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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD.,
Petitioner,
v.

Case No.
IPR2025-00935
US Patent No 11,129,163
Ref. 39843-0196IP1

WILUS INSTITUTE OF STANDARDS
AND TECHNOLOGY INC.,
Patent Owner.

IPR2025-00936
US Patent No 11,700,597
Ref. 39843-0197IP1

REMOTE DEPOSITION OF
TODOR V. COOKLEV, Ph.D.

April 13, 2026

Reported by:
Misty Klapper, RMR, CSR, RPR, RSA
Job No.: J14591849

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Monday, April 13, 2026
9:01 a.m. EDT

Held via remote videoconference

Taken pursuant to notice, before Misty
Klapper, Registered Merit Reporter, Certified
Shorthand Reporter, Registered Professional
Reporter, Realtime Systems Administrator and Notary
Public.

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C O N T E N T S

WITNESS:	EXAMINATION BY:	PAGE:
Todor V. Cooklev	Mr. Monaldo	5, 142
	Mr. Milkey	135

E X H I B I T S

NO.:	DESCRIPTION:	PAGE:
Exhibit A	Korean Patent Application No. 10-2016-0029975	138

PREVIOUSLY MARKED EXHIBITS REFERRED TO:	PAGE:
Exhibit 1001	12
Exhibit 1005	69
Exhibit 2016	9

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P R O C E E D I N G S

TODOR V. COOKLEV, Ph.D.,

The witness herein, called for
examination by the Petitioner, having been
duly sworn, was examined and testified as
follows:

EXAMINATION BY COUNSEL FOR PETITIONER

BY MR. MONALDO:

Q. Good morning, Doctor. Could you
please state your name for the record.

A. Todor Cooklev.

Q. Have you been deposed before?

A. Yes.

Q. You understand that you've given an
oath here today, correct?

A. Yes.

Q. And that oath requires you to tell
the truth, correct?

A. Yes.

Q. And you'll agree to do that today?

A. Yes.

Q. If at any point in the deposition you
want to supplement or change an answer, will you
please let me know?

A. I will try to do that, Counsel.

1 Q. Great. Is there any reason you can't
2 give your best, most accurate testimony today?

3 A. None that I'm aware of.

4 Q. What sort of preparation did you do
5 for today's deposition?

6 A. Well, I reviewed the -- the documents
7 of the IPR, I mean, the exhibits. I reviewed my
8 declaration. I reviewed the identified prior
9 art. I also took another look at the -- at the
10 '163 patent. And I -- and I also had discussions
11 with counsel.

12 Q. How many discussions did you have
13 with counsel?

14 A. About three, I think.

15 Q. When did those occur?

16 A. Over the last, I think, the
17 previous -- maybe the previous three days or
18 something like that.

19 Q. How long were those discussions?

20 A. The first one was -- was a bit
21 longer, on the order of -- maybe on the order of
22 three, three and a half hours or something like
23 that. And then they were getting shorter.

24 Q. Okay. I will try to take a break
25 about every hour or so. If you ever need a

1 break, please just let me know.

2 A. Thank you.

3 Q. And then do you have a preference
4 when we break for lunch?

5 A. No, no preference.

6 Q. Okay. We can play that by ear then.
7 Do you understand that we're covering
8 two proceedings involving two patents during
9 today's deposition?

10 A. Yes, I do.

11 Q. The first proceeding is numbered
12 IPR2025-00935. It involves U.S. Patent Number
13 11,129,163. I'll refer to that patent today as
14 the '163 patent.

15 Is that okay?

16 A. Yes.

17 Q. The second proceeding is numbered
18 IPR2025-00936. It involves U.S. Patent
19 Number 11,700,597. I'll refer to that patent
20 today as the '597 patent.

21 Is that okay?

22 A. That's fine. I don't remember that
23 patent number off the top of my head, but that's
24 fine.

25 Q. You understand that the

1 specifications and drawings of the '163 patent
2 and the '597 patent are generally the same,
3 correct?

4 A. Yes.

5 Q. So to save time and to make our jobs
6 easier here today, I will primarily refer to the
7 '163 patent. Given the similarity between the
8 patents and the issues involved in the two
9 proceedings, my questions will apply equally to
10 both the '163 and '597 patents unless I specify
11 that a question applies to only one of the
12 patents.

13 Is that okay?

14 MR. MILKEY: Object to form.

15 THE WITNESS: Yes.

16 BY MR. MONALDO:

17 Q. And when you answer a question, I
18 will assume your answer applies equally both to
19 '163 and '597 patents, unless you specify an
20 answer applies to only one of them.

21 Is that okay?

22 A. Yes, that's fine. I will try to
23 clarify if there is a need to clarify.

24 Q. Did you review the '163 and '597
25 patents in preparation for the deposition?

1 A. Well, I said that I reviewed the '163
2 patent. I think for the other IPR I -- I looked
3 at my declaration. I don't recall at the moment
4 most recently -- I reviewed that patent when I
5 submitted the declaration. Maybe not -- maybe
6 not in the last, like, few days.

7 Q. Did the '163 and '597 patents make
8 sense to you?

9 A. Yes.

10 Q. Now, Dr. Cooklev, I'm going to refer
11 to Exhibit 2016.

12 (Thereupon, Exhibit 2016,
13 previously marked, was referred to.)

14 BY MR. MONALDO:

15 Q. Do you have access to that? I can
16 also share my screen here.

17 A. Well, Counsel, I want to ask for your
18 permission to use -- here with me I have --
19 it's -- it's -- everything is unmarked, clean
20 copies. I have -- this is a copy of my
21 declaration in the 935 IPR.

22 Q. Okay.

23 A. And I also have hard -- I also have a
24 hard copy of the '163 patent and maybe of some of
25 the identified prior art.

1 Q. Okay. Yes, that is perfectly fine.
2 If you'd like to refer to those copies, please do
3 so.

4 A. Yeah, but I also would -- would ask,
5 you know, for permission to use -- sometimes an
6 electronic copy is useful. Maybe I can do a
7 quick search or something, depending on your
8 question.

9 So I expect to, if you will, go back
10 and forth between a paper copy and an electronic
11 copy.

12 Q. That is fine.

13 So I've started sharing my screen
14 here. Can you see the copy of the declaration?

15 A. Yes.

16 Q. Okay. Do you recognize this as
17 Exhibit 2016, the declaration you submitted in
18 the '163 patent IPR?

19 A. I -- that's the title page.

20 Q. At this time do you have any
21 corrections or changes you want to make to the
22 declaration?

23 A. I think there is one minor issue
24 that -- it's not substantive. In one paragraph,
25 the words -- I don't exactly remember, but the

1 word "disable" might be missing and it might say
2 coloring bit, where it means coloring disable
3 bit, although that is clear from the context.

4 So, again, it's not a substantive
5 change.

6 Q. Do you know which paragraph that
7 occurred in?

8 A. It might be around -- at or around
9 paragraph 56, but we can -- maybe I can right
10 now.

11 Q. So coloring bit being set to 1 should
12 be coloring disable bit?

13 A. Yes, I think so.

14 Q. Okay. Fair enough.

15 Dr. Cooklev, did you draft this
16 declaration?

17 A. Well, I worked with counsel in
18 preparing this declaration.

19 Q. So counsel helped you prepare the
20 opinions set forth in the declaration?

21 MR. MILKEY: Objection to form.

22 THE WITNESS: No. The opinions are
23 my opinions. Counsel helped me -- helped
24 me with the writing/formatting of the
25 declaration.

1 BY MR. MONALDO:

2 Q. Did counsel prepare a first draft of
3 the declaration for your consideration?

4 A. I don't exactly remember, but --
5 but -- maybe not.

6 Q. But you provided the first draft,
7 written draft, of the declaration?

8 A. Again, I don't exactly remember in
9 this case, but perhaps.

10 Q. I'm going to turn to the '163 patent
11 now.

12 (Thereupon, Exhibit 1001,
13 previously marked, was referred to.)

14 BY MR. MONALDO:

15 Q. Dr. Cooklev, do you recognize what
16 I'm sharing on the screen as Exhibit 1001, the
17 '163 patent?

18 A. Yes, I do. That's the title page.
19 And as -- as I said, just -- just for ease, here
20 I have a clean hard copy of it.

21 Q. Absolutely. I'll share my screen and
22 have that available to you. But also, please
23 refer to your hard copy or an electronic copy you
24 have on your computer. That is completely fine.

25 A. Thank you.

1 Q. Can I turn you to column 11, line 62
2 of the '163 patent.

3 Do you see the sentence there that
4 begins, Figure 6 shows that a wireless terminal
5 according to an embodiment of the present
6 invention, enters a power save mode based on a
7 BSS color?

8 A. I do see this, yes.

9 Q. What is a BSS color?

10 A. Yes, I'm -- I'm mindful of the
11 question.

12 I will take a look at an electronic
13 copy that I -- that -- I will try to give you a
14 little more accurate answer.

15 Q. Okay.

16 A. So not as a definition of BSS color,
17 but as a general idea, it's -- it is a concept to
18 distinguish frames or -- excuse me. It's a
19 concept to distinguish basic service sets.

20 I mean, maybe another way to look
21 at -- to look at it, it's -- it's a field in a
22 PPDU, which it is an identification of the basic
23 service set.

24 Q. You'd agree with me that BSS color is
25 a general field used to identify a basic service

1 set, correct?

2 MR. MILKEY: Object to form.

3 THE WITNESS: Well, almost. What
4 do you mean by general?

5 BY MR. MONALDO:

6 Q. I guess just the general concept that
7 a color is something that's used as an
8 identification of a basic service set.

9 MR. MILKEY: Object to form.

10 THE WITNESS: Oh, I think it's
11 called BSS color. And I think I just said
12 that, yes, you can look at it as a concept
13 or you can look at it as a field in a
14 PPDU, which identifies the basic service
15 set.

16 BY MR. MONALDO:

17 Q. Were you familiar with the concept of
18 BSS color before reviewing the '163 patent?

19 A. Yes.

20 Q. In what context?

21 A. In the context of 802.11ax.

22 Q. Can I turn you to column 12, line 3
23 of the '163 patent.

24 A. Yes, I'm looking at it.

25 Q. Do you see the sentence that begins,

1 When the PPDU received by the non-AP wireless
2 communication terminal is the HE-MU-PPDU, the BSS
3 color value signaled by the corresponding PPDU
4 indicates the BSS associated with the wireless
5 communication terminal?

6 A. Yes, I see this.

7 Q. What is the BSS color value signaled
8 by the corresponding PPDU?

9 A. Well, I mean, I think this is -- I
10 think this is pretty clear, that the BSS color
11 value here is -- is -- I mean, what -- it's like
12 a set of bits.

13 Q. Okay. So you'd agree with me that
14 the BSS color value is the set of bits, whereas
15 the BSS color is the field or concept for the
16 identifier of a BSS, correct?

17 A. Well, perhaps almost. I think
18 sometimes a person can refer to -- as -- as you
19 were saying, can refer to the BSS color value as
20 a set of bits or, depending on the context, it
21 could be the BSS color is that set of bits.

22 Q. But you'd agree with me that the '163
23 patent, as we've just discussed, uses BSS color
24 and BSS color value separately and distinctly,
25 correct?

1 MR. MILKEY: Object to form.

2 THE WITNESS: I think that's a
3 little too strong, too -- too -- a little
4 too strong to say. I think just the BSS
5 color value is -- is a little long. I
6 think a person of skill at the time of the
7 invention would use -- as I said,
8 depending on the context, could use BSS
9 color value and just BSS color, would use
10 them pretty much interchangeably.

11 BY MR. MONALDO:

12 Q. Would it be a fair interpretation to
13 refer to the BSS color as the field or concept of
14 BSS color and the BSS color value as the specific
15 bits included in that field?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: It is a -- in
18 general, that's -- it seems to me correct
19 what you are saying.

20 But -- and I think you are -- in
21 that question you were very -- you were at
22 least trying to be very precise. And I
23 don't think technical documents -- again,
24 generally -- may consistently maintain
25 that level of precision and distinction.

1 BY MR. MONALDO:

2 Q. So your opinion is that sometimes the
3 terms "color" and "color value" may be used
4 interchangeably, but it's also fair to say, if
5 you're being precise, that BSS color is the field
6 or concept in BSS color value are the specific
7 bits within the field?

8 MR. MILKEY: Objection to form.

9 THE WITNESS: Well, while -- again,
10 in some general sense, perhaps yes, but I
11 think it's -- I think in all cases, one
12 has to look at the context. And I think
13 that would be -- that would be a better
14 approach.

15 BY MR. MONALDO:

16 Q. And in the context of the '163
17 patent, we see the term "BSS color" used and we
18 also see the term "BSS color value" used.

19 In that context, would it be fair to
20 say that BSS color value is intended to be more
21 specific and represent the bits that are included
22 in the BSS color field?

23 MR. MILKEY: Objection to form.

24 THE WITNESS: Well, as far as the
25 '163 patent using the term "BSS color,"

1 well, sure, it uses that term many times.
2 And as -- as -- as you found here, this
3 example in column 12, is also uses BSS
4 color value.

5 But I think in -- in -- in all
6 contexts, to be -- to be -- to understand
7 it accurately, one would have to look at
8 the context.

9 BY MR. MONALDO:

10 Q. Okay. And in the context of
11 column 11 and 12, the portions we've just
12 discussed, what would be your understanding of
13 the distinction between BSS color and BSS color
14 value?

15 MR. MILKEY: Objection to form.

16 THE WITNESS: Let me -- and just
17 for reference, I -- I will open an
18 electronic copy of my declaration.

19 First, I -- I don't think I've
20 opined on any distinction between BSS
21 color and BSS color value. Of course,
22 please correct me if I'm wrong.

23 So you're asking me to -- to -- I
24 guess to tell you how I understand the
25 '163 patent and, in particular, this

1 passage from columns 11 and 12.

2 I'm not sure that in -- in -- even
3 in this passage there is a distinction,
4 which I think in your question you were
5 asking about a distinction. And I'm not
6 sure there's a distinction between BSS
7 color and BSS color value.

8 For example, in the -- in
9 column 11, line 62, that sentence ending,
10 in based on a BSS color, again, I haven't
11 provided an opinion, but it seems to me
12 that one could say based on a BSS color
13 value here.

14 BY MR. MONALDO:

15 Q. Okay. But you'd agree with me that a
16 possible distinction is that BSS color refers to
17 the field, whereas BSS color value refers to the
18 bits in the field, correct?

19 MR. MILKEY: Object to form.

20 THE WITNESS: It might be a little
21 too strong, what you are saying. I'm not
22 sure I can entirely agree. As I -- as I
23 said, in this sentence in column 11, if it
24 says based on a BSS color value, so the
25 entering the power save mode based on a

1 BSS color value, would this change the
2 meaning of this sentence? It seems to me
3 no.

4 And in the other sentence -- just
5 let me -- the BSS color value signaled by
6 the corresponding PPDU, I think a person
7 of skill would -- would understand it
8 pretty much in the same way if it says the
9 BSS color signaled by the corresponding
10 PPDU.

11 So even in this case, I think -- it
12 seems to me that they could be used
13 interchangeably, and, as I said, depending
14 on the context.

15 BY MR. MONALDO:

16 Q. But they may not be used
17 interchangeably also, correct?

18 MR. MILKEY: Object to form.

19 (Thereupon, Dr. Cooklev left the
20 deposition.)

21 MR. MILKEY: I assume he'll be
22 rejoining shortly. I just sent him a text
23 letting him know that he dropped just in
24 case.

25 THE WITNESS: I think there was an

1 interruption. I'm not sure what happened.
2 I apologize.

3 BY MR. MONALDO:

4 Q. No problem.

5 So you testified earlier today that
6 BSS color could be interpreted as a field,
7 correct?

8 A. Yes.

9 Q. And you testified earlier today that
10 BSS color value could be interpreted as bits
11 within that field, correct?

12 A. Could be.

13 Q. So you'd agree with me that one
14 possible distinction between BSS color and BSS
15 color value is that BSS color could refer to the
16 field and BSS color value could refer to the bits
17 within the field, correct?

18 MR. MILKEY: Objection to form.

19 THE WITNESS: Although -- yes, I --
20 I did testify that BSS color in -- could
21 be -- one could mean the concept, could
22 mean the field. And BSS color value would
23 be the -- the set of bits that -- yes.

24 But I think when we start to make a
25 distinction between these, I do think that

1 is a little bit strong statement. And it
2 is strong because I think a person of
3 skill or general technical people,
4 including myself, if you will -- technical
5 people are not that -- maybe are not that
6 precise.

7 BY MR. MONALDO:

8 Q. And I understand that your opinion is
9 that people are not always this precise,
10 sometimes these terms can be used
11 interchangeably, but my question is one possible
12 interpretation when you're being precise is that
13 BSS color refers to the field and BSS color value
14 refers to the bits in the field, correct?

15 MR. MILKEY: Objection to form.

16 THE WITNESS: In some general
17 sense -- in some general sense it seems to
18 me, yes; but, again, it always is
19 important to look at the context.

20 BY MR. MONALDO:

21 Q. Okay. Can I turn you to column 10,
22 line 54 of the '163 patent.

23 A. Column 10?

24 Q. Yes, line 54.

25 A. I'm there.

1 Q. Do you see the sentence that reads,
2 To solve this problem, a wireless communication
3 terminal may perform a spatial reuse operation?

4 A. Yes.

5 Q. What is a spatial reuse operation?

6 A. Well, for example, the next sentence
7 in column 10 says, Specifically, the spatial
8 reuse operation may include an operation of
9 accessing the channel depending on whether the
10 received frame is a MAC frame transmitted from a
11 BSS including a wireless communication terminal
12 or a MAC frame transmitted from another BSS.

13 So I think that this -- this sentence
14 tells you that a spatial reuse operation is an
15 operation of accessing the channel depending on
16 whether the received frame -- frame is
17 transmitted from the same BSS or transmitted from
18 another BSS.

19 Q. You'd agree with me that a spatial
20 reuse operation is an operation related to
21 accessing a resource such as a channel, correct?

22 A. Yes.

23 Q. It's fair to characterize the spatial
24 reuse operation as a resource/reuse-related
25 operation, correct?

1 A. I think in -- in -- in a sense, yes.
2 It's -- or at least based -- yes, based on how I
3 understood the question. But space is a resource
4 and spatial reuse is -- it relates to accessing
5 the channel in a way that this resource is
6 efficiently used.

7 Q. Can I turn you to column 10, line 63
8 of the '163 patent.

9 A. Yes.

10 Q. Do you see the sentence there that
11 reads, In a specific embodiment, the operation of
12 accessing the channel may include setting a NAV
13 and resetting NAV operation, a CCA operation and
14 a deferral operation?

15 A. Yes.

16 Q. What is a CCA operation?

17 A. Clear channel assessment operation.

18 Q. Okay. And how does that operation
19 relate to spatial reuse?

20 A. Well, if we continue at the bottom of
21 column 10, I think line 65, For example, the
22 wireless communication terminal may adjust the
23 clear channel assessment threshold value
24 according to whether a frame received by the
25 wireless communication terminal is a frame

1 transmitted from a BSS including a wireless
2 communication terminal or a frame transmitted
3 from an overlapping BSS. Also, the wireless
4 communication terminal may adjust the
5 transmission power of the PPDU.

6 So a clear channel assessment
7 threshold is the threshold -- again, I'm not --
8 not providing here a definition here, but just in
9 some -- describing in -- in some general sense,
10 it is the threshold according to which a terminal
11 decides if the medium is busy or if it is
12 available.

13 Q. Okay.

14 A. And if it's --

15 Q. But you'd agree with me that a CCA
16 operation is part of a spatial reuse operation,
17 correct?

18 MR. MILKEY: Object to form.

19 THE WITNESS: I think the -- the
20 answer to your question and perhaps the
21 question itself can become a little
22 confusing, what is a part of spatial
23 reuse.

24 But as a general idea, clear
25 channel assessment is something that is

1 performed when a terminal tries to access
2 the channel.

3 BY MR. MONALDO:

4 Q. And that would be part of a spatial
5 reuse operation, correct?

6 MR. MILKEY: Object to form.

7 THE WITNESS: Well, spatial reuse
8 relates to a specific form of channel
9 access. And whether clear channel
10 assessment would be performed prior to
11 spatial reuse and, in this sense, not part
12 of spatial reuse, or as part of spatial
13 reuse -- I'm -- I don't think I provided
14 an opinion about that.

15 BY MR. MONALDO:

16 Q. Okay. If you look at column 11,
17 line 6 of the '163 patent, it talks about the CCA
18 threshold value adjustment during the SR
19 operation.

20 Do you see that?

21 A. Yes.

22 Q. So in this context, the language of
23 during the SR operation suggests that the CCA
24 threshold value adjustment is performed as part
25 of the spatial reuse operation, correct?

1 MR. MILKEY: Objection to form.

2 THE WITNESS: I think I don't
3 agree, because this sentence says, the
4 wireless communication terminal may adjust
5 the transmission power of the PPDU to be
6 transmitted according to the CCA threshold
7 value adjustment during the SR operation.

8 And I can -- I would be happy to --
9 to read a little bit more columns 10 and
10 11, but just from this sentence -- there
11 are two adjustments, right? The first is
12 adjusting the transmission power of the
13 PPDU to be transmitted and during the SR
14 operation could refer to -- could relate
15 to adjusting the transmission power of the
16 PPDU to be transmitted.

17 BY MR. MONALDO:

18 Q. Okay. I guess my question more is in
19 a general sense.

20 How does clear channel assessment
21 relate to spatial reuse and whether a person of
22 ordinary skill in the art would understand those
23 concepts to be related to operations for reusing
24 a resource?

25 MR. MILKEY: Objection to form.

1 THE WITNESS: If I may, could you
2 please repeat the -- the question?

3 BY MR. MONALDO:

4 Q. My question is just, in general, how
5 does clear channel assessment relate to spatial
6 reuse?

7 MR. MILKEY: Objection to form.

8 THE WITNESS: Well, clear channel
9 assessment is -- just -- just CCA is the
10 procedure according to which the medium is
11 determined to be busy or available, again,
12 in a general sense.

13 No, but that -- it relates to
14 what's called the physical carrier sense.
15 So I think that's how it relates to
16 spatial reuse, that a terminal has to
17 perform the clear channel assessment
18 procedure -- in general has to perform
19 this procedure before it wants to --
20 before it transmits something.

21 BY MR. MONALDO:

22 Q. I see we've been going for about an
23 hour. Is it a good time to take a break?

24 A. Okay.

25 Q. How long would you like?

1 A. 15 minutes.

2 Q. So we'll resume at 10:15 a.m.

3 MR. MONALDO: If we could go off
4 the record.

5 (Thereupon, a brief recess was
6 taken.)

7 BY MR. MONALDO:

8 Q. Dr. Cooklev, can I turn you to
9 column 4, line 20 of the '163 patent.

10 A. Yes, I'm looking at it.

11 Q. Do you see the sentence that reads,
12 The processor may be configured to determine
13 whether the PPDU includes the trigger frame based
14 on information related to a spatial reuse
15 operation included in the PPDU?

16 A. I see the sentence, yes.

17 Q. You'd agree with me that this portion
18 of the '163 patent describes determining that the
19 PPDU includes the trigger frame based on
20 information related to a spatial reuse operation,
21 correct?

22 A. Yes.

23 Q. Can I move you to the next sentence
24 at column 4, line 24 of the '163 patent.

25 A. Yes.

1 Q. Do you see the sentence that reads,
2 Based on that information related to the SR
3 operation included in the PPDU indicates whether
4 the SR operation is restrictively allowed or the
5 SR operation is delayed while the PPDU is
6 transmitted, the processor may be configured to
7 determine whether the PPDU includes the trigger
8 frame?

9 A. I see the sentence, yes.

10 Q. So in the sentence, the information
11 related to the SR operation indicates whether the
12 SR operation is restrictively allowed or the SR
13 operation is delayed, correct?

14 A. It's a little bit of a long sentence,
15 but it seems to me that's what it says.

16 Q. Would it be fair to say that the
17 information related to the SR operation is
18 information restricting a reuse --
19 resource/reuse-related operation?

20 MR. MILKEY: Object to form.

21 THE WITNESS: I think it's -- like
22 I said, it's a little bit longer sentence.
23 And -- and, again, if -- if -- if I was
24 writing it, maybe I would put one or two
25 commas and maybe even would write shorter

1 sentences to -- to make it clearer.

2 But, yes, it says, Based on that
3 information related to the SR operation
4 included in the PPDU indicates whether the
5 SR operation is restrictvely allowed or
6 the SR operation is delayed.

7 BY MR. MONALDO:

8 Q. And the information related to the SR
9 operation is used to determine whether the PPDU
10 includes the trigger frame, correct?

11 A. I'm sorry. Maybe I -- if you could
12 please repeat the question.

13 Q. Yeah. My question is, the
14 information related to the SR operation, that
15 information is used to determine whether the PPDU
16 includes the trigger frame, correct?

17 A. Well, isn't that the previous
18 sentence, that the processor may be configured to
19 determine whether the PPDU includes the trigger
20 frame based on information related to a spatial
21 reuse operation?

22 Q. Yes. So you'd agree with me that
23 that sentence confirms that the information
24 related to the SR operation is used to determine
25 whether the PPDU includes the trigger frame,

1 correct?

2 MR. MILKEY: Objection to form.

3 THE WITNESS: I think that this --

4 I think I'd agree that, yes, it seems to
5 me this is what this sentence is saying.

6 BY MR. MONALDO:

7 Q. So I'd like to move a few more lines
8 down to discuss an example of restricting the
9 spatial reuse operation. And I'll point you to
10 the example at column 4, line 37.

11 Do you see the sentence that reads,
12 When the BSS color indicated by the PPDU is a
13 predetermined value, the processor may not
14 perform the SR operation for the PPDU?

15 A. Yes.

16 Q. You'd agree with me that this portion
17 of the '163 patent describes not performing the
18 SR operation when the BSS color indicated by the
19 PPDU is a predetermined value, correct?

20 A. Yes.

21 Q. And you would agree with me that this
22 is an example in the '163 patent of restricting
23 the SR operation, correct?

24 A. Yes, this is one example.

25 Q. Okay. So when the BSS color is the

1 predetermined value, the reuse operation is
2 restricted, correct?

3 A. Yes, when the BSS color is a
4 predetermined value.

5 Q. So the information -- go ahead.
6 Sorry.

7 A. Just I was going to finish the
8 spatial reuse operation is not performed.

9 Q. So the information that the BSS color
10 is the predetermined value is information
11 restricting a reuse-related operation, correct?

12 A. Well, SR is spatial reuse, so it is
13 reuse.

14 Q. But when the BSS color is the
15 predetermined value, the reuse operation is not
16 performed, correct? It's restricted?

17 A. I think that's fair. Yes, I agree.

18 Q. Okay. So my question is that the
19 information that the BSS color is the
20 predetermined value, that information is
21 information restricting a reuse-related
22 operation, correct?

23 A. In this example, yes.

24 Q. All right. I'd like to turn you
25 further down in the patent to column 21, line 16.

1 A. So all the way to column 21?

2 Q. Yes, all the way to column 21,
3 line 16.

4 A. Yes.

5 Q. You see the sentence that reads,
6 Specifically, the wireless communication terminal
7 may transmit the PPDU by including signaling
8 information indicating that the operation based
9 on the BSS color is not allowed in the signaling
10 field of the PPDU?

11 A. Yes, I see this.

12 Q. What does it mean to a person of
13 ordinary skill in the art in the context of the
14 '163 patent for an operation to be not allowed?

15 MR. MILKEY: Object to form.

16 THE WITNESS: Oh, I -- I think that
17 the words "operation not allowed," I think
18 these words are fairly clear. It's just
19 not allowed.

20 BY MR. MONALDO:

21 Q. Would that be equivalent to
22 prevented?

23 MR. MILKEY: Objection to form.

24 THE WITNESS: I mean, I -- I don't
25 think an explanation -- I mean, we're not

1 talking about claims to -- for this to be
2 an exercise in claim construction.

3 This is in the specification. But
4 I don't think an explanation of the words
5 "not allowed" is here necessary.

6 BY MR. MONALDO:

7 Q. How would something be not allowed in
8 the wireless communication terminal of the '163
9 patent?

10 MR. MILKEY: Objection to form.

11 THE WITNESS: Well, if -- if
12 something is not allowed, then that
13 something is not performed. Again, it's
14 not as a definition, but as a general
15 idea.

16 BY MR. MONALDO:

17 Q. So would the operation be prevented?

18 A. In some contexts -- in some context
19 you could say prevented.

20 Q. How would you prevent an operation in
21 a wireless communication terminal?

22 MR. MILKEY: Objection to form.

23 THE WITNESS: If -- if the terminal
24 doesn't perform, doesn't do that
25 operation, in some context, as I said,

1 that operation is -- is prevented. It's
2 not allowed.

3 BY MR. MONALDO:

4 Q. Would disabling something be a way to
5 prevent an operation?

6 MR. MILKEY: Objection to form.

7 THE WITNESS: Just for reference,
8 I'm looking at the paper copy of the
9 patent. And I'm -- I was looking at
10 claim 1 because we -- we -- I think you've
11 been talking about not allowed. And --
12 and specifically I was looking at the part
13 of claim 1 saying signaling information
14 indicates. So there is an indication
15 that's accomplished by signaling
16 information that an operation based on
17 the -- in this case, an operation based on
18 the BSS color is not allowed.

19 BY MR. MONALDO:

20 Q. My question is how is the operation
21 based on the BSS color not allowed.

22 MR. MILKEY: Objection to form.

23 THE WITNESS: I'm not sure. The
24 question is different from the question
25 what does it mean, an operation to be not

1 allowed. It -- as far as the meaning, it
2 means that the terminal is not going to do
3 an operation based on the B -- is not
4 going to do that operation.

5 BY MR. MONALDO:

6 Q. Would disabling the operation be an
7 example of the operation not being allowed?

8 A. I think no. At least no in the
9 context of claim 1.

10 Q. So disabling is not covered by
11 claim 1?

12 MR. MILKEY: Objection to form.

13 THE WITNESS: No. I did not -- I
14 disagree with that. An operation based on
15 the BSS color is not allowed means any
16 operation based on the received BSS color
17 is not allowed.

18 BY MR. MONALDO:

19 Q. So you're reading the term "an
20 operation" as any operation?

21 MR. MILKEY: Object to form.

22 THE WITNESS: And I also turn to my
23 declaration here. And so -- so my
24 declaration I can say is of somewhat
25 limited scope and, in particular, I tried

1 to respond to Dr. Mahon's declaration.

2 So as I state in paragraph 40 of my
3 declaration -- in other words, Dr. Mahon
4 alleges that Lee -- so this is in the
5 context of the Lee reference -- Lee
6 discloses that the coloring bit in Lee is
7 not used to perform any operations when
8 the coloring disable bit indicates a
9 trigger frame.

10 So here I -- and in -- in this
11 paragraph and in the following paragraphs,
12 I respond to Dr. Mahon's declaration,
13 including how he has understood claim 1.

14 BY MR. MONALDO:

15 Q. So my question is your understanding
16 of claim 1. And you mentioned when we were
17 earlier discussing claim 1 any operations.

18 My question is, are you reading an
19 operation in claim 1 to mean any operations,
20 based on BSS color?

21 MR. MILKEY: Objection to form.

22 THE WITNESS: And for the record,
23 I -- I was reviewing my declaration and
24 just browsing.

25 I think an operation -- and there's

1 no antecedent basis -- and an operation
2 not allowed, I think yes, it means --
3 it -- it -- it means not just one
4 operation is not allowed.

5 And I think Dr. Mahon -- although
6 it's a little bit unclear in his
7 declaration, but I think ultimately that
8 is -- from reading his declaration, I
9 think that's how he has understood the
10 claim.

11 BY MR. MONALDO:

12 Q. Okay. So your understanding of the
13 claim is that all operations based on BSS color
14 have to be not allowed to meet the claim,
15 correct?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: Well, it says an
18 operation based on the BSS color. And so
19 it's not just one operation.

20 BY MR. MONALDO:

21 Q. So disabling all operations based on
22 BSS color would meet this claim, correct?

23 A. Excuse me?

24 Q. Would disabling all operations based
25 on BSS color meet this claim?

1 A. I'm not sure I've offered an opinion
2 like that.

3 Q. So you haven't opined on whether
4 disabling all operations based on BSS color would
5 meet this claim?

6 A. You're saying all operations here,
7 based on BSS color not being allowed. And so in
8 my declaration I analyzed, among other things,
9 whether Lee discloses or renders obvious this
10 claim limitation. And I concluded that Lee does
11 not.

12 Q. Okay. Would that conclusion have
13 been different if you interpreted Lee to disable
14 all operations based on BSS color?

15 MR. MILKEY: Object to form.

16 THE WITNESS: Well, in your
17 question if I -- your question is -- is --
18 Counsel, is a little bit if Lee is not
19 Lee, would my conclusion have been
20 different and to which I would say well,
21 that's -- if Lee is not Lee, that's --
22 it's possible that my conclusion would be
23 different. I just need to -- I analyzed
24 Lee, I think, in -- in -- for -- for
25 everything that -- that Lee teaches.

1 BY MR. MONALDO:

2 Q. Okay. And I guess my question is
3 trying to understand what the prior art must show
4 to meet this claim, in your opinion. And I'm
5 asking if the prior art showed and disclosed
6 disabling all operations based on BSS color,
7 would that render obvious this feature of the
8 claim?

9 MR. MILKEY: Objection to form.

10 THE WITNESS: It's difficult for me
11 to answer a question like that. We are
12 talking about claim limitation 1.4. I
13 would have to evaluate a prior art
14 reference specifically and it's -- it's
15 difficult for me to answer a hypothetical
16 question like that.

17 BY MR. MONALDO:

18 Q. Okay. So as part of your analysis,
19 you did not consider whether disabling all
20 operations based on BSS color would meet this
21 claim; is that correct?

22 A. Well, in my analysis I considered the
23 identified prior art, Lee, Choudhury, Zhou and
24 combinations involving also Stacey. So my
25 declaration -- and I -- I stand by my opinions

1 whether these particular references disclose
2 claim 1. I mean, obviously, looking at
3 limitation 1.4, limitation 1.5, the next
4 limitation, it's -- and I think that's the scope
5 of my declaration. And anything kind of more
6 broad than that, a hypothetical, what needs to
7 happen for claim 1 to be disclosed, that I think
8 is -- falls a little bit outside my -- the scope
9 of my declaration.

10 Q. Okay. And I guess my question is,
11 I'm trying to get an understanding of what your
12 understanding of claim 1, specifically
13 limitation 1.4, what that requires and what
14 you're requiring of the prior art.

15 A. Okay.

16 Q. And I'm --

17 A. Well, with that context -- with that
18 context, then I think in paragraph 40 of my
19 declaration, kind of I -- I respond to one
20 opinion of Dr. Mahon, where he says the station
21 operates without regard to information indicated
22 by the coloring bit, which -- which I think is
23 incorrect. So it is -- and, in particular, it's
24 incorrect to say that the coloring bit is not
25 used to perform any operations.

1 Q. I'm trying to get a sense if it
2 performs any operations, would that be met by
3 disabling all operations.

4 MR. MILKEY: Objection to form.

5 THE WITNESS: Maybe -- in the
6 context of my declaration, Lee does not
7 disclose this claim limitation because, as
8 I state in paragraph 41, Lee does not
9 disclose the -- that the processor would
10 be configured such that no operations
11 using BSS color would occur.

12 BY MR. MONALDO:

13 Q. Okay. But if it had disclosed that
14 no operations occur based on BSS color, would
15 that be met by the claim?

16 A. Well, if it had disclosed that, which
17 is like well, if -- if Lee is not Lee, but
18 something different, I would examine it. And
19 it's possible that it would have disclosed this
20 limitation again. But I would have to examine it
21 before I come to that opinion.

22 Q. Would receiving a PPDU with a BSS
23 color be an operation based on BSS color?

24 MR. MILKEY: Objection to form.

25 THE WITNESS: Excuse me. Receiving

1 a PPDU --

2 BY MR. MONALDO:

3 Q. With a BSS color, would that be
4 considered an operation based on BSS color?

5 MR. MILKEY: Objection to form,
6 outside the scope.

7 THE WITNESS: I don't know right
8 now.

9 BY MR. MONALDO:

10 Q. Sitting here today, you don't know if
11 receiving a PPDU with a BSS color is an operation
12 based on BSS color?

13 A. I don't know.

14 Q. Let's turn back to an example in the
15 '163 patent. I'll turn you to column 21,
16 line 31.

17 A. Just a second. I do -- for context,
18 I also -- if I may, I am looking at the
19 electronic copy of the declaration of Dr. Mahon.

20 Q. Okay.

21 A. And you said column 31?

22 Q. Yeah, column 21, line 31 of the '163
23 patent.

24 A. I'm there.

25 Q. Do you see the sentence that reads,

1 Further, when the wireless communication terminal
2 receives the signaling information indicating
3 that the operation based on the BSS color is not
4 allowed, the wireless communication terminal may
5 not perform the operation based on the BSS color
6 value?

7 Are you having trouble locating the
8 sentence, Dr. Cooklev?

9 A. No. I was reviewing column 21.

10 Q. Okay.

11 A. No. I -- I agree with the -- the
12 sentence says what it is saying. That's what it
13 says here, that when it receives the signaling
14 information indicating that the operation based
15 on the BSS color is not allowed, then it's not
16 performing that operation based on the -- the --
17 the BSS color.

18 Q. You'd agree with me it says the
19 operation singular, correct?

20 A. Yes. That's -- I mean, that's what
21 this sentence is saying.

22 Q. Okay.

23 A. Now, I agree with you, it is
24 singular. I mean, just as a -- as a -- I have a
25 thought here that the inventors of the '163

1 patent -- I think they're based in Korea. And
2 it's -- it's -- just I'm -- sometimes there are
3 some translation issues and I think in particular
4 translation issues related to the use of definite
5 and indefinite articles.

6 Q. So your opinion is that there's a
7 translation issue with this sentence of the '163
8 patent?

9 MR. MILKEY: Object to form.

10 THE WITNESS: No, I'm not saying
11 that -- this particular sentence. I said
12 sometimes there are translation issues.

13 BY MR. MONALDO:

14 Q. Here it says the operation, singular,
15 correct?

16 A. Correct.

17 Q. Do you believe that's a translation
18 issue?

19 A. And just for a little more context, I
20 think earlier we were talking about the claim.
21 And here we are in the body of -- in the
22 specification of the patent, which I -- I
23 think -- which I think is -- is significant.

24 Q. So what is the significance that this
25 is the body of the specification as compared to

1 the claim?

2 A. Well, just that -- just that this
3 fact, I think, is significant.

4 Q. But you'd agree with me that the body
5 of the specification says the operation,
6 singular, correct?

7 A. In this instance. In this instance,
8 yes, it says the operation. I -- I have not
9 provided an opinion whether or not there is a
10 translation issue here. So I don't have an
11 opinion on whether or not there's a translation
12 issue.

13 Q. In your opinion, you would assume
14 this statement is accurate, correct?

15 MR. MILKEY: Object to form.

16 THE WITNESS: Well, but the next
17 sentence it says, Specifically, when the
18 BSS color value indicated by the signaling
19 field of the PPDU received by the wireless
20 communication terminal is a predetermined
21 value. The wireless communication
22 terminal may not perform the SR operation
23 described above based on the BSS color
24 value.

25 ///

1 BY MR. MONALDO:

2 Q. Yeah. And I actually was going to
3 turn you to that sentence because, again, it says
4 the SR operation, singular, correct?

5 A. Well, although it says the SR
6 operation, singular, I am sensing that you are
7 trying to make an incorrect conclusion from this
8 because the -- the SR operation, it uses the
9 definite article because it's the operation
10 described above.

11 So -- and what causes the terminal
12 not to perform this operation based on the BSS
13 color value is the BSS color value indicated by
14 the signaling field of the received PPDU being a
15 predetermined value.

16 So this -- here, the operation that
17 is not performed in this sentence is not
18 indicated in the signaling field. It says the
19 BSS color value indicated by the signaling field
20 is a predetermined value.

21 Q. Right. But it says that just one
22 operation, the SR operation, is what's not
23 performed, correct?

24 A. Well, but it -- the sentence begins
25 with the word "specifically."

1 Q. Does the '163 patent describe other
2 operations that are not performed based on BSS
3 color in this section?

4 MR. MILKEY: Object to form.

5 THE WITNESS: You said in this
6 section. Which -- which is this section?
7 Is it --

8 BY MR. MONALDO:

9 Q. The column 21 disclosure we've been
10 talking about.

11 A. But is column 21 a section?

12 Q. This example -- don't read too much
13 into my term "this section." I was just trying
14 to give you some context.

15 A. I was trying to a little bit narrow
16 kind of my quick -- quick review of the -- of the
17 patent.

18 Q. Sure. And I'm talking about this
19 specific example where the SR operation,
20 singular, is not performed.

21 A. Well, in this -- in column 21, the
22 specification is talking about channel access.
23 And as an example of an operation that is not
24 allowed based on BSS color, it gives this spatial
25 reuse operation.

1 Q. Okay. So in your opinion, this
2 example of not performing in spatial reuse
3 operation is covered by claim 1 of the '163
4 patent?

5 MR. MILKEY: Objection to form.

6 THE WITNESS: Well, you said
7 covered by. I think the claim says an
8 operation based on the BSS color is not
9 allowed and the specification gives an
10 example as spatial reuse based on the BSS
11 color not being allowed. I think this
12 is -- this is an example. And to me, if I
13 may say, it makes sense.

14 BY MR. MONALDO:

15 Q. So preventing the spatial reuse
16 operation meets the claim limitation that an
17 operation based on the BSS color is not allowed,
18 correct?

19 A. It is one example of an operation
20 based on the BSS color that is not allowed.

21 Q. And in this section it mentions a
22 predetermined value for the BSS color. And I
23 believe at column 21, line 29 to 30, the '163
24 patent describes the predetermined value may be
25 zero.

1 Do you see that?

2 A. I do.

3 Q. So in your opinion, is setting the
4 BSS color value to a predetermined value of zero
5 met by claim 1 of the '163 patent?

6 MR. MILKEY: Objection to form.
7 Outside the scope.

8 THE WITNESS: I don't know if this
9 is within the scope of claim 1.

10 BY MR. MONALDO:

11 Q. Why not?

12 A. I mean, if I -- if I don't know, I
13 don't know. It's not, I think, something that I
14 investigated. So what claim 1 claims says the --
15 it claims the processor being configured not to
16 use a BSS color, and then when the signaling
17 information indicates that an operation based on
18 the BSS color and the BSS color has to be an
19 identifier of a BSS.

20 So this is what is claimed.

21 Q. And my question is, is this example
22 in column 21 where the BSS color is set to a
23 predetermined value of zero, and based on that
24 predetermined value of zero, the SR operation is
25 not performed, is that example covered by claim 1

1 of the '163 patent?

2 MR. MILKEY: Objection to form,
3 outside the scope.

4 THE WITNESS: Not an analysis that
5 I did. I don't know.

6 BY MR. MONALDO:

7 Q. Okay. I'm going to turn you to,
8 let's see, claim 7 and claim 8 of the '163
9 patent.

10 A. Yes.

11 Q. Do you see claim 7 where it says,
12 wherein the processor is configured not to
13 perform a spatial reuse operation when the BSS
14 color indicated by the signaling field of the
15 PPDU is a predetermined value?

16 Do you see that?

17 A. Yes, I do. I'm just -- I was just
18 thinking about it.

19 Q. And do you see claim 8, where it
20 says, wherein the predetermined value is zero?

21 A. Yes.

22 Q. My question is, do those claims align
23 with the example we discussed at column 21, where
24 the BSS color was set to a predetermined value of
25 zero and the SR spatial reuse operation was not

1 performed?

2 A. I think that's -- that's possible.
3 It's -- I -- I haven't offered this opinion.

4 Q. You didn't review claims 7 and 8 as
5 part of your preparation of your declaration?

6 MR. MILKEY: Objection to form.

7 THE WITNESS: I can't say I didn't
8 review them entirely, but I -- my
9 declaration, I think, is in response to
10 Dr. Mahon's opinions in connection with
11 claims 1 and 9.

12 BY MR. MONALDO:

13 Q. Okay. And because dependent claims
14 further limit the independent claim from which
15 they depend, since it's possible the example in
16 column 21 that we discussed is met by claims 7
17 and 8, you'd agree with me that it's also
18 possible that the example of column 21 is met by
19 claim 1 of the '163 patent, correct?

20 A. But the -- so -- so your question is
21 whether it's possible?

22 Q. Whether that example is within the
23 scope of the claim, yes.

24 A. Whether it's in the scope of claim 1
25 or whether it's possible that it's within the

1 scope of claim 1?

2 Q. Why don't you answer possible first
3 and then maybe we'll get to the -- the second
4 question.

5 A. And I think the -- the honest answer
6 here is that I did not make this analysis.

7 Q. You didn't consider whether a
8 predetermined value of zero and not performing a
9 spatial reuse operation, whether that was part of
10 claim 1 or covered by claim 1?

11 MR. MILKEY: Object to form.

12 THE WITNESS: Not exactly. I did
13 not consider whether the example in
14 column 21, whether that is within the
15 scope of claim 1.

16 BY MR. MONALDO:

17 Q. Okay. And maybe it's a good time to
18 take a break, but my question -- I have a
19 question and that's can you point me to an
20 example in the '163 patent that is covered by
21 claim 1. And maybe if you want to take a look at
22 the '163 patent over the break and then come back
23 to that question --

24 A. Well, thank you for -- for giving me
25 this opportunity.

1 Yes, I -- I will review the '163
2 patent and will try to give you -- will try to
3 give you an answer.

4 Q. Okay. So maybe we'll go off record
5 now and maybe come back at, maybe, 11:50 a.m.
6 Eastern.

7 Is that okay?

8 A. Okay. That's fine.

9 (Thereupon, a brief recess was
10 taken.)

11 BY MR. MONALDO:

12 Q. Dr. Cooklev, have you communicated
13 with counsel during the course of today's
14 deposition?

15 A. I -- yes. Specifically I -- like I
16 said, I -- I told counsel that I will make a
17 bathroom break and I was considering asking for a
18 few more minutes. And counsel advised me to
19 go -- to go back on the record and maybe if I
20 need some time to review the patent.

21 Q. Okay. But you didn't speak about the
22 substance of your testimony today, did you?

23 A. No, I did not.

24 Q. Okay. So after -- before the last
25 break my question to you was can you identify an

1 example in the '163 patent that is met by
2 claim 1.

3 MR. MILKEY: Objection to form and
4 outside the scope.

5 THE WITNESS: That's a difficult
6 question to answer, Counsel, in the -- if
7 I may say in the heat of the deposition.
8 But I can say that -- so we were talking
9 about operations -- an operation based on
10 the BSS color not being allowed, and which
11 is -- which is part of claim element 1.4
12 and also claim element 1.5, wherein the
13 BSS color is an identifier of a BSS.

14 So these are key elements. These
15 are key elements of -- of claim 1 and
16 maybe even the example that we were
17 talking earlier about BSS color being a
18 predetermined value. And as long as the
19 BSS color is an identifier of -- of -- of
20 a BSS, then I think that would be an
21 example.

22 So I think that will be my answer.

23 BY MR. MONALDO:

24 Q. Okay. So my question is, the example
25 we discussed earlier at column 21 of the '163

1 patent, where the BSS color value is a
2 predetermined value of zero, is that what you are
3 pointing to as an example that meets claim 1?

4 MR. MILKEY: Objection to form.
5 Outside the scope.

6 THE WITNESS: And I also, for the
7 record, am reviewing an electronic copy of
8 the '163 patent and also an electronic
9 copy of my declaration. And -- and maybe
10 here a more complete answer -- I think
11 I've -- I've given an answer to this
12 question that I did not make this
13 analysis.

14 But to the extent your question is
15 challenging, perhaps my paragraphs 85 and
16 86 and 87 -- it's possible that BSS color
17 zero in column 21 is within the scope of
18 claim 1 because it doesn't -- because it's
19 possible that a BSS color of zero is an
20 identifier of a BSS in the -- in the
21 context of column 21.

22 However, Choudhury's disclosure is
23 different, because even Dr. Mahon
24 acknowledges that in Choudhury, a BSS or
25 color field -- excuse me -- color field

1 value of 0000 is not a valid BSS
2 identifier.

3 BY MR. MONALDO:

4 Q. Is a color --

5 A. And --

6 Q. Go ahead. Sorry.

7 A. Yeah -- which is what I state in my
8 paragraph 86 and -- and also in paragraph 87.

9 Q. Is a color value of zero a valid BSS
10 color in the 802.11 standard?

11 MR. MILKEY: Object to form.
12 Outside the scope.

13 THE WITNESS: I have not provided
14 this opinion. I think that's the -- the
15 most important part that I -- and you're
16 asking me a detail about the standard. I
17 think it's -- again, not study you're
18 asking me right now, but I think it's not
19 impossible.

20 BY MR. MONALDO:

21 Q. Okay. So in the 802.11 standard, you
22 could have a BSS color value of zero used to
23 identify a BSS?

24 Is that your testimony?

25 MR. MILKEY: Objection to form.

1 Outside the scope.

2 THE WITNESS: That's -- that
3 goes -- becomes a little strong. I --
4 because it's not in my declaration and --
5 so it's a little bit strong.

6 Again, just sitting here right now,
7 I think it's not impossible, but I have
8 not studied this in preparation for today.

9 BY MR. MONALDO:

10 Q. Does the '163 patent describe a color
11 value of zero being used to identify a BSS?

12 MR. MILKEY: Objection to form,
13 outside the scope.

14 THE WITNESS: Well, it's a little
15 bit long patent. So I could be wrong, but
16 I think it doesn't say that it -- it
17 doesn't say the -- that you cannot use
18 zero for that.

19 BY MR. MONALDO:

20 Q. You would agree with me, though, it
21 says it is a predetermined value of zero,
22 correct?

23 A. Yes.

24 Q. If a BSS color is going to be used to
25 identify a BSS, would that be predetermined?

1 MR. MILKEY: Objection to form.

2 Outside the scope.

3 THE WITNESS: I don't know that.

4 BY MR. MONALDO:

5 Q. Are BSS color values determined on
6 the fly, or are they set in advance and
7 unchangeable for BSSs?

8 MR. MILKEY: Objection to form.

9 THE WITNESS: I have not opined on
10 this, but it seems to me those two are not
11 mutually exclusive.

12 BY MR. MONALDO:

13 Q. Okay. So just to clarify, your
14 position is that the example in column 21 of the
15 '163 patent is covered by claim 1 because the
16 predetermined value of zero identifies a BSS,
17 whereas the predetermined value of zero on
18 Choudhury does not; is that correct?

19 MR. MILKEY: Objection to form.

20 THE WITNESS: I think two parts of
21 your question, one part about column 21
22 and another part about Choudhury. And as
23 far as the second aspect, color field all
24 zeros in Choudhury.

25 And Dr. Mahon is saying that color

1 field value of all zeros does not
2 represent a valid BSS identifier in
3 paragraph 172 of his declaration. And --
4 and he provides a reason for that. It
5 says, When a device receives a PPDU with
6 this value, it can't use the BSS color for
7 its intended purpose of BSS identification
8 because no valid BSS color has been
9 provided.

10 And I, in my paragraph 86, I agree
11 with -- with this. I agree that -- that
12 in Choudhury a color field of all zeros
13 does not represent a valid BSS identifier.

14 And -- and for this reason, I think
15 claim element 1.5 is not disclosed.

16 BY MR. MONALDO:

17 Q. Well --

18 A. Column 21 -- in column 21 it could be
19 a BSS identifier.

20 Q. And so your opinion is that in
21 column -- the example in column 21, zero could be
22 a BSS identifier, correct?

23 A. Well, subject to -- as I said, I
24 have -- this is not something that I studied.
25 Subject to that, sitting here right now, it seems

1 to me yes.

2 Q. Okay. So the difference between
3 Choudhury and the '163 patent is that in the '163
4 patent, zero could be a valid BSS identifier,
5 correct?

6 A. Could be.

7 Q. And that's why, even though Choudhury
8 discloses zero, it does not meet the claim?

9 MR. MILKEY: Object to form.

10 THE WITNESS: It's not the only
11 reason. It's -- it's one reason.

12 BY MR. MONALDO:

13 Q. Okay. So let's move on. I'm going
14 to turn you to Figure 45 of the '163 patent.

15 Do you see Figure 45?

16 A. I do.

17 Q. You'd agree with me that there are
18 three steps shown in the flowchart of Figure 45?

19 A. Yes.

20 Q. You agree with me that the first step
21 is Receive PPDU?

22 A. Yes.

23 Q. You'd agree with me that the second
24 step is Identify whether received PPDU is
25 inter-BSS PPDU or intra-BSS PPDU, correct?

1 A. Yes.

2 Q. How does the mobile terminal identify
3 whether the received PPDU is inter-BSS or
4 intra-BSS?

5 MR. MILKEY: Object to form.

6 THE WITNESS: Yes, I can give an
7 example. For example, in column 3,
8 line 21.

9 BY MR. MONALDO:

10 Q. Okay.

11 A. And so here it says that -- on
12 line 20 if we begin the predetermined value for
13 the BSS color may be zero. But then, line 21
14 says that a PPDU signaling the predetermined
15 value as the BSS color.

16 So if that's used as the BSS color,
17 then that PPDU may not be identified as an
18 inter-BSS or an intra-BSS based on the BSS color
19 because the BSS color is zero.

20 But the intra-BSS PPDU indicates a
21 PPDU transmitted from the same BSS to which the
22 wireless communication terminal belongs. I'm not
23 quoting verbatim, but just I'm adding some of my
24 words here.

25 And the inter-BSS PPDU may indicate

1 the PPDU transmitted from a BSS other than the
2 BSS, which includes the wireless communication
3 terminal.

4 Q. Okay. So is it fair to say that
5 whether a PPDU is an inter-BSS PPDU or an
6 intra-BSS PPDU is determined based on the BSS
7 color?

8 A. I don't think this -- this paragraph
9 teaches that. I think this -- this paragraph in
10 column 3 teaches that the determination
11 whether -- the determination whether the PPDU is
12 intra-BSS or inter-BSS is not based on BSS color
13 when the BSS color is this predetermined value.

14 So in other cases, I think you could
15 do that. But when the BSS color is this
16 predetermined value, then -- then -- then you'd
17 use -- you'd do it differently.

18 Then the intra-BSS is -- intra-BSS
19 PPDU is a PPDU transmitted from the same BSS.
20 And inter-BSS is a PPDU transmitted from an
21 address other than the BSS that includes the
22 wireless communication terminal.

23 Q. Okay. So in your opinion, the
24 mobile -- or the wireless communication
25 terminal -- strike that.

1 In your opinion, the wireless
2 communication terminal receives the PPDU,
3 accesses the BSS color -- in this case, that BSS
4 color is a predetermined value of zero -- and
5 then prevents an operation based on BSS color,
6 based on the predetermined value being zero, that
7 is covered by claim 1?

8 MR. MILKEY: Object to form.
9 Outside the scope.

10 THE WITNESS: I did not understand.

11 BY MR. MONALDO:

12 Q. So to determine that a BSS color has
13 a predetermined value of zero, you would have to
14 access the BSS color and evaluate the value of
15 the BSS color, correct?

16 A. Yes.

17 Q. So performing that step of evaluating
18 the value of a BSS color field falls within the
19 scope of claim 1 of the '163 patent, correct?

20 MR. MILKEY: Object to form.
21 Outside the scope.

22 THE WITNESS: Performing this step
23 is within the scope of claim 1? I did not
24 do this analysis.

25 ///

1 BY MR. MONALDO:

2 Q. You'd agree with me that a
3 predetermined value of zero, when it identifies a
4 BSS, is within the scope of claim 1, based on
5 your earlier testimony, correct?

6 A. Well, I said it could be.

7 Q. And you also testified that you must
8 access and evaluate the BSS color value to
9 determine that it is the predetermined value of
10 zero, correct?

11 A. Well, it seems to me you're asking me
12 do you have to receive that and properly receive
13 that BSS color field. I -- I think yes.

14 Q. So in your opinion, properly
15 receiving the BSS color value field and
16 evaluating it is covered by claim 1 of the '163
17 patent, correct?

18 MR. MILKEY: Object to form.
19 Outside the scope.

20 THE WITNESS: Well, I don't think
21 this is an opinion that I've given in my
22 declaration. You said properly receiving,
23 which is basically receiving. I'm not
24 sure what that evaluating is here,
25 distinct from receiving. It's -- I think

1 it's just the receiving.

2 But in -- in any case, I think the
3 answer is that I did not investigate that
4 in my declaration.

5 BY MR. MONALDO:

6 Q. So you have no opinion on whether
7 receiving a BSS color value of zero, identifying
8 that it is zero and then preventing an operation
9 based on BSS color is covered by claim 1 of the
10 '163 patent?

11 MR. MILKEY: Object to form.

12 THE WITNESS: No, I wouldn't say
13 that. I think I have formed an opinion
14 about Choudhury and Choudhury's color
15 field of 0000. And, in my opinion, that
16 does not represent the valid BSS
17 identifier.

18 BY MR. MONALDO:

19 Q. I understand your opinion on
20 Choudhury.

21 My question is, does the act of
22 receiving a BSS color value and evaluating it,
23 does that put you outside the scope of claim 1 or
24 is performing that operation acceptable within
25 the scope of claim 1?

1 MR. MILKEY: Objection to form.

2 THE WITNESS: And let me think.

3 Does the act of receiving BSS color field,
4 and specifically BSS color field of zero?

5 Is that the question, if that is --
6 if that act is outside the scope of
7 claim 1?

8 BY MR. MONALDO:

9 Q. Yes.

10 MR. MILKEY: Objection to form.
11 Outside the scope.

12 THE WITNESS: I -- I don't know.

13 BY MR. MONALDO:

14 Q. Maybe let's switch gears here. I'll
15 turn you to the Lee reference now, which is
16 Exhibit 1005.

17 A. Yes. And with your permission, I can
18 use -- I think I have a hard copy of Lee, again,
19 unmarked.

20 Q. Yes, please refer to your hard copy.
21 I'll also put it on the -- on the shared screen
22 here as well.

23 A. Okay.

24

25 ///

1 (Thereupon, Exhibit 1005,
2 previously marked, was referred to.)

3 BY MR. MONALDO:

4 Q. So I'd like to turn you to
5 paragraph 68 of the Lee reference.

6 You see the first two sentences of
7 paragraph 68?

8 A. I do.

9 Q. So you'd agree with me that the first
10 sentence establishes that the frame can include a
11 coloring disable bit, correct?

12 A. In the condition that it's a trigger
13 frame or a CTX frame, yes.

14 Q. And the second sentence confirms that
15 if the coloring disable bit indicates that the
16 frame corresponds to a trigger frame related to
17 multiuser transmission, the station may not
18 perform the change of the CCA level, irrespective
19 of information indicated by the coloring bit,
20 correct?

21 A. Yes, that's what it says.

22 Q. And the change of the CCA level is
23 similar to the CCA operation we discussed with
24 respect to the '163 patent, correct?

25 A. CCA is CCA, yes.

1 Q. So you'd agree with me that if the
2 coloring disable bit is set, the station does not
3 perform the CCA operation in Lee, correct?

4 A. Yes. If the coloring disable bit --
5 if the coloring disable bit is set, meaning the
6 frame corresponds to a trigger frame, the station
7 may not perform the change of the CCA level,
8 regardless of the coloring bit.

9 Again, not -- not verbatim, but I
10 think this is what this sentence is saying.

11 Q. You'd agree with me that that example
12 is similar to the example in column 21 of the
13 '163 patent, where the spatial reuse operation is
14 not performed when the BSS color has a
15 predetermined value of zero, correct?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: And just to explain,
18 I'm looking at -- turned again to '163
19 patent.

20 As far as may not perform an
21 operation, irrespective of the coloring
22 bit, it is similar in this aspect. In
23 column 21, it's not performing the SR
24 operation based on the color value.

25 So in this aspect, it's -- it is

1 similar. It's a little bit different that
2 in Lee, there's a coloring disable bit,
3 which indicates that the frame is a
4 trigger frame. And in column 21 it says
5 the BSS color value is a predetermined
6 value.

7 BY MR. MONALDO:

8 Q. Okay. And I'd agree with you there's
9 a difference in that column 21 uses a
10 predetermined value for the color and Lee uses a
11 coloring disable bit. But the result of not
12 performing an SR or CCA operation is similar,
13 correct?

14 MR. MILKEY: Object to form.

15 THE WITNESS: Well, what is similar
16 is that something is not performed,
17 regardless of, in the case of Lee, the
18 color bit or the -- excuse me -- the
19 coloring bit.

20 BY MR. MONALDO:

21 Q. Okay. Can I turn you to paragraph 89
22 of Lee.

23 A. 89?

24 Q. Yes.

25 A. Yes.

1 Q. Do you see that paragraph 89
2 describes, According to the aforementioned
3 embodiments, when RTS/CTS or a trigger frame/CTX
4 are transmitted by 802.11ax frame format, the
5 device receiving the frame is able to know that
6 the frame corresponds to the RTS, the CTS or the
7 CTX by adding not only a BSS coloring bit, but
8 also a coloring disable bit and applies CCA using
9 a method different from other frame.

10 Do you see that?

11 A. I do. I think you read it correctly.

12 Q. And so in this case, the coloring
13 disable bit is set if the frame is an RTS, CTS or
14 CTX, correct?

15 A. Yes. Yes.

16 Q. So the coloring disable bit in Lee
17 can refer to multiple things, correct?

18 A. Like I -- I also say in my
19 declaration that the coloring disable bit in Lee
20 is used to denote trigger frame or RTS/CTS.

21 Q. But you wouldn't know which one
22 specifically based on the coloring disable bit of
23 Lee, correct?

24 A. I don't think I've provided an
25 opinion about this.

1 Q. You'd agree with me that the coloring
2 disable bit is a single bit in Lee, correct?

3 A. Yes.

4 Q. And a single bit would not be able to
5 specify whether a frame is RTS, CTS or CTX,
6 correct?

7 A. And I think a bit can signify whether
8 it's any one of these or not.

9 Q. But it cannot signify which of those
10 three options it is, correct?

11 A. I don't think so.

12 Q. So, in your opinion, the coloring
13 disable bit of Lee could indicate multiple
14 things, correct?

15 MR. MILKEY: Object to form.

16 THE WITNESS: Well, multiple things
17 is a little bit open-ended. It indicates
18 a trigger frame or RTS/CTS.

19 BY MR. MONALDO:

20 Q. Can we move back to paragraph 68.

21 A. Yes.

22 And, Counsel, I would be happy to
23 answer a question, maybe two, and would ask for a
24 break after that.

25 Q. Okay. It may be a good time to break

1 for lunch after this. Is that your preference?

2 A. That is what I was thinking, yes.

3 Q. Okay. So let me try to ask a few
4 more questions on Lee, see if we can't wrap this
5 up.

6 A. Okay.

7 Q. In paragraph 68, the last sentence,
8 do you see that? It says, Since a current frame
9 corresponds to a trigger frame, the coloring
10 disable bit can also be comprehended as a bit
11 indicating that CCA level change is not performed
12 and whether or not a medium is busy is not
13 determined.

14 A. And I see this and you read it
15 correctly.

16 Q. So you'd agree with me that the
17 coloring disable bit in Lee could be an
18 indication that CCA level change is not
19 performed, correct?

20 A. Yes.

21 Q. So in your opinion, the coloring
22 disable bit could indicate multiple things, such
23 as trigger frame, RTS, CTS or that CCA level
24 change is not performed, correct?

25 MR. MILKEY: Object to form.

1 THE WITNESS: That would depend on
2 the context, but, yes, here it says that
3 the coloring disable bit can be
4 comprehended as a bit indicating that CCA
5 level change is not performed.

6 BY MR. MONALDO:

7 Q. When Lee says disabling BSS color,
8 what does that mean to a person of ordinary skill
9 in the art?

10 MR. MILKEY: Objection, form.

11 THE WITNESS: I mean, Lee says
12 disabling BSS color. Which paragraph
13 of -- of Lee do you have in mind?

14 BY MR. MONALDO:

15 Q. Maybe just start with the paragraph
16 saying coloring disable bit.

17 So coloring disable, what does that
18 mean to a person of ordinary skill in the art?

19 MR. MILKEY: Objection to form.

20 THE WITNESS: I think in the
21 context of Lee, a coloring disable bit
22 is -- is a bit that denotes whether or not
23 the frame is a trigger frame or RTS/CTS.

24 BY MR. MONALDO:

25 Q. Is a coloring disable bit known in

1 the 802.11 standard?

2 MR. MILKEY: Objection to form.

3 THE WITNESS: A coloring disable
4 bit is something that Lee talks about.
5 And so this is how a person of skill
6 reading Lee -- as I said, reading Lee
7 would have understood what this coloring
8 disable bit is doing, as denoting trigger
9 frame or RTS/CTS.

10 Whether the 802.11 standard has
11 something which is called coloring disable
12 bit, I don't know.

13 BY MR. MONALDO:

14 Q. You don't know if the standard has a
15 coloring disable bit?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: I mean, you said
18 coloring disable bit. It's not an opinion
19 that I have given here and I have general
20 familiarity with the standard, but I have
21 not reviewed the standard with this
22 question in mind.

23 BY MR. MONALDO:

24 Q. And when you see the term "coloring
25 disable," would a person of ordinary skill in the

1 art have thought it possible that that means that
2 BSS color is disabled?

3 MR. MILKEY: Objection to form.

4 THE WITNESS: Well, Counsel, I
5 think your question is trying to take this
6 term outside the context of Lee, and to
7 make it even different from Lee's
8 teaching.

9 So in the abstract -- in the
10 abstract, if it's just a different
11 disclosure that I haven't seen, something
12 like that is possible. And that's a
13 hypothetical question. In the abstract it
14 might be possible. But it's not in the
15 context of Lee.

16 BY MR. MONALDO:

17 Q. In the context of Lee, the coloring
18 disable bit could indicate multiple things that
19 we've discussed, RTS, CTS, trigger frame, CCA,
20 adjustment is not performed, correct?

21 MR. MILKEY: Objection to form.

22 THE WITNESS: I think that's -- I
23 think that's fair.

24 BY MR. MONALDO:

25 Q. And so isn't it possible that since

1 the coloring disable bit can be set for multiple
2 reasons, a person of ordinary skill could have
3 simply understood the coloring disable bit as
4 disabling BSS color, correct?

5 MR. MILKEY: Objection to form.

6 THE WITNESS: I don't agree with
7 that.

8 BY MR. MONALDO:

9 Q. Why not?

10 A. Because I -- I -- that's not
11 supported by the Lee reference. Lee does not
12 teach that the coloring disable bit disables.
13 You said disables. I forgot exactly what the
14 question was, but disables BSS color or all
15 operations based on BSS color. I think that's
16 not supported by the Lee reference.

17 Q. I guess my question was, we've talked
18 about this BSS color disabling bit and it being
19 set based on multiple different reasons.

20 So in that context, could that bit
21 have been understood to simply correspond to an
22 indication that BSS color is disabled?

23 A. No. And in your question, you said
24 BSS color disable bit, which is a little
25 different from how Lee calls it.

1 So although I agree that Lee says
2 coloring disable bit, I think you are trying
3 to -- you're going beyond the scope of what Lee
4 is teaching. You're trying to make this coloring
5 disable bit in Lee -- it seems to me right now
6 you're trying to make it more than what Lee is
7 teaching.

8 Q. I'm not trying to make it anything.
9 I'm just trying to get an understanding of, you
10 know, how a person of skill would read the
11 disclosure of Lee and its -- its coloring disable
12 bit.

13 And so I think I understand you that
14 the coloring disable bit in Lee would disable an
15 operation based on BSS color, but it would not
16 broadly disable BSS color itself.

17 Is that your opinion?

18 A. That's -- that is close. I think
19 we -- we agreed earlier that BS -- that the
20 coloring disable bit can denote a trigger frame
21 or RTS/CTS. And it also, even as we -- in
22 paragraph 68 of Lee, it can be comprehended as a
23 bit indicating that CCA level change is not
24 performed.

25 So, yes, it could denote this. What

1 it doesn't do is it does not say or -- that all
2 operations based on BSS color are not allowed or
3 it doesn't disable all operations based on BSS
4 color.

5 Q. Does the '163 patent provide an
6 example where all operations based on BSS color
7 are not allowed?

8 MR. MILKEY: Objection to form.
9 Outside the scope.

10 THE WITNESS: Sitting here right
11 now, I -- I don't know if there is an
12 example like that.

13 BY MR. MONALDO:

14 Q. Okay. Fair enough.

15 MR. MONALDO: I think maybe this is
16 a good time to break for lunch. Let's
17 maybe go off the record.

18 (Thereupon, at 1:07 p.m. EDT, a lunch
19 recess was taken.)

20 ///

21 ///

22 ///

23 ///

24 ///

25 ///

1 AFTERNOON SESSION (1:34 p.m. EDT)

2 BY MR. MONALDO:

3 Q. Dr. Cooklev, I would like to turn now
4 to the Choudhury reference.

5 Do you have a copy of Choudhury?

6 A. I do. Also, with your permission,
7 here is a clean paper copy of Choudhury.

8 Q. Absolutely. So I'd like to turn you
9 to paragraph 23 of Choudhury.

10 A. 23, I'm looking at it.

11 Q. Okay. Great. So do you see how
12 Choudhury describes that low power devices and
13 devices in high SINR regions use an indication
14 that a device is operating at low power or is
15 otherwise unusually susceptible to interference
16 or experiencing interference?

17 A. Yes. Yes, I do.

18 Can I -- can I take a one-minute
19 break?

20 Q. Yes.

21 A. Okay. I apologize.

22 (Thereupon, a brief recess was
23 taken.)

24 BY MR. MONALDO:

25 Q. So, Dr. Cooklev when you took a short

1 break, we were discussing paragraph 23 of
2 Choudhury.

3 A. Yes.

4 Q. And in the second sentence of
5 paragraph 23, you see that Choudhury discloses
6 that one approach is to use a one-bit indicator
7 in the SIG, with the indicator suitably being
8 called low power bit.

9 A. Yes.

10 Q. And the following sentence indicates
11 that if a station is able to decode the SIG and
12 the low power bit is set, limitations are placed
13 on its use of the channel, such as inhibition
14 from using the channel or use of a lower CCA
15 threshold.

16 Do you see that?

17 A. Yes.

18 Q. So inhibiting use of the channel or
19 using a lower CCA threshold relate to the spatial
20 reuse operation we discussed earlier today, as
21 described in the '163 patent, correct?

22 A. Yes.

23 Q. And you agree with me that those
24 operations are restricted when the low power bit
25 of Choudhury is set, correct?

1 A. Well, you said restricted is the use
2 of the channel by -- by a station if the low
3 power bit is set.

4 Q. Yes. Would inhibition from using the
5 channel be a restriction of using the channel
6 that is similar to restricting the spatial reuse
7 operation described in the '163 patent?

8 MR. MILKEY: Objection to form.

9 THE WITNESS: Well, there is a
10 restriction on something, a restriction on
11 an operation, such as using the channel.

12 BY MR. MONALDO:

13 Q. So in that way, you'd agree with me
14 that that is similar to what the '163 patent
15 describes in restricting its spatial reuse
16 operation, correct?

17 MR. MILKEY: Objection to form.

18 THE WITNESS: Well, is this -- so
19 the -- I understand the question. The
20 question is, is this similar to the
21 restrictions that the '163 patent is
22 describing.

23 And while I think the -- well, the
24 way I have performed the analysis whether
25 or not the claims of the '163 patent are

1 rendered obvious by Choudhury, I -- I
2 looked at the claims of the '163 patent.

3 And I can see here in Choudhury the
4 words "inhibition from using the channel,"
5 something like that, but I think overall
6 the -- the Choudhury reference falls short
7 and does not render obvious the claims of
8 the '163 patent.

9 BY MR. MONALDO:

10 Q. Okay. But you'd agree with me that
11 the limitations placed on use of the channel,
12 such as an inhibition from using the channel, is
13 similar to the example in the '163 patent we
14 discussed earlier today at column 21, where the
15 spatial reuse operation is restricted, correct?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: Well, just -- just
18 this part that something is not allowed.
19 Just this part, yes.

20 BY MR. MONALDO:

21 Q. Okay.

22 A. In the sense that, yes, something is
23 not allowed, if that's your question.

24 Q. Okay. And the difference between
25 this disclosure in Choudhury and the example in

1 column 21 of the '163 patent is that Choudhury
2 uses the low power bit, whereas the '163 patent
3 uses a predetermined value of the BSS color
4 field, correct?

5 MR. MILKEY: Objection to form.

6 THE WITNESS: I'm again taking
7 another look at column 21.

8 The -- column 21, what is not
9 allowed when the BSS color field is a
10 predetermined value, it's -- this is
11 around line 38 or so. What's not allowed
12 is the SR operation based on the BSS
13 color. That is not -- and what is not
14 allowed in Choudhury is channel use.

15 I mean, yes, something is not
16 allowed, but it's -- but it is a little
17 bit different if we look in detail.

18 BY MR. MONALDO:

19 Q. In Choudhury, isn't channel use based
20 on BSS color?

21 MR. MILKEY: Object to form.

22 THE WITNESS: In which paragraph of
23 Choudhury?

24 BY MR. MONALDO:

25 Q. Maybe we could go down to

1 paragraph 25 of Choudhury.

2 So do you see paragraph 25 where it
3 says, In the first variant, the color field is
4 used, so that all stations belonging to the same
5 BSS set the same color field. All stations are
6 thus aware that there is an ongoing intra-BSS
7 transmission so that the station will not reuse
8 the channel if it decodes a valid SIG field from
9 the same BSS?

10 So in that section, the reuse of the
11 channel is based on the BSS color and whether the
12 color indicates a communication from the same
13 BSS, correct?

14 MR. MILKEY: Objection to form.

15 THE WITNESS: Well, yes, it says --
16 so I would agree that it says the station
17 will not reuse the channel. So this
18 refers to channel use, not necessarily
19 spatial reuse.

20 BY MR. MONALDO:

21 Q. Okay. Perhaps you can look at the
22 table at page 5 in Choudhury.

23 A. Oh, yes.

24 Q. Do you recall this table,
25 Dr. Cooklev?

1 A. I do.

2 Q. So in table -- in this table on
3 page 5, do you see the last two rows of the
4 table?

5 A. I do.

6 Q. You'd agree with me that those two
7 rows relate to the situation when a communication
8 is received from a station in a different BSS,
9 correct?

10 A. Well, it says here different BSS,
11 yes.

12 Q. And in the second row from the
13 bottom, you'd agree with me that the low
14 power/high interference indicator is zero and,
15 therefore, the receiving station is allowed
16 access to the channel, correct?

17 A. Yes.

18 Q. And in the final row of the table,
19 the low power/high interference indicator is set
20 to 1 and, therefore, the receiving station has
21 limited access to the channel, correct?

22 A. Yes.

23 Q. So in that last row, setting the low
24 power/high interference indicator to 1 limits
25 access to the channel, irrespective of the BSS

1 color value, correct?

2 MR. MILKEY: Objection to form.

3 THE WITNESS: In the last row?

4 BY MR. MONALDO:

5 Q. Yes.

6 A. And just as a -- for reference, I am
7 looking at my declaration. I think -- I think
8 somewhere I did analyze this.

9 I don't think I agree with you. In
10 fact, I don't agree with you that in the last row
11 of Table 5, if the low power indicated as 1, it
12 doesn't matter the color field.

13 Q. Sorry. Are you saying that because
14 the low power/high interference indicator is 1,
15 the station has limited access and it doesn't
16 matter what the color field value is set at?

17 MR. MILKEY: Objection to form.

18 THE WITNESS: No. I'm not saying
19 that it doesn't matter. I mean, in fact,
20 as -- as I state in my paragraph 74, even
21 when the low power indicator is set to 1,
22 Choudhury will still evaluate the color
23 field to determine whether or not the PPDU
24 is part of an intra- or inter-BSS.

25 ///

1 BY MR. MONALDO:

2 Q. So if you compare the second to last
3 row in the table on page 5 to the last row in the
4 table on page 5, the difference between the two
5 rows is the low power/high interference
6 indicator, correct?

7 MR. MILKEY: Objection to form.

8 THE WITNESS: Well, as far as those
9 two rows, yes.

10 BY MR. MONALDO:

11 Q. And so the difference in limiting
12 access for the bottom row of the table on page 5
13 is that the low power/high interference indicator
14 overrides the ordinary operation based on BSS
15 color, correct?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: No. In my
18 paragraph 74 I give an answer to this
19 question. And I state that if the station
20 determines that the PPDU is not part of an
21 intra-BSS transmission, which basically
22 means it's different, that the station is
23 a different BSS, the station will then
24 evaluate the low power indicator to see if
25 it equals to 1, and, if so, it will limit

1 channel access.

2 BY MR. MONALDO:

3 Q. Right. So if the station is in a
4 different BSS, there's two potential options.

5 Option one is you're allowed access
6 because the communication is from a different BSS
7 and option two is you're limited access and that
8 occurs if the low power/high interference
9 indicator is set to 1, correct?

10 MR. MILKEY: Objection to form.

11 THE WITNESS: Well, to the extent
12 that's the same thing what I state in my
13 paragraph 74, then I agree. I state that
14 the station will evaluate the BSS color
15 field to know -- to find out if the PPDU
16 is -- is or is not part of an intra-BSS
17 transmission and will then evaluate the
18 low power indicator to see if it equals 1.

19 BY MR. MONALDO:

20 Q. But does your opinion on Choudhury
21 depend on the order with which the color field
22 and the low power/high interference indicator are
23 considered?

24 MR. MILKEY: Objection to form.

25 THE WITNESS: Well, Choudhury says,

1 as we were talking in paragraph 24, that
2 the color field may include or be
3 accompanied by a low power indicator and,
4 in the third case, a modified version of
5 the color field.

6 So -- so I think the color field
7 here is -- it is important in the sense
8 that there may not be a low power
9 indicator without the color field. I
10 mean, the color field may include the low
11 power indicator, so it might be there, or
12 it might be accompanied by a low power
13 indicator.

14 And in the third case, it's just
15 the color field.

16 BY MR. MONALDO:

17 Q. So I guess my question relates to the
18 first variant here, where you have an indicator
19 following the color field concept described in
20 802.11ah, may include or be accompanied by a low
21 power indicator. I believe that's what's shown
22 in the table on figure -- or on page 5, correct?

23 MR. MILKEY: Objection to form.

24 THE WITNESS: Yes.

25 ///

1 BY MR. MONALDO:

2 Q. In that case, does it matter the
3 order with which you assess the color field and
4 the low power/high interference indicator?

5 MR. MILKEY: Objection to form.

6 THE WITNESS: Well, for the table,
7 the color field achieves the functionality
8 of both the low power indicator and the
9 color field as defined by 802.11ah. So --
10 so this is what my opinion is based on.

11 BY MR. MONALDO:

12 Q. Okay. But I don't know that answered
13 my question. My question was, does the order
14 with which you evaluate the color field versus
15 the low power indicator matter?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: I think yes, because
18 there is a case of -- such as if the
19 receiving station determines that the PPDU
20 is part of an intra-BSS or within the BSS
21 transmission, then -- then it doesn't need
22 to evaluate the low power indicator.

23 BY MR. MONALDO:

24 Q. Okay. So if the order was reversed
25 and it considered the low power/high interference

1 indicator first, would that meet claim 1 of the
2 '163 patent?

3 MR. MILKEY: Objection to form.

4 THE WITNESS: But that's not
5 exactly -- if -- if it -- if Choudhury
6 operates a little differently, would that
7 meet the limitation; I mean, if Choudhury
8 is different, then -- then I would have to
9 evaluate it, I guess, and I would evaluate
10 it with an open mind. And in that sense,
11 it's possible. But the way Choudhury is,
12 no.

13 And we -- we see -- also in -- in
14 this table we see the low power/high
15 interference indicator is just a bit -- is
16 just a bit, but the table has -- there are
17 five rows, like five different cases. And
18 to me, that's also -- that is an
19 indication that, well, you have to
20 evaluate the color field.

21 It doesn't say okay, you -- just --
22 the low power indicator is just a bit.
23 Look at that and see what you could do
24 that way.

25 ///

1 BY MR. MONALDO:

2 Q. So you'd agree with me that rows 1, 3
3 and 5 cover the case where the low power/high
4 interference indicator is 1, correct?

5 MR. MILKEY: Objection to form.

6 THE WITNESS: Almost. All three
7 says 001 so could be either.

8 BY MR. MONALDO:

9 Q. Right.

10 A. It doesn't matter.

11 Q. All three of those rows limit access,
12 correct?

13 A. Yes.

14 Q. So couldn't Choudhury simply look at
15 the low power/high interference indicator and, if
16 it's 1, limit access without considering the BSS
17 color?

18 A. I think this example operates a
19 little differently. Where the -- the example
20 where the color field concept is generalized to
21 achieve both the -- the functionality of both,
22 the low power indicator and the color field.

23 Q. In this table?

24 A. Yes.

25 Q. How so?

1 A. It's -- it is a little differently
2 from just constructing the truth table, little
3 differently from a truth table, which -- which
4 is -- contains the logic that you were
5 describing.

6 I think that you have five different
7 cases in this table. And the -- as I state in my
8 paragraph 74, the station will determine if -- if
9 the PPDU is an intra-BSS or inter-BSS.

10 Q. It wouldn't make that determination
11 for rows 1 and 2, correct, since the color field
12 isn't used?

13 A. Yes.

14 Q. So in that case, it would --
15 Choudhury would go straight to the low power/high
16 interference indicator and determine whether to
17 allow access or not based on the low power/high
18 interference indicator itself, correct?

19 MR. MILKEY: Objection to form.

20 THE WITNESS: I think -- I think in
21 those two cases it will do that.

22 BY MR. MONALDO:

23 Q. Well, couldn't you do that also in
24 the other cases and look at the low power/high
25 interference indicator and, if it's 1, simply

1 limit access?

2 MR. MILKEY: Objection to form.

3 THE WITNESS: I think that my
4 paragraph 74 is accurate, that the station
5 must evaluate the BSS color field to know
6 whether channel access is limited,
7 regardless of the low power indicator.

8 BY MR. MONALDO:

9 Q. I guess my question is, couldn't you
10 do the opposite, where you evaluate the low power
11 indicator, if it's 1, you limit access as shown
12 in rows 1, 3 and 5; if it's zero, then you could
13 turn to the BSS color and determine whether the
14 station -- the communication is from the same BSS
15 or a different BSS?

16 Isn't that possible?

17 MR. MILKEY: Object to form.

18 THE WITNESS: I think that you
19 could implement it like this. But even
20 then, my paragraph 74 is still accurate.
21 So even in this case, I think my analysis
22 is accurate.

23 BY MR. MONALDO:

24 Q. But if you considered low power/high
25 interference indicator first and it was a 1, why

1 would you look at the BSS color field?

2 MR. MILKEY: Object to form.

3 THE WITNESS: Well, because there
4 is a case where -- when even the low power
5 indicator is zero.

6 BY MR. MONALDO:

7 Q. I'm asking about the case where
8 it's 1.

9 A. That's not completely -- it doesn't
10 completely describe this table.

11 Q. Well, I'm asking if you considered
12 Choudhury's low power/high interference indicator
13 first and that value is 1, every time that occurs
14 you limit access. So in that case, you would not
15 need to consider the BSS color to determine
16 whether to limit access or not. You already have
17 the answer because you always limit access when
18 the low power/high interference indicator is 1,
19 correct?

20 MR. MILKEY: Objection to form.

21 THE WITNESS: But I think that this
22 is -- this does not completely describe
23 this table. It only partially describes
24 this table.

25 ///

1 BY MR. MONALDO:

2 Q. Okay. But in the case where it's
3 zero, I would agree with you that you would then
4 have to turn to the BSS color. But in the
5 circumstance where the low power bit is 1, I do
6 not believe you need to turn to the BSS color to
7 figure out whether or not to limit access.

8 Would you agree with me?

9 A. I agree that in -- like, in
10 isolation, you can take here the low power
11 indicator and, if it's equal to 1, access would
12 be limited. But I think this -- an operation of
13 a device according to this table would be a
14 little different.

15 And also, I was looking at
16 Dr. Mahon's declaration in paragraph 168, where I
17 think he also understood it, that in this case --
18 which I think is the third row of this table --
19 in this case, the value of the low power/high
20 interference indicator does not matter, so --
21 because channel access is limited.

22 And -- and even the logic of that,
23 while it's -- if -- if you have an inter- --
24 excuse me -- intra-BSS, that's the same BSS,
25 then -- then it makes sense to limit access,

1 regardless of the low power indicator.

2 So I think on this issue in the third
3 row of this table, in the -- it seems to me that
4 with Dr. Mahon, we are in -- have the same
5 opinion. And, for example, in paragraph 25 of
6 Choudhury, it says -- and so we were talking
7 about the first variant, right, when -- so the
8 color field is used, all stations belonging to
9 the same BSS set the same color field and all
10 stations are thus aware that there is an ongoing
11 intra-BSS transmission so that the station will
12 not reuse the channel if it decodes a valid SIG
13 field from the same BSS.

14 So this is what I think in response
15 to your question.

16 Q. Okay. And I think I understand your
17 position.

18 I guess my question is, couldn't you
19 have written this table differently, because it
20 doesn't really matter if you consider the color
21 field first or the low power bit first, and
22 written the table so that low power/high
23 interference indicator is 1 and then the color
24 field is same BSS or different BSS?

25 Isn't that possible?

1 MR. MILKEY: Objection to form.

2 THE WITNESS: I think I understand
3 the question. And formally, if you -- if
4 you -- I think if you just are trying to
5 build -- I think in -- in boolean algebra
6 and digital logic this is -- or similar
7 tables are called truth tables if I -- if
8 I recall correctly. And so in the
9 abstract, you could -- you could build a
10 truth table as you were suggesting.

11 However, this is not how Choudhury
12 is operating. It's not -- it's not how
13 Choudhury -- we said the first -- so the
14 first variant -- that's paragraph 24 -- an
15 indicator following the color field may
16 include or be accompanied by the low -- by
17 a low power indicator.

18 And then -- and then it's -- it --
19 it's describing that when the color field
20 is used, stations will -- will monitor
21 that color field.

22 And you are constructing an example
23 where -- well, they're not doing that;
24 they're only examining the low power
25 indicator, which is included. It's

1 included with the color field or -- or
2 accompanied by the color field.

3 And I think Choudhury would not --
4 Choudhury does not operate like this.

5 BY MR. MONALDO:

6 Q. Would it be more efficient to process
7 a 1-bit indicator than a multi-bit field?

8 MR. MILKEY: Objection to form.

9 THE WITNESS: Well, in the
10 abstract, yes, just if -- if the question
11 is as far as complexity, one bit is one
12 bit simpler. Dealing with one bit, is it
13 simpler than multiple bits? Yes, it is
14 simpler.

15 BY MR. MONALDO:

16 Q. But wouldn't it be obvious to process
17 the simpler 1-bit low power/high interference
18 indicator prior to the multi-bit color field in
19 Choudhury?

20 MR. MILKEY: Objection to form.
21 Outside the scope.

22 THE WITNESS: Well, I think this
23 would contradict Choudhury saying that the
24 color field is used and -- because now it
25 turns out, okay, it's in the -- what you

1 are constructing it's not used.

2 BY MR. MONALDO:

3 Q. I'm not constructing something where
4 it's not used. My question relates to it being
5 used second to the low power/high interference
6 indicator.

7 MR. MILKEY: Objection to form.

8 THE WITNESS: I think at the
9 minimum, it's used together with. And we
10 see one example where it's used before the
11 low power indicator. That's in
12 paragraph 25.

13 So if it is intra-BSS, don't use
14 the channel, that -- that actually
15 makes -- as I said, makes -- makes
16 technical sense. But at the minimum, it's
17 used together with the low power
18 indicator.

19 BY MR. MONALDO:

20 Q. Is using it together outside the
21 scope of the claim, claim 1 of the '163 patent?

22 MR. MILKEY: Objection to form.

23 THE WITNESS: Well, I think it's --
24 this is -- this I address in my
25 paragraph 74, that -- and I say in either

1 scenario, the station must evaluate the
2 color field to know, in the case of
3 intra-BSS, whether channel access is
4 limited.

5 BY MR. MONALDO:

6 Q. So in the circumstance where the BSS
7 color and the low power indicator are evaluated
8 together, which was the example you introduced,
9 is that example covered by claim 1 of the 6 -- or
10 '163 patent?

11 MR. MILKEY: Objection to form.
12 Outside the scope.

13 THE WITNESS: I'm not sure I've
14 offered an opinion about this.

15 BY MR. MONALDO:

16 Q. If we could turn to claim 1 of the
17 '163 patent.

18 A. Yes.

19 Q. Can you tell me which limitations in
20 claim 1 impart an order on consideration of the
21 BSS color field and signaling information, such
22 as Choudhury's low power/high interference
23 indicator?

24 MR. MILKEY: Objection to form.

25 THE WITNESS: Well, as far as order

1 in claim 1, I don't know that any
2 particular order is required.

3 BY MR. MONALDO:

4 Q. Okay. But you testified that order
5 is important in evaluation of Choudhury. I'm
6 just trying to understand why order is important
7 when evaluating Choudhury against claim 1.

8 MR. MILKEY: Objection to form.

9 THE WITNESS: I'm not -- I think in
10 my paragraph 74, which is where I am
11 looking -- first, I think that my
12 paragraph 74 is correct. And a reason
13 that it's correct is if you look at the
14 footnote on page 32 at the bottom, I
15 explain that Choudhury's station would be
16 unable to evaluate the BSS color, only
17 when the BSS color is different, because
18 Choudhury would first have to evaluate the
19 BSS color to know whether or not the BSS
20 color is different.

21 BY MR. MONALDO:

22 Q. I guess my question is, why does it
23 matter that the BSS color is -- is evaluated
24 first? Where in the claim is there a requirement
25 of an order?

1 MR. MILKEY: Objection to form.

2 THE WITNESS: I don't think in my
3 declaration I say that claim 1 of the '163
4 patent requires a certain order. And,
5 again, correct me if I'm wrong, but I
6 think that's true.

7 BY MR. MONALDO:

8 Q. Are you saying, then, that the
9 valuation of the BSS color at all falls outside
10 the scope of claim 1 of the '163 patent?

11 MR. MILKEY: Objection to form.
12 Outside the scope.

13 THE WITNESS: I'm not sure I
14 completely understand the question here.
15 All I'm saying is that the low power
16 indicator, it has not been shown by
17 Dr. Mahon that it -- it indicates that an
18 operation based on BSS color is not
19 allowed.

20 BY MR. MONALDO:

21 Q. I guess my question, if we turn back
22 to the footnote at page 32 of your declaration
23 that you mentioned, the last sentence --

24 A. And if I may, I would -- after this
25 question I would ask for a break.

1 Q. So you say here Choudhury would first
2 have to evaluate the BSS color to know whether
3 the BSS color is different.

4 Is it your opinion that a valuation
5 of the BSS color to know whether the BS color --
6 BSS color is different falls outside of the scope
7 of claim 1 of the '163 patent?

8 MR. MILKEY: Objection to form.

9 Asked and answered.

10 THE WITNESS: I think the low power
11 indicator is not the claimed signaling
12 information.

13 BY MR. MONALDO:

14 Q. So your opinion is that the low power
15 indicator is not signaling information?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: It's not the claimed
18 signaling information.

19 BY MR. MONALDO:

20 Q. And why not?

21 A. Because it does not indicate that any
22 operation based on the BSS color is not allowed.

23 Q. You had asked for a break, so we can
24 go ahead and go off record.

25 A. Thank you, Counsel.

1 (Thereupon, a brief recess was
2 taken.)

3 BY MR. MONALDO:

4 Q. So, Dr. Cooklev, I'd like to discuss
5 with you paragraph 29 of Choudhury.

6 A. All right.

7 Q. Do you see the first sentence where
8 Choudhury describes that the color field concept
9 can be generalized to achieve the functionality
10 of both the low power indicator and the color
11 field, as defined by 802.11ah?

12 A. Yes, I see this.

13 Q. And then Choudhury provides an
14 example where the first three bits of the color
15 bit can be used to set the basic service set
16 identification, BSS ID, and the fourth bit can be
17 used as a low power/high interference indicator.

18 Do you see that?

19 A. Yes.

20 Q. You'd agree with me that the low
21 power/high interference indicator would have a
22 value of zero or 1, correct?

23 A. Yes.

24 Q. So in this case, the color field
25 could identify a BSS using the first three bits

1 of the color field and then have a predetermined
2 value of zero as the fourth bit of the color
3 field, correct?

4 MR. MILKEY: Object to form.
5 Outside the scope.

6 THE WITNESS: Well, if you're
7 asking me if the fourth bit, which here
8 can be used as a low power/high
9 interference indicator, if that bit can be
10 zero, I think that that bit can be zero.

11 BY MR. MONALDO:

12 Q. And you'd agree with me that the
13 other three bits identify the BSS, correct?

14 MR. MILKEY: Objection to form.

15 THE WITNESS: The first three
16 bits -- here it says to set the BSS
17 identification. Yeah, therefore, the BSS
18 ID.

19 BY MR. MONALDO:

20 Q. So in this example, the color field
21 identifies the BSS and can have a predetermined
22 value of zero in the fourth bit, correct?

23 MR. MILKEY: Object to form.

24 THE WITNESS: Well, what is the --
25 here you keep asking about the

1 predetermined value of zero. And I said
2 if -- if -- if you mean whether the fourth
3 bit can be zero, I mean, a bit can be
4 zero.

5 So what is the significance of this
6 predetermined?

7 BY MR. MONALDO:

8 Q. I guess I'm referring to the example
9 we discussed in column 21 of the '163 patent,
10 where it uses the term "predetermined value."
11 I'm not sure if there's significance to it beyond
12 that, other than I wanted to confirm with you
13 that this portion of Choudhury, the color field
14 serves as both a BSS identifier and can have a
15 value of zero.

16 MR. MILKEY: Objection to form.

17 THE WITNESS: Well, as far as --
18 and thank you for -- for clarifying that.
19 I -- I kind of remembered the discussion
20 about predetermined values.

21 So as far as can the fourth bit be
22 a zero, yes. I don't think it's going to
23 be a predetermined value as in column 21
24 of the '163 patent.

25 ///

1 BY MR. MONALDO:

2 Q. Why is that?

3 A. I think there is a clear distinction.
4 So in column 21 of the '163 patent it says when
5 the BSS color value is a predetermined value.
6 The low power indicator that's the -- the fourth
7 bit here, I mean, that -- that -- the low power
8 indicator indicates is this a low power device or
9 is it susceptible to interference. And so that
10 is -- and that right there, that's a different
11 thing than the BSS color value being -- being a
12 predetermined value. And that predetermined
13 value in column 21, when that happens, the device
14 may not perform spatial reuse based on the BSS
15 color.

16 So that is what is associated with
17 this predetermined value, not performing the
18 spatial reuse based on the BSS color.

19 Q. Okay. I guess my question, though,
20 is, in Choudhury's paragraph 29, the color field
21 itself can identify the BSS and also be a value
22 of zero or 1, correct?

23 MR. MILKEY: Objection to form.

24 Outside the scope.

25 THE WITNESS: Well, the first three

1 bits of the color field in this case

2 can -- can identify the BSS.

3 I think that's my answer.

4 BY MR. MONALDO:

5 Q. Could I turn you to paragraph 38 of
6 your declaration.

7 A. 38.

8 Q. And I'd actually like to look at the
9 footnote at the bottom of page 12 that's
10 referenced in paragraph 38.

11 Do you see that footnote?

12 A. I do see that, yes.

13 Q. And you say, I assume that a coloring
14 disable bit value of 1 indicates either a trigger
15 frame or an RTS/CTS frame.

16 And that's in the context of Lee,
17 correct?

18 A. Yes.

19 Q. Do you recall that we discussed
20 earlier that Lee's coloring disable bit could be
21 comprehended as a bit indicating that CCA level
22 change would not be performed?

23 A. I have a recollection of that, yes.

24 Q. So the assumption you put in this
25 footnote on page 12 is incorrect?

1 A. What? Incorrect?

2 MR. MILKEY: Objection to form.

3 BY MR. MONALDO:

4 Q. Because the coloring disable bit
5 could also indicate that the CCA level adjustment
6 is not performed.

7 MR. MILKEY: Objection to form.

8 Do you have a question, Counsel?

9 BY MR. MONALDO:

10 Q. My question is, is the assumption set
11 forth in the footnote on page 12 of the
12 declaration incorrect based on our earlier
13 discussion that the coloring disable bit in Lee
14 could also be comprehended as an indication that
15 CCA level adjustment is not performed?

16 A. No, I -- I do remember the question.
17 I -- my footnote is correct. And --

18 Q. But your footnote does not cover the
19 case where Lee describes the coloring disable bit
20 is comprehended as a bit that indicates that CCA
21 level adjustment is not performed, correct?

22 MR. MILKEY: Objection to form.

23 THE WITNESS: I don't think so,
24 because, as I stated, the -- and the same
25 page 12 and beginning of page 13, I

1 assume, okay, that at most, Lee discloses
2 that the processor is configured not to
3 change the CCA level based on the BSS
4 color when the coloring disable bit
5 indicates a trigger frame.

6 So I don't think that here I have
7 missed something taught by Lee.

8 BY MR. MONALDO:

9 Q. And if we turn back to Lee
10 paragraph 68, that last sentence says, The
11 coloring disable bit can also be comprehended as
12 a bit indicating that CCA level change is not
13 performed and whether or not a medium is busy is
14 not determined.

15 Correct?

16 A. That's what it says, yes.

17 Q. And that statement is broader than
18 the statement in your footnote on page 12,
19 correct?

20 MR. MILKEY: Object to form.

21 THE WITNESS: But -- first, if one
22 examines Lee, I think they would conclude
23 that my footnote is correct. And not only
24 that, I do say that -- I say at most, Lee
25 discloses that when the coloring disable

1 bit indicates a trigger frame, the
2 processor is configured not to change the
3 CCA level based on the BSS color, which I
4 think is consistent with this sentence
5 from Lee.

6 BY MR. MONALDO:

7 Q. I'll take you to paragraph 41 of your
8 declaration.

9 A. Yes.

10 Q. Do you see the last sentence here
11 that says, Lee does not disclose the processor
12 would be configured such that no operations using
13 BSS color would occur, as required by the claim
14 requirement that the processor be configured not
15 to use a BSS color?

16 My question is, does Lee disclose
17 performing operations using BSS color when the
18 coloring disable bit is set?

19 A. And I may be here a little slow, but
20 I was thinking first about the double negative,
21 perhaps, in my -- in the last sentence of my
22 paragraph 41. And as I was thinking, I think my
23 sentence is correct.

24 But having said that, if I may, can I
25 have the question repeated?

1 Q. Yeah. My question is, does Lee
2 disclose operations using BSS color that are
3 performed when the coloring disable bit is set?

4 A. Okay.

5 So, for example, in -- so starting
6 with paragraph 82 of Lee, so where Lee -- Lee
7 describes when -- describes the case relating to
8 RTS/CTS frames, rather than a trigger frame.

9 And so in paragraph 82 it says, okay,
10 in this case, the -- a transmitter of the RTS/CTS
11 sets a coloring disable bit to 1 to indicate that
12 it is RTS/CTS.

13 But then -- so your question is well,
14 are there operations that are allowed here. So
15 one operation -- so now, if we -- there are two
16 cases here, I think.

17 So paragraph 83 says if the device
18 belongs to the same BSS, and then the operation
19 described in paragraph 84 -- the operations
20 described in paragraph 84 are performed. And
21 if -- yes -- and if the RTS/CTS is transmitted by
22 a device belonging to a different BSS, then we
23 have the operations in paragraph 86.

24 And in these operations -- in these
25 operations, what is going on is that the NAV --

1 the NAV is an acronym for the network allocation
2 vector, which is the virtual carrier sense
3 mechanism. And so among the other things, let's
4 say paragraph 84, it says the station terminates
5 NAV and may be able to perform a back-off
6 procedure again.

7 And there is a similar -- similar
8 language in paragraph 86 where the device
9 terminates the NAV and may be able to perform a
10 back-off procedure.

11 So, for example, since I think your
12 question asked for an example, I think these are
13 operations which are allowed, even if the BSS
14 coloring disable bit is set to 1.

15 Q. Where does it describe that these
16 operations are based on BSS color and that the
17 coloring disable bit is set to 1?

18 A. Well, first, regarding the coloring
19 disable bit, isn't this described in
20 paragraph 82?

21 Q. Okay.

22 A. I think it is.

23 So in response to the second
24 question, where does it say that the NAV or
25 basically using -- using the NAV is based on BSS

1 color?

2 The NAV is -- as I -- as I said -- I
3 mean, here Lee doesn't describe in detail how the
4 network allocation vector operates. But the NAV
5 is -- I mean, I can -- I can -- yes. I think it
6 is correct that Lee doesn't describe in detail
7 how network allocation vectors operate, but
8 these -- the network allocation vectors are
9 for -- they are operations based on BSS color.

10 And setting or resetting that
11 timer -- the NAV is basically a timer and it
12 shows whether the medium is busy or available and
13 for how long. If the timer is counting down, it
14 counts down for how long will the medium be busy.
15 But when we have -- when we have intra-BSS and
16 inter-BSS situations. So the NAV is based on BSS
17 color.

18 Q. In this case, paragraph 84 states
19 that the station terminates NAV or TXOP?

20 A. Yes.

21 Q. Terminating NAV would not be based on
22 BSS color, correct?

23 A. No. I mean, I just -- I think I was
24 just saying that it is.

25 Q. Terminating the NAV is based on BSS

1 color? I thought you said setting the NAV was
2 based on BSS color.

3 A. Well, the NAV, it's -- there is --
4 there's a separate NAV for -- so the NAV is -- is
5 tied to the concept of BSS color. So I don't
6 think there is a distinction that the NAV itself
7 is -- is a concept based or associated with a BSS
8 color.

9 And terminating the NAV -- I don't
10 think that there's a distinction there, so
11 terminating the NAV would be, in this context, an
12 operation based on BSS color.

13 Q. Wouldn't terminating a NAV prevent an
14 operation based on BSS color and that operation
15 would be setting the NAV?

16 A. I'm just looking at my declaration.

17 Excuse me. What was the question?

18 Q. The question is, wouldn't terminating
19 the NAV actually be preventing an operation based
20 on BSS color because the NAV would be set based
21 on BSS color and terminating it would end the
22 operation, correct?

23 MR. MILKEY: Objection to form.

24 THE WITNESS: I -- I would not
25 agree with this. And I think, at the

1 minimum, it is a very confusing statement.
2 Terminating NAV here is an example of an
3 operation based on BSS color.

4 BY MR. MONALDO:

5 Q. How is terminating a NAV based on BSS
6 color?

7 MR. MILKEY: Objection to form.

8 THE WITNESS: How? Well, I think a
9 good answer to the question how or -- or
10 maybe why, why is -- why am I saying that
11 here terminating the NAV or the
12 transmission entity, the TXOP, why is this
13 an operation based on BSS color, a good
14 answer is that, look, the entire -- entire
15 paragraph 84 is -- pertains to the case
16 when the device belongs to the same BSS.
17 Right? That's what paragraph 83 says.

18 So in paragraph 84 we have
19 actions -- we have actions performed based
20 on BSS color because these actions are
21 performed in the case when the device
22 belongs to the same BSS.

23 And if -- paragraph 85 says if the
24 RTS/CTS is transmitted by a device
25 belonging to a different BSS, well, that's

1 BSS color, right, the same BSS or
2 different BSS, that is -- that is the
3 concept of BSS color.

4 So then -- then you have everything
5 in paragraph 86. So all the operations in
6 paragraph 86 are based on BSS color.

7 BY MR. MONALDO:

8 Q. So in both paragraph 84 and
9 paragraph 86 the device terminates the NAV and
10 performs a back-off procedure, correct?

11 A. Yeah. Yes, terminates the NAV.

12 Q. So that operation in itself is not
13 based on the BSS color, correct?

14 MR. MILKEY: Objection to form.

15 THE WITNESS: No, I -- I don't
16 agree with that. It's -- there is --
17 there is one NAV. There is a NAV for --
18 for -- for the same BSS. And there is a
19 NAV for a different BSS.

20 And so when you -- so this is why
21 the NAV itself is based on BSS color. And
22 I said even if we just look at terminating
23 NAV, just that, because the NAV is -- is
24 based on BSS color or associated with BSS
25 color, as I explained, terminating the NAV

1 is an operation based on BSS color.

2 But even more than that, I mean,
3 if -- if -- if I may, and if I have two
4 colors, everything in paragraph 84 will be
5 in -- based on one color and everything in
6 paragraph 86 will be based on -- will
7 be -- I'll call it differently, meaning
8 it's based -- based on a BSS color.

9 BY MR. MONALDO:

10 Q. So in your opinion, if a BSS color is
11 used to determine whether a device belongs to the
12 same BSS or a different BSS, that falls
13 without -- outside the scope of claim 1 of the
14 '163 patent?

15 MR. MILKEY: Objection to form.

16 THE WITNESS: And, I'm sorry, I
17 need to look once again at the claim since
18 the -- the claim is so important.

19 Well, the claim requires the -- the
20 device not to use BSS color when signaling
21 information indicates that an operation
22 based on the BSS color is not allowed.

23 So what is not allowed is an
24 operation based on the BSS color.

25 ///

1 BY MR. MONALDO:

2 Q. And my question was, determining
3 whether a communication is from the same BSS or a
4 different BSS using the BSS color, is that
5 outside of the scope of this limitation of
6 claim 1 of the '163 patent?

7 MR. MILKEY: Objection to form.
8 Outside the scope.

9 THE WITNESS: I'm not sure I've
10 offered an opinion about this. And please
11 correct me if I'm wrong, but to give you
12 an opinion, I think I need to -- I
13 basically would need to study the issue.

14 BY MR. MONALDO:

15 Q. So sitting here today, you can't
16 testify as to whether using BSS color to
17 determine whether a communication is from the
18 same BSS or a different BSS falls within the
19 scope of the claim?

20 A. It's -- to the extent I have not
21 given an opinion -- I mean, I'm doing my best
22 here to answer truthfully all of the questions.
23 But for questions for which I did not
24 investigate, I would need a little more time.

25 Q. Fair enough. I'm just trying to get

1 an understanding of your assessment of the scope
2 of the claim as it relates to the prior art.

3 Did you consider whether there's a
4 time frame on how long operations, based on BSS
5 color, are not allowed within the scope of
6 claim 1 of the '163 patent?

7 MR. MILKEY: Objection to form.
8 Outside the scope.

9 THE WITNESS: I don't think I
10 considered that. I did not.

11 And, to the best of my
12 recollection, Dr. Mahon did not. I don't
13 think that this is an issue brought up by
14 Dr. Mahon.

15 BY MR. MONALDO:

16 Q. In your opinion, would it be
17 sufficient for a single operation based on BSS
18 color to not be performed as long as no other
19 operations based on BSS color are performed to
20 meet this limitation of claim 1 of the '163
21 patent?

22 MR. MILKEY: Objection to form.

23 THE WITNESS: Counsel, I'm not sure
24 I completely understand the question.
25 That -- is it sufficient one operation to

1 not be performed?

2 BY MR. MONALDO:

3 Q. Yes.

4 A. Well, if we stop here, is it
5 sufficient one operation not to be performed, I
6 don't think that's sufficient.

7 Q. Why not?

8 MR. MILKEY: Same objection.

9 THE WITNESS: Because in my
10 opinion, the claim, claim 1, requires any
11 operation. And as we've been talking
12 today, Lee -- yes, Lee teaches that CCA
13 level change or -- teaches that that's not
14 allowed, but allows other operations.

15 BY MR. MONALDO:

16 Q. So in your opinion, if claim 1 was
17 met by not performing or not allowing one
18 operation, Lee would disclose it; but because you
19 interpret claim 1 as any operations, Lee does not
20 satisfy claim 1?

21 MR. MILKEY: Objection to form.

22 THE WITNESS: That's close. You
23 said if claim 1 is -- is restricting one
24 operation -- so that's -- in this sense
25 the question is -- is hypothetical, right,

1 if -- if -- if the language in claim 1 is
2 a little different. And so in this sense
3 I can't just -- I think it becomes too
4 open-ended to say well, if -- if it's --
5 the language is a little different, Lee
6 would disclose it. So for this reason
7 not -- I wouldn't completely agree with
8 this.

9 Now, obviously, if the claim
10 language is changed -- if it's changed
11 somewhat -- I'm not sure exactly how, but
12 if it's changed somewhat, yeah, possibly
13 Lee would disclose that.

14 BY MR. MONALDO:

15 Q. Okay. So if the claim wasn't
16 interpreted to require any operation, as you've
17 discussed today, and could be met by disallowing
18 one operation, Lee could disclose that, correct?

19 MR. MILKEY: Objection to form.

20 THE WITNESS: For example, in --
21 starting with paragraph 44 in my
22 declaration, I explain why Lee's device or
23 processor is not configured not to use BSS
24 color when the coloring disable bit
25 indicates a trigger frame.

1 And even -- even though I say here
2 a trigger frame, it's for a trigger frame
3 or RTS/CTS, it's -- here I have shortened
4 the title of this section of my
5 declaration.

6 So back to your question. Even
7 if -- even if it's not any operation, but
8 even if it's one operation based on the
9 BSS color, I'm -- it seems to me that at
10 least for these paragraphs, beginning with
11 paragraph 44, it seems to me Lee would not
12 disclose claim 1.

13 (Thereupon, a discussion was had off
14 the record.)

15 (Thereupon, a brief recess was
16 taken.)

17 BY MR. MONALDO:

18 Q. I'd like to turn you now to
19 paragraph 59 of your declaration.

20 Do you see the fourth sentence that
21 says, Furthermore, Dr. Mahon does not explain why
22 a person of ordinary skill in the art would have
23 sought to disable all operations based on color
24 in response to color collisions as opposed to
25 implementing techniques to avoid collisions in

1 the first place, or resolve those collisions
2 quickly through prompt color reassignment?

3 A. Yes, I see this.

4 Q. My question is, are those techniques
5 related to avoiding color collisions in the first
6 place or resolving them quickly exclusive of
7 disabling operations based on color when a color
8 collision occurs?

9 MR. MILKEY: Objection, form.

10 THE WITNESS: Excuse me. When a
11 color collision occurs, are these
12 operations what?

13 BY MR. MONALDO:

14 Q. Exclusive of preventing the use of
15 color, at least temporarily, when you detect a
16 color collision.

17 A. At least to some extent. I have not
18 investigated here that they are completely
19 exclusive.

20 Q. Okay. So in other words, if you
21 detect a color collision, you could temporarily
22 stop using color, work to avoid collisions in the
23 first place and work to resolve collisions
24 promptly through color reassignment all together?

25 A. I don't think I can agree with that.

1 I was just trying to be conservative when I said
2 that at least to some extent, resolving color
3 collisions through color reassignment is -- is
4 exclusive of not using color.

5 Again, at -- at least to some extent.

6 Q. Yeah. I guess my question is
7 temporarily not using color while the
8 reassignment process is happening.

9 A. I understand that logic. That's not
10 how I understood Dr. Mahon's declaration.

11 Q. Okay. But it's possible that one
12 might temporarily not use color while the
13 reassignment process is occurring, correct?

14 A. Well, that's -- that's a
15 hypothetical, I think, that -- I don't think
16 it's -- it's -- it's being articulated by
17 Dr. Mahon. And I also believe, as you know, my
18 declaration is only in response to his opinions.

19 But in addition to that, so in
20 addition to the reason why I can't -- can't agree
21 with this hypothetical is that -- is I say all
22 right, so that -- now moving on to paragraphs 60
23 and 61, from Dr. Mahon's declaration I did not --
24 I did not understand that there is any
25 explanation how Lee and Stacey would cease

1 color-based operations. So how is that going to
2 happen?

3 You're -- you're asking me a
4 hypothetical which, in some abstract sense, may
5 make sense, but not -- not here. So how is that
6 going to happen or even for a short period of
7 time before we do -- before color reassignment is
8 done.

9 And, for example -- for example, here
10 I describe the -- the NAV operations. And so I
11 continue in my paragraph 61 and -- so I'm saying
12 well, if there is -- if you stop -- if you stop
13 using a NAV, at the minimum, that's not obvious.
14 Right? That's a big deal.

15 So for a while, while you resolve the
16 color collision and do color reassignment, stop
17 doing -- stop operating the NAV. Those two --
18 there's not just even one time -- start operate
19 the -- those timers.

20 So that -- that's -- it's not -- and
21 I want to be clear, it's -- I don't mean that
22 it's impossible, but at the minimum, it wasn't an
23 obvious thing to do.

24 And -- but the second thing is, okay,
25 if you -- if you are going to have a NAV -- so

1 that is at the top of my page 26, around there.

2 So assuming that Dr. Mahon is not
3 suggesting to eliminate the NAV, but then how are
4 we going to operate that NAV not using BSS color?

5 Q. So, Dr. Cooklev, is it possible to
6 set a NAV without BSS color?

7 MR. MILKEY: Objection to form.

8 THE WITNESS: In the context of Lee
9 and Stacey?

10 BY MR. MONALDO:

11 Q. Generally. In a general context, is
12 it possible to set a NAV without using BSS color?

13 MR. MILKEY: Objection to form.

14 THE WITNESS: Well, in legacy
15 802.11, where there was no BSS color and
16 there was a NAV, in such legacy networks,
17 yes, the NAV would be operated not using
18 BSS color.

19 BY MR. MONALDO:

20 Q. So it's possible the NAV can be set
21 without the use of BSS color, correct?

22 MR. MILKEY: Objection to form.

23 THE WITNESS: I think the
24 clarification is important that we're
25 talking about legacy networks where there

1 is no BSS color, but there is a NAV.

2 BY MR. MONALDO:

3 Q. In a situation where you have a BSS
4 color field, is it possible to set a NAV using
5 other information different from the BSS color?

6 MR. MILKEY: Objection to form.

7 THE WITNESS: Well, I do not have
8 an opinion whether that's possible or
9 impossible. But first time I'm just
10 stating that Dr. Mahon has not explained
11 how could -- in the context of Lee and
12 Stacey, right, which is different from
13 legacy 802.11, how in that context could
14 the NAV be set not using BSS color.

15 BY MR. MONALDO:

16 Q. Okay. So your opinion relates to
17 Dr. Mahon's lack of explanation, rather than an
18 impossibility of the BSS -- sorry, strike that.

19 Your opinion is based on the lack of
20 explanation by Dr. Mahon as opposed to it being
21 impossible to set the NAV using something other
22 than BSS color, correct?

23 MR. MILKEY: Object to form.

24 THE WITNESS: I think that's fair,
25 yes. And I'm sorry for mispronouncing his

1 name.

2 I don't want to say that it would
3 be impossible for this to happen. Just I
4 did not understand that there is any
5 explanation about this.

6 But even more than that, it's
7 right, I think, that there should have
8 been together with that an explanation
9 that a person of skill would have been
10 motivated to do it and that a person of
11 skill could have got it.

12 And I'm just saying that these
13 things I did not -- based on my
14 understanding, I did not see in
15 Dr. Mahon's declaration.

16 BY MR. MONALDO:

17 Q. As it relates to power save
18 operations, do power save operations require a
19 BSS color?

20 MR. MILKEY: Objection, form.

21 THE WITNESS: Well, in paragraph 62
22 I think I state that, yes, in this -- in
23 the context of paragraph 62, which is --
24 which is now Stacey, the Stacey reference,
25 power save is an operation based on BSS

1 color.

2 BY MR. MONALDO:

3 Q. But could you perform some
4 power-saving techniques without the use of BSS
5 color?

6 MR. MILKEY: Objection to form.

7 THE WITNESS: Again, it -- it
8 wasn't my task to investigate that. I
9 don't want to say that it is impossible,
10 this to be done. It might be possible,
11 but it's just -- it has not been presented
12 to me to analyze.

13 BY MR. MONALDO:

14 Q. As it relates to spatial reuse
15 operations, is it possible those can occur
16 without the use of BSS color?

17 MR. MILKEY: Objection to form.

18 THE WITNESS: Well, as I explain in
19 the following paragraphs here on -- on
20 what is page 27, spatial reuse -- as
21 stated in paragraph 64, spatial reuse
22 requires different CCA levels and BSS
23 coloring. And I even quote for support, I
24 think, the Stacey reference, Exhibit 1006.

25 And it's -- it's just -- not only,

1 I think, that this has not been explained
2 in Dr. Mahon's declaration, but at the
3 minimum, I think spatial reuse without BSS
4 color is -- or was at the time -- not
5 obvious, if at all possible.

6 BY MR. MONALDO:

7 Q. Your opinion is that spatial reuse
8 would not be possible without BSS coloring?

9 MR. MILKEY: Objection to form.

10 THE WITNESS: I don't want to just
11 give such strong statements.

12 BY MR. MONALDO:

13 Q. Does spatial reuse occur before BSS
14 color was added to the standard?

15 A. I think that question requires a more
16 detailed analysis. I cannot at the moment --

17 Q. You don't know if spatial reuse
18 occurred before BSS color was added to the
19 standard?

20 MR. MILKEY: Objection to form.

21 THE WITNESS: As I -- as I said,
22 it's -- and that question requires a more
23 detailed analysis of spatial reuse, the
24 way -- the way it is understood now
25 versus -- versus to whatever extent some

1 ideas about efficient channel use existed
2 years ago.

3 So that -- the question is -- the
4 question requires a more detailed
5 investigation and -- and at the moment, I
6 can't give you an answer.

7 MR. MONALDO: Well, I have no
8 further questions, so I will pass the
9 witness at this time.

10 MR. MILKEY: All right.

11 Could we take a ten-minute break?

12 MR. MONALDO: Sure.

13 MR. MILKEY: Let's go off the
14 record.

15 (Thereupon, a brief recess was
16 taken.)

17 EXAMINATION BY COUNSEL FOR PATENT OWNER

18 BY MR. MILKEY:

19 Q. Dr. Cooklev, do you recall that you
20 discussed terminating the NAV in the context of
21 Lee earlier today?

22 A. I do, yes.

23 Q. Okay. And at a high level, what is
24 terminating the NAV?

25 A. As I said, the NAV is a timer. And

1 terminating the NAV is setting that timer to
2 zero. I mean, this is how I understood Lee when
3 Lee says terminating the NAV.

4 Q. Okay. And you were asked by counsel
5 for Samsung whether specific examples in the
6 specification of the '163 patent practice certain
7 claims.

8 Do you remember that?

9 A. Generally, yes.

10 Q. Okay. In forming your opinions, did
11 you analyze whether any specific examples in the
12 specification of the '163 patent practiced the
13 claims?

14 A. In forming my opinions that are in my
15 declaration, no, I did not analyze if any -- if
16 any embodiments are covered by the claims.

17 Q. Okay.

18 A. No, I did not do that.

19 Q. And was that required for you to do
20 the analysis in forming your opinions?

21 A. Not to my understanding. I
22 understood my task as essentially responding to
23 the declaration of Dr. Mahon. And this is why I
24 did not analyze at all which embodiments are
25 covered by the claims or, in particular, claimed

1 by claim 1.

2 Q. Okay. Could you please turn to
3 paragraph 30 of your declaration, three-zero.

4 A. Yes, I'm there.

5 Q. Okay. And does paragraph 30 of your
6 declaration provide an accurate understanding of
7 what you understand the -- the legal standard is
8 for claim construction?

9 A. Paragraph 3?

10 Q. Paragraph 30, three-zero.

11 A. Oh, three-zero. I apologize.

12 Yes.

13 Q. Do you recall Dr. Mahon in his
14 declaration providing any opinions regarding
15 lexicography or disclaimer?

16 A. I do not recall that.

17 Q. Okay. And do you recall being asked
18 earlier today if the '163 patent describes an
19 embodiment where all operations using BSS color
20 are not allowed?

21 A. Again, I generally remember those
22 questions, even if I, perhaps, don't recall the
23 specific question.

24 Q. Okay. Could you please turn to the
25 '163 patent at column 1 and just let me know when

1 you're there.

2 A. I am looking at '163 patent and --
3 column 1, I'm there.

4 Q. Okay. And do you see in the very
5 first section in column 1 the cross-reference to
6 related applications, there are a number of
7 applications listed in that paragraph and then
8 that paragraph concludes by saying, the entire
9 contents of which are incorporated herein by
10 reference?

11 A. Yes, I see this.

12 Q. Okay. And do you see that at
13 lines 14 to 15 of that same column, one of those
14 incorporated by reference applications is Korean
15 Patent Application Number 10-2016-0029975?

16 A. Yes, I do.

17 Q. Okay. And I'm going to upload as
18 Exhibit A to this deposition.

19 (Thereupon, Exhibit A was
20 marked for identification.)

21 BY MR. MILKEY:

22 Q. Dr. Cooklev, could you please open
23 Exhibit A and let me know when you have it open.

24 MR. MONALDO: I'll lodge an
25 objection to the use of the deposition --

1 or the exhibit as outside of the scope.

2 MR. MILKEY: Could you please
3 explain how it's outside the scope if
4 you're asking about whether the '163
5 patent discloses something and this is
6 incorporated by reference into the '163
7 patent?

8 MR. MONALDO: I didn't ask any
9 questions related to the priority
10 applications. I was asking what was in
11 the specification of the '163 patent. And
12 this exhibit was not cited in
13 Dr. Cooklev's declaration, to my
14 knowledge.

15 MR. MILKEY: Is it your position
16 that this isn't part of the '163 patent?

17 MR. MONALDO: It's my position that
18 this wasn't the subject of his testimony
19 given today or part of his declaration and
20 therefore is outside the scope of this
21 deposition.

22 MR. MILKEY: Okay. Well, I think
23 we clearly disagree on that.

24 BY MR. MILKEY:

25 Q. So, Dr. Cooklev, could you please

1 turn to the second page of the PDF of Exhibit A.
2 And this shows -- it lists an application number
3 there.

4 Do you see that?

5 A. I do.

6 Q. Okay. Does this show Korean
7 Application Number 10-2016-0029975?

8 MR. MONALDO: I'll lodge an
9 objection to scope for this entire line of
10 questioning.

11 MR. MILKEY: Okay.

12 THE WITNESS: Yes.

13 BY MR. MILKEY:

14 Q. Okay. And did counsel for Samsung
15 provide this document to you as you were -- as
16 they were asking you about whether certain
17 aspects of the claims were disclosed by the '163
18 patent?

19 A. No.

20 Q. Okay. Could you please turn to
21 paragraph 69 of this document? It's on PDF
22 page 21.

23 A. I'm there. 69?

24 Q. Yes.

25 A. I'm there.

1 Q. And do you see 69 states, Figure 6 is
2 a diagram illustrating intra-PPDU power save when
3 a BSS color collision occurs?

4 Do you see that?

5 A. Yes.

6 Q. Okay. And then going down to the
7 last sentence of paragraph 71, do you see --
8 or -- strike that.

9 The last two sentences of
10 paragraph 71 read, Additionally, upon detecting a
11 BSS color collision, the STA may cease operations
12 based on the BSS color. More specifically, it
13 may stop performing operations based on the same
14 BSS color?

15 A. Yes.

16 Q. Okay. And this wasn't something that
17 you had considered when you were answering
18 questions earlier today about whether certain
19 examples were provided in the '163 patent,
20 correct?

21 A. I have to agree with that, that this
22 is not what -- I did not consider this document.

23 Q. Okay.

24 MR. MILKEY: I have no further
25 questions.

1 MR. MONALDO: Can we take maybe a
2 five-minute break?

3 MR. MILKEY: Okay.

4 MR. MONALDO: Off the record.

5 (Thereupon, a brief recess was
6 taken.)

7 FURTHER EXAMINATION BY COUNSEL FOR PETITIONER

8 BY MR. MONALDO:

9 Q. So, Dr. Cooklev, do you recall
10 counsel asking you about Exhibit A, which
11 purports to be a translation of a Korean priority
12 application cited by the '163 patent?

13 A. Yes, I do.

14 Q. And counsel asked you about
15 paragraph 71 of that document, correct?

16 A. That's correct.

17 Q. In paragraph 71, you'd agree with me
18 that it does not describe signaling information
19 that indicates an operation based on BSS color is
20 not allowed, correct?

21 MR. MILKEY: Object to form.

22 THE WITNESS: I have to take a
23 moment to review paragraph 71.

24 If the question is whether in
25 paragraph 71 it describes signaling

1 information not allowing an operation
2 based on BSS color, is this -- if I may
3 restate the question, is this correct?

4 BY MR. MONALDO:

5 Q. Yes, that's correct.

6 A. So as I think I've -- as I said
7 earlier today, I said what was the -- my task and
8 what was the scope of my declaration, that -- and
9 so analyzing whether an embodiment or which
10 embodiment is covered by the claim, I -- I didn't
11 do -- I did my best to answer the questions. And
12 also, in -- your question is -- your question is
13 about signaling information that indicates that
14 an operation based on the BSS color is not
15 allowed.

16 I mean, this type of analysis is --
17 is, I think -- I mean, that's -- that's like --
18 whether something is within the scope, like, this
19 is like infringement analysis, which is not my
20 task. And it's a significant work.

21 But in -- if we scroll to the next
22 page -- that's page 22 of the PDF -- it says in
23 one embodiment the station may operate using a
24 specific reserve -- reserve BSS color, for
25 example, zero, to restrict BSS color-based

1 operations.

2 So subject to what I said, this,
3 seems to me, comes close to your question about
4 signaling information.

5 Q. Okay. So you consider a color value
6 of zero to be within the scope of the claims of
7 the '163 patent?

8 MR. MILKEY: Object to form.
9 Outside the scope.

10 THE WITNESS: Well, I think we
11 were -- we were discussing earlier about
12 that example of BSS color zero. And my --
13 my answer would be the same, that it could
14 be.

15 BY MR. MONALDO:

16 Q. And it could be only in the case
17 where a color of zero identifies a BSS as a
18 proper BSS identifier, correct?

19 A. In the sense that the BSS color has
20 to be an identifier of a BSS, according to claim
21 element 1.5. In that sense, yes, claim
22 element 1.5 must be met for something to be
23 within the scope of claim 1.

24 Q. So if a color value of zero is not a
25 valid BSS identifier, then that would be outside

1 the scope of the claim, correct?

2 A. This -- as I said, this particular
3 example -- in this particular example, which is
4 about reserve BSS color such as zero, if color
5 zero is not an identifier of BSS, it would not be
6 within the scope. There could be another example
7 there that -- that is, but this one won't be.

8 Q. If we could go to the last sentence
9 on page 21 of the PDF in paragraph 71.

10 Do you see that says, More
11 specifically, it may stop performing operations
12 based on the same BSS color?

13 A. Yes.

14 Q. You'd agree with me it does not
15 describe stopping performing operations based on
16 a different BSS color, correct?

17 A. It says it may stop performing
18 operations based on the same BSS color.

19 Q. So it would allow operations based on
20 a different BSS color, correct?

21 MR. MILKEY: Object to form.

22 THE WITNESS: I mean, just this
23 sentence -- just this sentence, I -- it
24 seems to me yes. But often one -- you
25 know, to answer in detail these questions,

1 one would need to study carefully the
2 entire document.

3 BY MR. MONALDO:

4 Q. But sitting here today with this
5 sentence, you agree with me that it allows
6 operations based on a different BSS, correct?

7 MR. MILKEY: Objection to form.

8 THE WITNESS: It doesn't say -- it
9 doesn't say that they are allowed, but it
10 says that operations, based on the same
11 BSS color, are not performed.

12 BY MR. MONALDO:

13 Q. So it's possible that operations
14 based on a different BSS color might be
15 performed, correct?

16 MR. MILKEY: Objection to form.

17 THE WITNESS: And like I said,
18 it's -- to -- if -- if I study in detail
19 this document, I might give you a -- a
20 better answer because I had time to
21 properly study and consider it.

22 But just -- just here, this --
23 these couple of sentences on PDF page 21,
24 it leaves that possibility, yes.

25 ///

1 BY MR. MONALDO:

2 Q. You hadn't seen this document prior
3 to today's deposition, correct?

4 A. That's correct.

5 Q. You did not consider paragraph 71 in
6 forming the opinions set forth in your
7 declaration, correct?

8 A. That's correct.

9 Q. So you'd agree with me that this
10 would be new information that was not considered
11 in your declaration?

12 A. I have to agree with that.

13 MR. MONALDO: No further questions.

14 MR. MILKEY: And for the record,
15 you know, to the extent that -- I assume
16 that petitioner is aware of its
17 obligations, but to the extent you're
18 going to raise new claim constructions or,
19 you know, new theories based on
20 inconsistent claim constructions with the
21 District Court, we reserve all rights and
22 we're obviously going to present any
23 information, including District Court
24 expert reports or anything else that's
25 inconsistent with claim construction

1 positions to the extent petitioner is
2 going to try to take new or inconsistent
3 positions.

4 But I have no questions for
5 Dr. Cooklev.

6 (Thereupon, signature having not been
7 waived, at 5:22 p.m. EDT the
8 deposition concluded.)
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CERTIFICATE OF DEPONENT

I, Todor V. Cooklev, Ph.D., do
hereby certify that I have read the foregoing
pages, which contain a correct transcript of
the answers given by me to the questions
propounded to me herein, except for changes,
if any, duly noted on the enclosed errata
sheet.

TODOR V. COOKLEV, Ph.D.

Sworn and subscribed to before me
this ____ day of _____, 2026.

My commission expires:

Notary Public:

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1 CASE: Samsung Electronics Co. Ltd. v. Wilus
2 Institute of Standards and Technology Inc.
3 DEPOSITION OF: Todor V. Cooklev, Ph.D.
4 TAKEN: April 13, 2026

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21 _____
22 TODOR V. COOKLEV, Ph.D.

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CERTIFICATE OF NOTARY

I, MISTY KLAPPER, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me in shorthand and thereafter reduced to typewriting by me; that said deposition is a true record of the testimony given by said witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.



Misty Klapper, RMR, CRR, CSR,
RSA and Notary Public

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