

14 JUDGE QUINN: We heard from Petitioner that largely the
15 contentions for limitations 1.4 and 1.5 rely on prior statements of either
16 counsel for Patent Owner or Appellant during the examination of the patent.
17 What weight should we give to those statements to the extent that they
18 attempt to use your prior statements of a party as some sort of admission that
19 the Butler matrix or some components thereof perform the claim limitations?

20 MR. WANG: Sure, Your Honor. Thank you for that question. I
21 do want to address that at some length. First, at a high level, I think that
22 really, all of these arguments -- I'll address them substantively -- but they --
23 and I just realized this, which is that I think it's attempting to use things in
24 the spec or the priority or prior IPRs as kind of a roadmap, and I think it's
25 used in a wrong way. I want to describe this, which is in a provisional
26 application, there was some mention of signal strength under a different

1 structure, which I want to show.

2 And so then they're kind of attempting to fit that into Agee,
3 which -- and I agree with Your Honor. It's a very long, vague, confusing
4 reference. And including to say that the formula -- the formulas that are
5 very difficult, if not impossible to understand in Agee -- are using signal
6 strength as a parameter, but it's not there. So it's kind of trying to fit like
7 something into something that won't fit.

8 On the prosecution history. Also during prosecution, there was a
9 rejection based on the Crilly reference and the Crilly reference was another
10 application, another patent by the same company, Vivato and it had three
11 common inventors as the '235 patent. I think the common inventors were
12 Mr. Crilly, Mr. Biba, and Mr. Conley. They were all employees of Vivato
13 and the '235 patent has several more inventors, so it's work from the same
14 company.

15 And then -- so the Examiner made a rejection, found that it would
16 render the '235 patent obvious, and then the Applicant, they didn't agree with
17 the Examiner's finding. I think Mr. Anderson admitted there was no
18 disclaimer. It didn't agree with anything the Examiner may have found or it
19 didn't agree with comparing and contrasting Crilly with a provisional
20 application. That's like a second level admission. There's nothing like that.
21 All that the Applicant did was as the best way to overcome this reference,
22 was to say that it could be pre-dated.

23 And for the exercise of pre-dating a reference, we know from cases
24 like *Dynamic Drinkware* where it's just to show that the inventor was in
25 possession of the invention and to show what support there is for the
26 different limitations. I mean, that's done after the fact, but that's what the

1 Applicant did to get over Crilly and relying on the Littlejoe provisional
2 application or provisional document. And I do want to show that document,
3 which I think is important and will hopefully answer Your Honor's
4 questions. So I shared this on the screen.

5 What I have here is this is the Littlejoe and this is in Exhibit 1009
6 to the Petition, and Littlejoe does talk about a Butler matrix, but the
7 important part or what's the more relevant part is that it says the usage is 16
8 port Butler matrix. This is a passive circuit component, and then the outputs
9 are connected to 16 standard WLAN cards installed in a PC. An application
10 on the PC obtains the received signal levels for each received packet. So
11 this is shown in the next page, this block diagram.

12 So the important thing here is not really the Butler matrix. You
13 know, you could think of that as an antenna array or a multiplex or
14 whatever, but the stuff about the signal strength is described by Littlejoe as
15 being done by the 16 separate WLAN cards installed on the PC. And then it
16 says the signal level information, that's calculated, determined by the WLAN
17 cards, and I'm referring to page 1, is used to computer the complex weights
18 and then it goes to another beam former, so-called card 13 beam former
19 allows independent, complex weights on each array.

20 So this is an example and this is an attempt to show that the
21 inventors were in possession of the claimed invention, so it's an example.
22 But it's different from just a Butler matrix or anything in Agee, and it
23 specifically -- the implementation talks about using these WLAN cards to
24 calculate signal information, the signal strength based on the outputs of the
25 Butler matrix.

26 And then it says that -- on page 2 of Exhibit 1009, that this report,

1 it calls itself a technical report, deals with the task of converting the received
2 signal strength reported by the search or receivers, which is referring to the
3 WLAN cards, into a set of weights for the card 13 beam former. And so the
4 rest of the document describes the algorithm of using that signal
5 information, the signal strength for the card 13 beam formers.

6 And reason this is responsive to Your Honor's question is that this
7 is how we're distinguishing their argument. I mean, it's not -- the Applicant
8 and the Patent Owner never agreed with their mapping. We never agreed
9 that if you just have a Butler matrix, as I started with, that you could --
10 which receives an analog signal -- you could point to some property of like
11 the two antennas as the alleged burst signal information and the alleged
12 second signal information that are different, and then it gets combined by
13 analog circuit. And then that constitutes determining the first and second
14 information and then just -- and that again, that output is another analog
15 signal, and then whatever you do to that output of the Butler matrix if that
16 meets limitations 1.2, 1.3, and 1.4. And I hope --

17 JUDGE SZPONDOWSKI: I have a --

18 MR. WANG: Yes.

19 JUDGE SZPONDOWSKI: Counsel, I have a follow-up on that.
20 So if those portions of Littlejoe were used by the Applicant to show
21 possession of the invention, doesn't that give us some guidance as to what
22 the Applicant considered to encompass the scope of the claims, those
23 arguments? Or what would be encompassed by the claims, maybe I should
24 say?

25 MR. WANG: Sure. Sure, Your Honor. I think it can be relevant,
26 but I think what we heard Mr. Anderson argue is that this is exactly the

1 same. Exactly the same as Agee. It's not exactly the same because it does
2 not have this explicit structure of talking about a specific signal
3 information -- here, the example of signal strength -- showing it being
4 determined, not by the big Butler matrix, but by these WLAN cards and then
5 the report says that these signal information are used to convert into a set of
6 weights.

7 And so there is an attempt at road mapping -- in argue -- improper
8 road mapping going on by Petitioners, and it does -- I would say that
9 Littlejoe does say that signal strength, to the extent that it's measured and for
10 a first antenna element and a second antenna element, and determined and
11 then the weights is determined based on that, it could be a signal
12 information.

13

14 It's instructive in that it also tells us a Butler matrix is not
15 excluded -- the use of a Butler matrix somewhere is not excluded by the
16 claimed invention, even though it doesn't explicitly recite a Butler matrix,
17 but it doesn't say that the use of a Butler matrix alone, which at a high level,
18 is what the Petition is contending, invalidates Claim 1. Much less that
19 Patent Owner admitted that in any way because the prosecution history is
20 what I described, which is that there was an attempt to show support for it
21 and that the support is this structure -- this example. Did either of Your
22 Honors have any follow-up questions to that point?

23 JUDGE SZPONDOWSKI: I don't have anything to that point, but
24 I do have another question. And you mentioned this, I think, at the start of
25 your argument that a person of skill in the art would not understand a Butler
26 matrix as determining or measuring signal strength, and that was at page 21

1 of your Response, also. And I'm just -- I'd like to know what evidence in the
2 record supports that statement. And if you want to get back to me during
3 your rebuttal on that and you want to have somebody look for it, that's fine,
4 but I'd like to know what evidence supports that.

5 MR. WANG: Sure, Your Honor. I mean, what I would point,
6 Your Honor, just off the top of my head is I would point to the descriptions
7 of the Butler matrix in the '235 patent itself and that would be at Column 25
8 where it describes it as a passive device where it receives an analog input,
9 multiple analog inputs, and then it outputs a signal and I don't think there's
10 any support for a Butler matrix itself being considered a processor, nor do
11 Petitioners argue that it's a processor.

12 And so the claim talks about a processor configured to determine a
13 first signal information and a second signal information, and I think Mr.
14 Anderson argued -- it sounded like a new argument that a Butler matrix
15 could be implemented in software and maybe that's how it would be a
16 processor, but I do think that it's a new argument and not made in the
17 Petition, and whether it could be is not germane, I think.

18 And then we also have like the original Butler reference which is
19 technically a secondary reference in this proceeding, and I think it comports
20 with how the '235 patent describes and what I've been saying, which is that
21 it's been a passive circuit, and it takes analog signals and outputs analog
22 signals. There is a lot of annotation and box drawing, color coding, addition
23 of numbers in the Petition to say that this has a hypothetical signal strength
24 at this point and at that point, and I think that those are just hypotheticals
25 that were pointing to a property of a signal, but there's -- just because
26 something may have a property does not mean that a processor is configured

1 to determine that property.

2 And also, the claim requires that the information that's determined
3 subsequently the weights are determined based on that property, so it's
4 something that has to be determined kind of at both ends. One, you have to
5 determine it and then you make a subsequent determination based on it.
6 And so just pointing to a property that's part of a signal, we do agree that
7 these things are receiving signals, pointing to some property and calling that
8 information, to me two or three different claim elements, we think it is not
9 right. And in some way, it's even reading out like the claim elements.

10 If we looked at, for example, Claim 1 of the '235 patent, I will pull
11 that up on the screen right now. So the processor limitations are about here
12 in the middle of the screen and it talks about determine first signal
13 information with the first signal transmission, determine second signal
14 information for the second signal transmission, where they're different, and
15 determining a first set of weighting values based on the first signal
16 information, and second signal information.

17 If all we're talking about is a Butler matrix receiving a signal and
18 then outputting it, that's, in some way, just reading these limitations out of it.
19 We were just talking about receiving a first signal transmission at a first
20 antennaelement, and a second signal transmission from a second antenna
21 element. And then subsequently, determining the said weighting values
22 based on the signal. That may be true, but that's a way of reading the claims
23 that doesn't give sufficient weight to these claim limitations 1.2, 1.3, 1.4 and
24 so on.

25 And so because of that theory, I think what the Petition tries to do
26 is to articulate this alleged signal information, signal strength of the antenna

1 to meet these limitations, but we think that there's not a sufficient showing of
2 how a passive circuit, like a Butler matrix, determines these alleged two
3 pieces of information and then subsequently in the formulas, I cannot find
4 any variable that directly or closely ties to the alleged signal strength.
5 There's no parameter that we can decide from -- that we can determine from
6 the formula.

7 And all of this, again, Mr. Anderson's argument is this is -- their
8 theory on Agee is exactly the same as the patent or exactly the same as
9 Littlejoe. It's not, because what we showed with the technical specification,
10 the report, is these WLAN cards determining a signal information and that
11 being a parameter to the weight calculation that the report talked about.

12 JUDGE QUINN: So I want to follow-up on that because it seems
13 to me that when I read the '235 patent, that the Butler matrix is disclosed
14 there as one of alternative to beam forming and how to do that, but the
15 weight evaluation and the analysis of the characteristics of the signals were
16 performed by the scanner or some other - or the scanner receiver or some
17 other device outside of the Butler matrix. Is it possible that Agee describes
18 the Butler matrix, but it's a different flavor of the Butler matrix? Like, it
19 seems like the '235 patent describes a basic one, and then Agee has more
20 bells and whistles in that Butler matrix than what you would expect.

21 MR. WANG: Thank you, Your Honor, for that question. I would
22 preface my response by saying that Agee is difficult to understand. It
23 certainly discusses Butler matrices and in terms of exactly what it's doing or
24 how it may modify Butler matrix, I'm not sure. I do know that the Petition
25 to -- for purposes of this IPR, they are identifying signal strength as the
26 alleged signal information and trying to fit that into Agee's Butler matrix,

1 but I don't think there's any description in Agee of the Butler matrix being a
2 processor or determining the signal strength of first and second antenna
3 elements or that piece of information being stored or being operated on in
4 the formula to do that.

5 I mean, the '235 patent, it actually has a couple of embodiments
6 just at the end about the Butler matrix, I think in a couple of figures. One
7 talks about a -- in the description of Figure 13, it says an exemplary system
8 with a Butler matrix, and then it talks about the Butler matrix being a passive
9 device, and then there's another embodiment. Figure 14, it talks about an
10 exemplary modified Butler matrix that does -- that maybe does a little bit
11 more to reduce the effective communication beam nose and increase side
12 lobes.

13 So it's complimentary. But in both, it's not describing the Butler
14 matrix and there's no admission or statement in this specification as
15 meeting -- it says defining the elements 1.2 through 1.4. The Butler matrix,
16 it's just a component that's right next to the antennas, and Counsel is right. It
17 can be used for both receiving and transmitting, but it's just kind of like a --
18 it can be used as a gain right next to the antennas attached onto there. It's
19 not being described as doing the processing or determining the signal
20 information. Were there any other questions on this point or anything else?

21 JUDGE QUINN: I do have a question. Petitioner also explained, I
22 believe, succinctly did explain that the part of the signal information that
23 you're looking at, because of the algorithms in Figure 37 - 35 and 37 - those
24 are the algorithms there where they referred to the pilot signals, and wanted
25 to give you an opportunity to respond as to whether the pilot signal is a type
26 of signal that has the characteristics - for example, the information being

1 either the frequency or the information it carries, such that it meets the
2 claim, and that - I think, you argued it in your response, but it was done
3 very summarily and I want to give you an opportunity to explain that.

4 MR. WANG: Thank you, Your Honor. So first, to supplement my
5 previous answer to your question, which is that I don't think in Agee there's
6 any indication that the Butler matrix is special or that it's disclosing a new
7 and different kind of Butler matrix, and that's why the secondary reference
8 that Petitioner relies on is this 40-year-old conventional -- the Butler
9 reference.

10 And so I think that suggests that they're not -- that they're trying to
11 add to the record by using this 40-year-old reference. Not that Agee has
12 additional disclosures of the Butler reference. It mentions like a Butler
13 mode form or something like that, and so there's nothing special about the
14 Agee/Butler matrix.

15 On the pilot signal, I suppose I agree with you, Your Honor, that a
16 signal could have information as a property of the signal, including a pilot
17 signal. But I mean, for purposes of invalidity and what we're dealing with in
18 this IPR is that they're, to me, claim limitations, there has to be like a
19 showing that alleged information -- first and second signal information -- is
20 determined by the system. You know, a processor is configured to
21 determine it, and then -- that's on the first half.

22 And then the second half of it is that this information that's
23 specifically determined needs to be used to calculate weights. And so I
24 mean, it's a little bit of a moving target and maybe -- it almost sounds like an
25 inherency argument that they're saying that this is a pilot signal, it might
26 have some property that a system could measure, determine, calculate as

1 information, and then use that information, but that is not clear enough and
2 the showing has not been made despite many pages spent on it for what
3 Agee is doing and that either that Agee measures the signal strength
4 information at different antennas or that it uses it.

5 And again, this is like in sharp contrast to even the Littlejoe
6 specification, which talks about determining signal strengths and storing it.
7 Storing it is not a requirement of the claims, but I just mention that as an
8 example of how concrete it is. It's determined and stored and then it goes as
9 a direct input to calculations. And for Agee, it's even hard to piece together.

10 I mean, I would say that in the abstract, a pilot signal might have
11 some properties or claim characteristics that, depending on the system and
12 how it's implemented and what it focuses on, could be considered signal
13 information, but it would -- yeah, it would have to, you know -- it would
14 have to be determined and it would have to be used. And I think Petitioner
15 is saying that that's signal strength, and so I don't want to play whack-a-mole
16 for different properties, but that's the one thing they identified in what we've
17 rebutted.

18 Your Honors, just one more topic or point, which is that I don't
19 want to go through all the claims. I think what we've talked about applies to
20 all the challenge claims, but briefly, I did want to mention for Claim 15, it
21 has a lot of overlap with Claim 1, and I think Petitioner's reply criticized us
22 for ignoring the differences. And I would just say that what we did was just
23 respond to the Petition's theory, which for Claim 15, just relies back on
24 Claim 1.

25 And I would show on my screen just briefly, this is Petition -- one
26 of the first papers. So for Claim 15, they just refer back to Claim 1,

1 limitation 1.1 and 1.2, and also they also talk about Claim 5. And so they
2 criticized us for ignoring certain differences in the claim, like the
3 simultaneous requirement, but I mean, to the extent that presents an
4 additional invalidity argument, the showing that they made in the Petition is
5 just to refer back to limitation 1.1.

6 And I would also point out that for Claim 15.4, it talks about the
7 first signal transmission comprising signal information, for example, a
8 transmit power level. And when we're talking about the Butler matrix and
9 the alleged signal strength at one of the inputs or even the output from it, I
10 would just say that that's not a showing of -- that's not equivalent to the
11 transmit power level, which talks about the power level of the transmitter --
12 the remote device. And so especially given that their theory is just focused
13 on the Butler matrix and what it allegedly receives, that that is not
14 information comprising the --

15 JUDGE SZPONDOWSKI: I think Petitioner --

16 MR. WANG: -- (CROSSTALK) --

17 JUDGE SZPONDOWSKI: -- equates the -- Counsel, I think
18 Petitioner equates the signal strength to the transmit power level. Do you
19 dispute that?

20 MR. WANG: Yes, yes, because if we're talking about signal
21 strength -- again, we disagree that signal strength is measured, determined,
22 so on, but hypothetically, if we're looking at this property of signal strength
23 at input or that hits the Butler matrix, that that's not -- that does not
24 constitute a transmit power level because --

25 JUDGE SZPONDOWSKI: You are about seven minutes into your
26 rebuttal time. You're welcome to continue, but I just wanted to make sure

1 you knew.

2 MR. WANG: Thank you, Your Honor. I will reserve my
3 remaining eight minutes for surrebuttal. Thank you, Your Honor.

4 JUDGE SZPONDOWSKI: Thank you. Okay, we can turn back to
5 Petitioner. I think you have about 14 and a half minutes. We'll let Judge
6 Quinn get the clock set up.

7 JUDGE QUINN: All right.

8 JUDGE SZPONDOWSKI: Okay. You may begin whenever
9 you're ready.

10 MR. ANDERSON: Thank you, Your Honor. Kevin Anderson for
11 Petitioner again. Let me just say, first of all, like if I gave the wrong
12 impression, I apologize. Our theory is not at all what Patent Owner said that
13 there's some like super Butler matrix. Our theory is set forth in the Petition
14 very, very clear. The Butler matrix is being relied upon for the receive
15 element -- the simultaneously aspect of the receive element. Everything else
16 is explained in there as part of the rest of the Agee processing. And I'll
17 come back to that and I'm going to step through the figures in Agee and how
18 you can see the data go through there. That's the first thing.

19 The second, on the issue of whether their own statements to the
20 Patent Office should be applicable here, I'm just going to show the quote out
21 of the brief they submitted to this Court in their previous prior IPR. I'm
22 trying to get that. Well, I'm having difficulty -- oh, there it is.

23 So in the previous IPR, they were arguing about the contents of
24 Littlejoe, which is document C here. On page 00023 in Exhibit 1010, this is
25 what they said: "Further, as a matter of law, the scope of the challenged
26 element must include the disclosures in document C, cited by Applicant for

1 this element during prosecution." And then they go on to cite *Vitronics*. We
2 agree. Exactly right. What they cited in prosecution has to at least be in the
3 scope of the disputed claims. That's what they said then, that's what we're
4 saying now.

5 Let me just switch to what they told the -- what the Examiner --
6 these are not, as was characterized previously, these are not the statements of
7 the Examiner. These are the statements of the Patent Owner. And let me
8 just go through element by element and explain what it is that we are
9 mapping out.

10 First of all, for the antenna element, they had pointed to the
11 antennaelements; that's what we're pointing to in Agee. For the transceiver,
12 they pointed to the array elements in the Butler matrix. For these received
13 elements, they point to the signal received by the array elements. That's
14 exactly what we're pointing to for the receive element, the signals being
15 received on the Butler matrix.

16 For the determined first signal element, they pointed to the beam
17 forming application. That's exactly what we are pointing to. The beam
18 forming application is the multi-weight adaptation algorithm. That is what
19 is determining the first signal information and it's using the signal strength
20 that's coming from the antennas. And then the remainder of the citations are
21 also to the beam forming algorithm and that's what we point to.

22 In our Petition, let me just explain the flow of the data. This is
23 Figure 25 from Agee, which shows the Butler matrix right here on the left.
24 That's where the data comes in. It is then the amplitudes and phases of these
25 signals hitting the antenna -- different antennas or here are combined in a
26 way defined by the Butler matrix and then their output on the right-hand side

1 to go to the rest of the processing. That is the combined signal strengths
2 from the different antennas and that is an example of signal information.

3 That output from the Butler matrix then goes, as shown in Figure
4 30, which is on page 59 of our Petition. The output from the Butler matrix
5 comes from the feed RX data. That is the combined signals from the Butler
6 matrix going into the multi-length adaptation algorithm, which is in Figure
7 30. So by the time it gets here, the Butler matrix is completely gone, and
8 this is -- this algorithm is determining those signal informations because
9 exactly as was said during prosecution, it is using that information received
10 from the Butler matrix to do the beam forming algorithm. That's how it's
11 determining it.

12 And then the algorithm on page -- in Figure 35 is this obtain -- this
13 is an example of the detailed algorithm, the multi-weight adaptation
14 algorithm shown in Figure 30 above, and it is obtaining the data, the current
15 OFDM symbol. That's where it's obtaining it from the Butler matrix as
16 shown in Figure 30. It then does the processing and if it's a pilot signal, it
17 calculates based upon the other pilot signals. That is the theory that is
18 presented. It is not, in any fashion, as was stated by Patent Owner, that
19 there's some sort of super Butler matrix here. It was used for the
20 simultaneously aspect that Petitioner argued previously.

21 Another point I do want to make -- and I'll stop sharing here -- is
22 none of these arguments really that we heard from Patent Owner have any
23 citation or basis in the actual disclosure of the '235 patent. There is a -- the
24 disclosure has Figures 12 through 14 and their associated descriptions,
25 which calculate -- describe a weight calculation, and the only example of
26 being able to calculate weights is the Butler matrix example, which is what

1 Agee has exactly.

2 There was reference to the WLAN card beam formers in Littlejoe.
3 Those are part of the multi-weight adaptation algorithm that shows in Agee,
4 that processing. That's what we're pointing to, again, is the -- it's the
5 algorithm that takes the output that is received simultaneously from the -- on
6 the Butler matrix antennas there.

7 I do want to point out that there was a lot of discussion of signal
8 strength and the specific claims that are challenged here do not actually
9 recite signal strength as claims -- for example, Claim 6 that isn't challenged.
10 The combined strength, but it's not only the combined strength. It's the
11 combined signal strength and phases that are the output of the Butler matrix,
12 is what's used by the multi-weight adaptation algorithm as the signal
13 information to calculate the weights. There's no requirement that it uses
14 signal strength, but it's doing exactly the same thing as Littlejoe was doing,
15 as was cited, both to this Board in previous IPRs and in the prosecution
16 history.

17 I would say on Claim 15, there was a reference to the transmit
18 power level not being the signal strength. I think our point is there if one
19 goes and looks at the actual disclosure of the '235, because again, we're
20 confined that disclosure guides our understanding of terms. The only
21 disclosure of any sort of signal information that is used to calculate weights
22 was the signal strength information that was derived off of the Butler matrix
23 outputs. That's the only thing. None of those other things -- there's no
24 example anywhere in the specification of anything else potentially being the
25 transmit power level.

26 And since I'm in that situation where I'm receiving data is what

1 that claim element recites, the receipt of the signal corresponds to the
2 transmit power level on the transmitter. That's the only disclosure. That's
3 the only thing that makes sense in the context of that claim and the context
4 of Claim 15. I did a very extended rant. I'm going to stop for a second to
5 allow for questions. I apologize for my lengthy colloquy.

6 JUDGE SZPONDOWSKI: I actually have a question about
7 limitation 1.8 --

8 MR. ANDERSON: Sure.

9 JUDGE SZPONDOWSKI: -- which is the third signal.

10 MR. ANDERSON: Yep.

11 JUDGE SZPONDOWSKI: What are you mapping to the third
12 signal in Agee?

13 MR. ANDERSON: The third signal is the subsequent transmission
14 of data using the weights. So the way Agee works is when I'm receiving
15 data, under this concept of reciprocity, I use the received data to figure out
16 how to calculate weights to send back, and so when I receive data and I
17 calculate my weights, those weights are then -- it's actually a complex
18 conjugate, but it's the -- those weights effectively are then used as the
19 transmit weights and there's many passages in Agee that explain the use of
20 those weights to subsequently transmit the data that's going back down.

21 And the reason that works is again, this concept of reciprocity,
22 which is a concept that assumes that for a particular frequency -- and that's
23 why doing this for individual frequencies or tones is important -- for a
24 particular frequency, my channel characteristics between the two devices
25 remain roughly the same. If the other base station transmits to me and then
26 within a short timeframe, I transmit back to it, the expectation is that the

1 interference and all of the atmospheric conditions -- all the things that make
2 up the channel -- the -- well, it's the channel between the two -- is going to
3 stay the same for that short period of time, and that's what reciprocity means.
4 If I measure what's coming to me, if I turn around and send something fast
5 enough, I can effectively use those measurements to pre-adjust my
6 transmission going the other way, if that makes sense.

7 JUDGE SZPONDOWSKI: Yes, thank you.

8 MR. ANDERSON: I think I can finish a minute early. I'm done.
9 Thank you.

10 JUDGE SZPONDOWSKI: Okay. Thank you. We can turn back
11 to Mr. Wang, who I believe has seven and a half minutes. It looks like
12 Judge Quinn is ready to go there.

13 JUDGE QUINN: Wait, I see --

14 JUDGE SZPONDOWSKI: Yeah. It's not the right time. I think
15 eight minutes actually is --

16 JUDGE QUINN: Yes.

17 JUDGE SZPONDOWSKI: -- what he had.

18 JUDGE QUINN: Yeah.

19 JUDGE SZPONDOWSKI: Okay. All right, great. You can start
20 whenever you're ready.

21 MR. WANG: Thank you, Your Honors. I'll try to wrap it up in
22 seven so we avoid any ambiguity. Your Honors, I showed on the Littlejoe
23 specification earlier, and I don't want to repeat myself, I did not understand
24 Petitioner's theory to be about like a newfangled Butler matrix. Rather, it
25 was that a conventional Butler matrix, the kind that it's referenced in the
26 patent, the kind that's in the prior art secondary reference, was alleged

1 through mappings to meet all of these limitations. And we're not
2 disavowing any of the statements we made in prosecutions or other IPRs, but
3 they were brief statements, and they were just intended to show not every
4 part that provides written description, but just one part that showed that the
5 inventors were in possession for purposes of pre-dating reference.

6 The thing that was mentioned in the IPR was an attempt to pre-
7 date, like the Burke reference, pre-institution, and that the Board declined to
8 make that finding, and so it was kind of on a preliminary record, but I don't
9 even mean to sound defensive. I'm just trying to provide this context. I
10 think that when we look -- and that's why I spent so much time on the
11 Littlejoereference itself -- it was different from Agee. We don't view that as
12 a concession. It had a different structure of having 16 separate WLAN
13 cards. It explicitly talks about an application on a PC, personal computer,
14 with a processor determining the signal strength and it had 16 separate cards
15 corresponding to 16 antennas, and it called the signal strengths and it said
16 the rest of this report is about determining weights based on this signal
17 strength per receiver and calculating it. So that's -- if they had a prior art
18 reference, if Agee had that, then that would be a different story, but that's not
19 something that we see from Agee, which just has the conventional Butler
20 matrix and some formulas that are difficult to understand.

21 And let me just finish on this last point, Your Honors. I think that
22 the discussion we've been having is helpful and I think it's good to compare
23 it to the institution decision, which is something, obviously, we've all read
24 and have in our minds. So as the Board knows, the institution decision is,
25 you know, based on that record and preliminary under the reasonable
26 likelihood standard, but on page 26 of the decision, the Board did

1 preliminarily consider this argument and it found that the Petition indicates
2 that the measured signal strengths -- it quotes on page 26 -- that different
3 antenna elements correspond to the recited first signal information and
4 second signal information.

5 And so the Board made that finding, but I think as we've been
6 trying to explain that there's really -- given what a Butler matrix is and
7 throughout this record, that there's not really sufficient indication that it
8 measures or determines the signal strength at each antenna. And also, the
9 claim requires a processor, you know, configured to determine that, given
10 that a Butler matrix is an analog circuit.

11 And then also, Petitioner, I think, attempted to move the
12 determination out of the Butler circuit, so that seems to be like a new
13 argument or an inconsistent argument, and contrary to what the Board
14 granted institution on, which the Board is free to reconsider. Also, on page
15 26, the Board has said in this way, a first signal and second signal
16 information is determined and the two pieces of information are different, as
17 required by limitations 1.4 and 1.5, and so that's the same as what I was
18 talking about that I think on a fuller record it's not determined and it's not
19 determined by a processor.

20 And then on page 27, the Board in its institution decision said that
21 for limitation 1.6, Petitioner contends that the output data from the Butler
22 matrix, that is the output from processing the pilot signal information, is
23 used to calculate weights based on the received pilot signal information
24 combiner weights.

25 So I think their theory is that the first and second signal
26 informations were determined, and then the output is how it's met or the

1 subsequent work on the output is how they meet the weights limitation and
2 again, I think that point has been addressed, that there's not -- if we're
3 looking at the output, what happened before that was not determining the
4 signal strengths and that's not -- it's hard to say that the weight generation in
5 the algorithm described in Agee, that that's based on the signal information.

6 Even if they're alleging that this could be a property about pilot
7 signal, again, there needs to be a showing in the prior art that this specific
8 property is determined and then used, and any other reading would read out
9 the specific limitations 1.2, 1.3, 1.4, out of the claim and just talk about
10 generating weights based on a first and second signal transmission. Do Your
11 Honors have any more questions?

12 JUDGE SZPONDOWSKI: I don't have any more. Judge Quinn or
13 Judge Beamer?

14 JUDGE QUINN: I'm good. Thank you so much for your
15 argument.

16 MR. WANG: Thank you, Your Honors. Then I will give back my
17 30 seconds.

18 JUDGE SZPONDOWSKI: Okay, thank you to both of you. This
19 has been very helpful today. So this concludes our hearing in IPR2024-
20 00613. If the parties could remain on the line in case the Court Reporter has
21 any questions or needs any spellings, we would really appreciate it.

22 (Whereupon, the above-entitled matter went off the record at 2:34
23 p.m.)

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