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

SAVANT TECHNOLOGIES LLC d/b/a :
GE LIGHTING and LEDVANCE LLC :
Petitioners, : CASE IPR2024-01357
: US PATENT
versus : NO. 8,604,678
:
FEIT ELECTRIC COMPANY, INC., :
Patent Owner. :

DEPOSITION OF
WILLIAM A. DOOLITTLE, PH.D.
9:45 a.m.
June 10, 2025

Regus - Main Street Office Center
320 West Lanier Avenue
Suite 200

Fayetteville, Georgia

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1 (Tuesday, June 10, 2025 9:45 a.m.)

2 WILLIAM A. DOOLITTLE, PH.D.,

3 called as a witness at the instance of the Patent Owner,
4 being first duly sworn, was examined and deposed as
5 follows:

6 EXAMINATION

7 BY MR. MCMAHON:

8 Q. Good morning, Dr. Doolittle. I am Charlie
9 McMahon from the Benesch firm. With me here is Carlton,
10 and he is -- we both represent the patent owner, Feit.
11 I think you know that.

12 Also on the line by Zoom is Nick Klierer from
13 Feit Electric itself. He will be listening in but
14 otherwise not participating, is my expectation.

15 MR. MCMAHON: Andy, you want to go ahead?

16 MR. BROWN: Any Brown of Radulescu, LLP,
17 on behalf of the petitioners.

18 THE WITNESS: And I apologize. Since
19 your names are not on the screen here, last name
20 is?

21 BY MR. MCMAHON:

22 Q. McMahon?

1 A. McMahon.

2 THE WITNESS: And yours is?

3 MR. HEMPHILL: Hemphill.

4 THE WITNESS: Hemphill. I will try my
5 best to remember those.

6 BY MR. MCMAHON:

7 Q. Thank you. If you don't, just let us know.

8 Happy to remind you.

9 So, Dr. Doolittle, thank you for being here this
10 morning. You understand we're here for deposition
11 cross-examination in connection with the IPR of the --
12 of Feit Electric's '678 Patent?

13 A. Yes.

14 Q. Okay. Have you been deposed before?

15 A. I have.

16 Q. About how many times?

17 A. I don't know the exact number, but well into the
18 teens, I would imagine.

19 Q. Have any of those been -- depositions been in
20 connection with an IPR?

21 A. Yes.

22 Q. How many of them?

1 A. Again, I don't know the exact number, but,
2 estimating, probably about half of those, I would
3 imagine. Maybe half or a little bit more than that.

4 Q. Okay. Is that -- so, roughly, 5 to 10, in that
5 range?

6 A. In that ballpark, I would guess.

7 Q. Okay. Is that also the -- the number of IPR
8 proceedings that you've been involved with; in other
9 words, are they the same number?

10 A. I would assume so. I think in every one I had
11 been deposed, I don't think that any of them have gone
12 away before that stage.

13 Q. Okay. In those proceedings, have you
14 represented the -- the patent owner, the petitioner or a
15 mix of both?

16 A. I believe a mix of both, yes.

17 Q. Roughly equal or -- or weighted one way or the
18 other?

19 A. I don't have that. I couldn't remember that
20 right now.

21 Q. That's fine.

22 Is there any reason that you can't provide fully

1 competent testimony this morning?

2 A. No.

3 Q. Okay. Not under the influence of any drugs or
4 alcohol?

5 A. Other than -- I guess I've never had to say this
6 before, but I am taking a stomach medication that they
7 do tell me that I need to be careful with heavy
8 equipment. So as long as we're not driving heavy
9 equipment this morning, I guess we'll be okay.

10 Q. Okay.

11 A. So --

12 Q. You're confident that's not going to affect your
13 ability to provide --

14 A. It will not.

15 Q. -- testimony.

16 A. It will not. It may make us have a few more
17 breaks this morning than -- than you might like, but
18 that's the only thing there.

19 Q. That's fine. And any time you need a break,
20 just let me know.

21 A. Thank you.

22 Q. For the Court Reporter's benefit, I'm going to

1 try to go slowly, which is against my nature, and both
2 of us will need to work to not talk over each other.

3 Okay?

4 A. That works, yes.

5 Q. Thank you.

6 When did you begin work on this IPR project?

7 A. I'm terrible with dates. I would say late
8 spring or early summer, sometime in that range, of 2024,
9 I guess it was. But I don't recall exactly. It could
10 be earlier than that.

11 Q. Okay. Do you have a rough estimate of how much
12 time you've spent on this matter?

13 A. No, I don't. I've billed, but I don't have that
14 in my head.

15 Q. Okay. You are -- you've also been involved in
16 another related proceeding, the district court case,
17 correct?

18 A. Correct.

19 Q. And at least one case that -- the one pending in
20 the Northern District of Texas?

21 A. I believe that's where it's at, yes.

22 Q. Okay. And that involves the same '036 -- or the

1 same '678 Patent?

2 A. Yes. That -- there is a district case that
3 involves a '678 Patent. I don't remember the district
4 that it's involved in, though.

5 Q. That's fine.

6 In that case, you have opined on the topic of
7 claim construction, right?

8 A. Yes.

9 Q. Okay. You submitted a declaration or two?

10 A. Yes.

11 Q. Okay. Have you -- prior to this case, have you
12 ever worked with any of the petitioners before?

13 A. Petitioners, meaning Savant specifically?

14 Q. Yeah.

15 A. Possibly, but I don't remember. It's been a
16 number of years and I've done a lot of cases. I don't
17 recall right offhand, but it's on my -- if you're -- if
18 you need this information, I can give you my -- I think
19 you already have it, but I can give you an updated
20 version of my list of -- of -- expert witness list, what
21 have you.

22 Q. Okay. So if you had -- and the other

1 petitioners are GE Lighting and Ledvance. Do you
2 understand that?

3 A. Yes.

4 Q. If you've worked with any of them, that would be
5 on your CV?

6 A. Yes.

7 Q. Okay.

8 A. Everything that I've done is on that CV, with
9 the exception of recent cases. I think you guys got one
10 last year. I think there's been some other cases that
11 have been added this year.

12 Q. Okay. In this case -- and when I say "this
13 case," I mean this IPR proceeding. Do you understand
14 that?

15 A. Yes.

16 Q. Okay. If you -- and I should clarify. I know
17 you've been deposed 10, 15, 20 times, so I think you
18 probably know the process. But I will ask you
19 questions. If my question is not clear or you -- you
20 need clarification, just let me know and I'll clarify it
21 for you.

22 A. Thank you.

1 Q. If you don't ask for clarification, I will
2 assume that you understand the question and can answer
3 it.

4 A. That's understood.

5 Q. Okay. In this case, you analyzed the claims of
6 the '678 Patent, correct?

7 A. To be clear, we're talking about the IPR here in
8 this case. Yes, I did analyze the claims of the '678
9 Patent.

10 Q. And you opined that the -- certain challenged
11 claims in the proceeding are unpatentable based on
12 certain prior art, right?

13 A. That is correct, yes.

14 Q. And you understand that in -- in -- the process
15 of analyzing patent claims as they relate to prior art
16 is a two-step process: First you construe the claims,
17 and then you apply the claims as construed to the prior
18 art, correct?

19 MR. BROWN: Objection.

20 THE WITNESS: Could you repeat the
21 question? I'm sorry.

22 BY MR. MCMAHON:

1 Q. Let me simplify that. You understand that as
2 part of the process of opining on unpatentability, you
3 first must construe the challenged claims, correct?

4 A. Yes.

5 Q. And in this proceeding, you construed all of the
6 claim terms under their plain and ordinary meaning,
7 correct?

8 A. That is correct, yes.

9 Q. You also -- and, actually, I'll take a moment to
10 give you a copy of your declaration.

11 (Tendered.)

12 I've just handed you what has -- was previously
13 marked as Exhibit 1002, and that's a copy of your
14 declaration in this IPR proceeding.

15 Do you see that?

16 A. I see that.

17 Q. And is that the declaration that you submitted
18 in this case?

19 A. It appears to be.

20 Q. If I could direct your attention, please, to
21 paragraph 32.

22 A. (Complying.)

1 Q. Do you see that?

2 A. I see that.

3 Q. In the first sentence here, you wrote, "I
4 understand that for purposes of my analysis in this
5 proceeding, the terms appearing in the patent claim
6 should be interpreted according to their ordinary and
7 customary meaning."

8 Did I read that correctly?

9 A. I believe you did.

10 Q. And does that -- that reflected your
11 understanding at the time you signed this declaration?

12 A. Yes.

13 Q. And it still reflects your understanding today?

14 A. As I will testify about this, yes.

15 Q. If you'd flip ahead, please, to paragraphs 83 to
16 86.

17 A. (Complying.)

18 Q. Let me know when you have those.

19 A. I am at them. I have not read them yet, but --
20 and let me just make a general statement too, is that
21 this deposition is coming some ten months after I wrote
22 this, so if you'd be patient with me. I may -- more

1 than I would normally, I may choose to read some of this
2 as you reference certain paragraphs. And just be
3 patient. I appreciate it.

4 Q. Certainly. And you can take all the time you
5 need to do that. That's fine.

6 So I referenced four paragraphs, paragraphs 83
7 to 86. And my first question about those is that those
8 four paragraphs represent the content of a section that
9 you entitled "Opinions on Claim Construction," correct?

10 A. Yes.

11 Q. So all of your opinions on claim construction
12 that you presented to the board are -- strike that.

13 Is there anything in these paragraphs that, in
14 your opinion, departs from the plain and ordinary
15 meaning of the claim language?

16 A. Now that I've read it, could you ask your
17 question again?

18 Q. Sure.

19 Is there anything in those four paragraphs that
20 departs from the plain and ordinary meaning of the claim
21 language?

22 A. Departs from the -- the -- I'm not sure I

1 understand the form of your question, but I will -- I'll
2 say that those four paragraphs summarize my opinions on
3 claim construction that were based on the plain and
4 ordinary meaning of the terms, yes.

5 Q. So let me ask it a slightly different way. We
6 previously looked at paragraph 32, in which you said you
7 understand that the plain and ordinary meaning of all
8 claim terms should apply. And then we looked at
9 paragraphs 83 to 86, which are your section on claim
10 construction. I just want to understand if there's any
11 inconsistency between those paragraphs, paragraph 32 on
12 the one hand and paragraphs 83 to 86 on the other hand.

13 MR. BROWN: Objection. Misstates
14 paragraph 32.

15 THE WITNESS: With the -- with the -- if
16 I can answer your question concisely, I've applied
17 the plain and ordinary -- ordinary meaning of the
18 terms unless otherwise specified throughout the --
19 the document. And my opinions in Sections 83
20 through -- what was it -- 86 are the opinions on
21 claim construction based on, you know, my
22 understanding of -- of -- of the terms as an

1 expert.

2 BY MR. MCMAHON:

3 Q. In returning to paragraph 32 for a minute -- I
4 just want to read that first sentence again -- you wrote
5 "I understand that" --

6 A. Give me -- give me just one second. I've lost
7 it there. I should've kept my finger there. I
8 apologize.

9 Q. Paragraph 32. Do you have it now?

10 A. Yes.

11 Q. In that first sentence of paragraph 32 you
12 wrote, quote, "I understand that, for purposes of my
13 analysis in this proceeding, the terms appearing in the
14 patent claim should be interpreted according to their
15 ordinary and customary meaning," end quote.

16 Did I read that correctly?

17 A. I believe so, yes.

18 Q. And that's the sentence we -- we talked about
19 earlier. You said you applied that when you signed the
20 declaration and you stand by it today, correct?

21 A. Yes.

22 Q. Okay.

1 A. Unless otherwise -- I do say, at the end of that
2 paragraph, unless otherwise stated -- "otherwise
3 specifically indicated."

4 Q. Thank you. And that's the sentence at the end
5 of paragraph 32?

6 A. Yes.

7 Q. Okay. Is there any term that -- for which you
8 did not apply the plain and ordinary meaning in your
9 analysis in this case?

10 A. I do not recall there being one. But as we go
11 through the day, if one shows up in my discussion, I
12 certainly will be glad to -- to point out that that
13 deviates from that.

14 Q. So as far as you can recall sitting here today,
15 you applied the plain and ordinary meaning of all claim
16 terms of all challenged claims in this case, correct?

17 A. I believe that was the case for this particular
18 analysis, yes.

19 Q. You've also offered opinions on claim
20 construction in the district court case, right?

21 A. Yes.

22 Q. And that was -- that's the case pending in the

1 Northern District of Texas that we talked about earlier?

2 A. Yes.

3 Q. Before Judge Brantley Starr?

4 A. I don't know the judge's name. I apologize.

5 And, again, I don't know the -- the -- the district.

6 There -- I understand there's multiple districts, and

7 I'm not sure -- you guys handle all that stuff. I just

8 give opinions on what the facts would say.

9 Q. Understood.

10 So I'll represent to you that -- that the case

11 I'm talking about is pending in the Northern District of

12 California and that the judge assigned to that case is

13 Judge Brantley Starr.

14 MR. BROWN: The Northern District of

15 Texas.

16 MR. MCMAHON: Northern District of --

17 MR. BROWN: And I believe, actually, his

18 declaration was submitted in the Savant case and

19 there was an agreement between Elong and Feit to

20 allow his same declaration to be used in the

21 Northern District of Texas case.

22 MR. MCMAHON: Thank you for both the

1 correction and the reminder. I appreciate that.

2 BY MR. MCMAHON:

3 Q. Let me generalize. Without referring to a
4 specific case, you would agree that you have provided
5 opinions on claim construction in connection with
6 district court cases related to the '678 Patent?

7 A. Yes.

8 Q. Thank you.

9 And in your opinions in district court, you did
10 not apply the plain and ordinary meaning to all claim
11 terms, right?

12 A. I would have to -- again, because of the issues
13 involved and how many issues involved and so forth, I'd
14 need to take a look at that.

15 (Exhibit 2023, Declaration of William A.
16 Doolittle, Ph.D., was marked for identification.)

17 (Exhibit 2024, Rebuttal Declaration of
18 William A. Doolittle, Ph.D., was marked for
19 identification.)

20 BY MR. MCMAHON:

21 Q. Dr. Doolittle, I've just handed you two
22 documents. The first one is entitled "Declaration of

1 William A. Doolittle, Ph.D." We have designated that
2 Exhibit 2023, and that is a 39-page declaration dated
3 November 6, 2024.

4 Do you see that?

5 A. November 6, 2024. Yes, I see that.

6 Q. The second document is entitled "Rebuttal
7 Declaration of William A. Doolittle, Ph.D." We've
8 designated that Exhibit 2024, and that is a seven-page
9 declaration dated November 20, '24.

10 Do you see that?

11 A. November 20, 2024, yes.

12 Q. These are the two declarations that you
13 submitted on the topic of claim construction in the
14 district court case, right?

15 A. Yes.

16 Q. And according to the -- the heading on the front
17 of both of these documents, these were submitted in
18 connection with the Savant case pending in the Northern
19 District of Ohio, correct?

20 A. It appears to be the Northern District of Ohio,
21 yes.

22 Q. Are you aware that these declarations were also

1 used in the Elong case pending in the Northern District
2 of Texas?

3 A. That's not something I would be aware of. I
4 mean, somebody might have told me or said it, but it's
5 not something that I deal with. I deal with just the
6 facts in the case, generally speaking.

7 Q. Okay. I'd like to focus initially on the first
8 of these two documents, Exhibit 2023. I'd like to
9 direct your attention to page 22, beginning with
10 paragraph 66. Let me know when you have that.

11 A. I'm with you.

12 Q. Paragraph 66 is the first paragraph in a -- in a
13 section entitled -- with two claim limitations. Do you
14 see that?

15 A. Yes.

16 Q. The first claim limitation in the title is,
17 quote, "Improves an off-state white appearance of the
18 wavelength conversion component," end quote.

19 Do you see that?

20 A. Yes.

21 Q. And the second claim limitation in the title
22 heading -- in the subsection heading is, quote,

1 "Improves an off-state white appearance of a wavelength
2 conversion component," end quote.

3 Do you see that?

4 A. I see that.

5 Q. And the heading further references that those
6 terms come from Claims 1, 19 and 29, right?

7 A. Yes.

8 Q. And those claims come from the '678 Patent?

9 A. That is correct.

10 Q. In this section, you did not apply the plain and
11 ordinary meaning of those two claim terms, correct?

12 MR. BROWN: Objection.

13 THE WITNESS: Well, to be clear, the -- I
14 can read the entire long list if you'd like, but
15 my -- my analysis is based on what is summarized in
16 -- in Section 4, Legal Standards, which -- it
17 includes the plain and ordinary meaning, but it
18 includes a lot more considerations than that, that
19 inform my opinion.

20 So, for example, I understand that one
21 must first consider the words of the claims
22 themselves, giving those words their customary and

1 ordinary meaning as understood by a person of
2 ordinary skill in the art. But I also clarify this
3 further on by saying, you know, after reviewing the
4 claims, one must consider the specification to
5 determine whether the inventor is employed in --
6 any terms or words in a manner that is inconsistent
7 with the plain and ordinary meaning. In addition
8 to the claims and specification, one must review
9 the patent prosecution history.

10 And there's a whole bunch of other stuff,
11 if you'd like me to continue reading. It's all
12 there for you, but that's the standards that I
13 applied throughout my declaration.

14 MR. MCMAHON: Objection. Move to strike
15 as nonresponsive.

16 BY MR. MCMAHON:

17 Q. Dr. Doolittle, my question is much simpler than
18 that. I just want to know if there's any place in this
19 section where you applied the plain and ordinary meaning
20 to the off-state white appearance claim limitations.

21 MR. BROWN: Objection.

22 THE WITNESS: Could you repeat your

1 question? Because I think -- if I misheard it -- I
2 think there's a double negative in it. I'm not
3 sure.

4 BY MR. MCMAHON:

5 Q. Sure. Let me try to avoid all the -- the
6 negatives and just be more direct.

7 In paragraph 66, you opined that those two
8 limitations we referred to -- let me -- let me clarify
9 something for simplicity.

10 On page 22, Section 7 includes those two claim
11 limitations that we quoted before, right?

12 A. Yes.

13 Q. Will you understand if I refer to those as the
14 off-state white appearance claim limitations?

15 A. Yes. For the purpose of this question, yes, I
16 will -- yes.

17 Q. Thank you.

18 In paragraph 66 you opined that the off-state
19 white appearance claim limitations are indefinite,
20 correct?

21 A. That is correct, yes.

22 Q. And by indefinite, you mean that you were unable

1 to determine the meaning and scope of those two claim
2 limitations, correct?

3 MR. BROWN: Objection.

4 THE WITNESS: I would say that there's
5 specific terms used in that that are not defined
6 with bounds and so forth, and that's why I found
7 them to be indefinite.

8 BY MR. MCMAHON:

9 Q. You did not tell the Patent Trial and Appeal
10 Board that those two claim limitations are indefinite,
11 right?

12 A. It's my understanding that indefiniteness is not
13 something that the PTAB handles. But I'm not a lawyer,
14 so I could be wrong, so I would -- I would say that, no,
15 I did not.

16 MR. MCMAHON: Okay. Objection. Move to
17 strike as nonresponsive except for that last part.

18 BY MR. MCMAHON:

19 Q. Just to clarify, the answer -- the question is,
20 did you tell the Patent Trial and Appeal Board that your
21 opinion is those two claim limitations are indefinite?

22 MR. BROWN: Objection. Asked and

1 answered.

2 THE WITNESS: I'm sorry if I'm not being
3 clear. I'll try to clarify, is that I -- I
4 understood that the PTAB does -- and if my
5 understanding is incorrect, I apologize. I'm just
6 a professor that doesn't understand a lot of the
7 law. But -- but it's my understanding that the
8 PTAB doesn't deal in indefiniteness. If I've said
9 that incorrectly or quoted it in -- wrong, I
10 apologize, but that is my understanding.

11 BY MR. MCMAHON:

12 Q. My question is --

13 MR. MCMAHON: Objection. Move to strike
14 as nonresponsive.

15 BY MR. MCMAHON:

16 Q. My question is not about what the PTAB does or
17 does not do. My question is about what you told the
18 PTAB. You did not tell the PTAB that those two claim
19 limitations are indefinite, right?

20 MR. BROWN: Objection.

21 THE WITNESS: Can you ask your question
22 again? Because, again, you've made a statement and

1 then you asked -- you said "right" as the -- I
2 think there were two questions in your question, if
3 I'm not mistaken. Maybe I heard it wrong.

4 BY MR. MCMAHON:

5 Q. Yeah, the question's just this -- and I'm
6 intending it to be a yes-or-no question. I hope it can
7 be answered that way. You did not tell the patent
8 office that those two claim limitations are indefinite,
9 right?

10 A. It wasn't something that was relevant in that
11 proceeding, so I did not.

12 Q. When you told the district court that those two
13 claim limitations are indefinite, did you understand
14 that to mean that you were unable to determine the
15 meaning and scope of those limitations?

16 MR. BROWN: Objection.

17 THE WITNESS: Certainly in terms of the
18 word "improves," there are certain aspects of those
19 claims that are ill-defined for someone that would
20 try to practice this claim, and that's why I chose
21 to -- to say that they are indefinite.

22 BY MR. MCMAHON:

1 Q. And am I correct to understand that in the
2 district court, what you were saying was that one of
3 ordinary skill in the art would not know how to apply
4 those limitations to an Accused Product or to prior art?

5 MR. BROWN: Objection.

6 THE WITNESS: I'm sorry, can you repeat
7 the question?

8 BY MR. MCMAHON:

9 Q. Sure.

10 A. I apologize. Maybe I'm a little slow this
11 morning or something, need a little caffeine or
12 something perhaps. But if you'd be patient with me
13 enough to restate your question.

14 Q. Sure.

15 Am I correct to understand that when you told
16 the district court that those two claim limitations are
17 indefinite, you were saying that one of ordinary skill
18 in the art would not know how to apply those claim
19 limitations to an Accused Product or to prior art?

20 MR. BROWN: Objection.

21 THE WITNESS: I would say that it's a
22 little bit more nuanced than that, but -- but

1 simply stating that it would be difficult for me to
2 read these claims and understand to what degree the
3 improvement needs to be, by what metric and what
4 measurement, by what observation is not really
5 clear in the specification or in the claim. That
6 term "improves" is specifically what I find
7 difficult to interpret and, therefore, render this
8 indefinite.

9 BY MR. MCMAHON:

10 Q. I direct your attention, please, to paragraph 76
11 on page 26 of Exhibit 2023.

12 A. (Complying.)

13 Q. Let me know when you have that.

14 A. Give me just a second to catch up with you here.
15 I'm with you.

16 Q. This paragraph 76 is the first paragraph of
17 Section 8 of your declaration, right?

18 A. Yes.

19 Q. And Section 8 is entitled with a different claim
20 limitation. I'll read it here: Quote, "the
21 light-scattering material will scatter the excitation
22 light relatively more than the light-scattering material

1 will scatter light generated by the at least one
2 photoluminescence material", end quote, open paren
3 "Claim 11," close paren.

4 Did I read that correctly?

5 A. Yes.

6 Q. And that -- this section, Section 8, provided
7 your opinion to the district court about the meaning of
8 that claim limitation, right?

9 A. Yes.

10 Q. And your opinion that you provided to the
11 district court is that that claim limitation is
12 indefinite, correct?

13 A. Yes.

14 Q. You did not tell the PTAB that that claim
15 limitation is indefinite, correct?

16 A. Again, I believe it's irrelevant for the PTAB.
17 I don't know how to answer it any other way other than
18 to say that it's my understanding -- again, if I
19 misunderstand this, I apologize -- that the PTAB doesn't
20 deal with indefiniteness.

21 MR. MCMAHON: Objection. Move to strike
22 as nonresponsive.

1 BY MR. MCMAHON:

2 Q. My question is, did you tell the patent office
3 that that claim limitation claim is indefinite?

4 MR. BROWN: Objection.

5 THE WITNESS: It was irrelevant to that
6 proceeding, so, no.

7 BY MR. MCMAHON:

8 Q. So the answer is, no, you did not tell the
9 patent office that that claim limitation was indefinite,
10 correct?

11 MR. BROWN: Objection. Asked and
12 answered.

13 THE WITNESS: It was irrelevant as far as
14 I understand, so, no.

15 BY MR. MCMAHON:

16 Q. And, Doctor, I'm -- I'm going to try to ask very
17 precise questions today.

18 MR. MCMAHON: I'm going to object again
19 and move to strike that last answer because it's
20 not responsive to the question.

21 BY MR. MCMAHON:

22 Q. My question is not what's relevant or not. It's

1 what you did or did not tell the patent office. So let
2 me try and be very precise here. You did not tell the
3 patent office that that claim limitation is indefinite,
4 correct?

5 MR. BROWN: Objection. Nobody is ruling
6 on your motion to strike, and he can answer the
7 questions as completely as he needs to.

8 THE WITNESS: So let me just take a pause
9 here and -- and say that I'm just a professor, I'm
10 not a lawyer. I'm trying to answer your questions
11 as honestly as I can. I've taken an oath to answer
12 them honestly. And if I view that a question has
13 no yes-or-no answer, then I need to explain that.

14 If you would prefer me to just use a
15 generic term and say, "As answered, I have to
16 provide more context" or "as asked, I need to
17 provide more context. Is that allowed?" And then
18 you can decide. But -- and if -- because I've
19 taken this oath, I have to answer according to my
20 conscience. If -- if -- I hope we can work out
21 some sort of, you know, understanding in that, and
22 that I will try -- I know professors tend to ramble

1 on, which I'm perhaps doing now. And I will try my
2 best to keep my answers very short and concise in
3 that case. That's what I was doing when I said it
4 was irrelevant, so I did not put that before the
5 PTAB board. If -- if -- you know, I -- I'll do my
6 best to -- to answer your questions as best I can.

7 BY MR. MCMAHON:

8 Q. I appreciate that. And -- and in the interest
9 of considering the proposal, let's do that. If I ask a
10 yes-or-no question and you can answer yes or no, but you
11 feel there's further explanation necessary, let me know
12 that and I'll let you know if we need that further
13 explanation.

14 A. Okay.

15 Q. Okay. In your opinions provided to the PTAB,
16 you applied the plain and ordinary meaning of this claim
17 limitation in Section 8 of Exhibit 2023, correct?

18 And for convenience, I'll refer you back to
19 paragraph 32 of your declaration to the PTAB.

20 A. So -- so before I even answer, please ask your
21 question again to make sure I heard it correctly.
22 Because there's some confusion about what you're

1 actually asking.

2 Q. Sure. And before I reask the question, I --
3 I'll just repeat. Do you have paragraph 32 of your
4 declaration to the PTAB there for reference?

5 A. Yes.

6 Q. So in that declaration that you provided to the
7 PTAB, when it came to this claim limitation that begins
8 with "the light-scattering material will scatter the
9 excitation light relatively more," for the PTAB, you
10 applied the plain and ordinary meaning, correct?

11 A. I would believe so. I'd have to go through the
12 section where I actually discuss that. But, again,
13 unless otherwise stated, as I said at the end of that
14 paragraph, I believe that was what I did for most all
15 of -- all the things here.

16 Q. Whereas in the district court, you said that
17 that claim limitation was indefinite, correct?

18 A. That is -- if that is what I said, yes.

19 Q. Okay. Same questions -- if we skip ahead in
20 Exhibit 2023, the district court declaration, to page
21 28, beginning with paragraph 83. And this is the first
22 paragraph of Section 9, which is entitled, quote,

1 "wherein the light-scattering material scatters the
2 excitation light as least twice as much as light
3 generated by the at least one photoluminescence
4 material," end quote.

5 Did I read that correctly?

6 A. I believe you did. There's also a Claim 12 in
7 parentheses at the end, if we want to be really picky.
8 I'm sorry, I was married to a lawyer for 22 years. I'm
9 -- I'm kind of used to kind of making sure, if you ask
10 me a question, I'm very precise in that.

11 Q. I appreciate the precision and the
12 clarification.

13 In paragraph 83, you told the district court
14 that that claim limitation is indefinite, right?

15 A. Yes.

16 Q. Whereas you told the PTAB that you applied the
17 plain and ordinary meaning of that claim limitation,
18 right?

19 A. Yes. For that declaration I did, yes.

20 Q. Okay. Let's skip ahead in Exhibit 2023 to
21 paragraph 87.

22 A. (Complying.)

1 Q. Are you there?

2 A. I'm with you.

3 Q. Okay. This is the first paragraph of Section
4 10, which is entitled, quote, "corresponds to an average
5 particle size that improves the off-state white
6 appearance of the wavelength conversion component (Claim
7 21)," end quote?

8 A. Yes.

9 Q. And in -- in this --

10 A. My ex-wife would be proud. Sorry.

11 Q. In this declaration to the district court, you
12 opined that that claim limitation is indefinite, right?

13 A. Yes.

14 Q. Whereas you told the PTAB that you applied the
15 plain and ordinary meaning of that claim limitation,
16 right?

17 A. For that declaration, yes.

18 Q. Let's turn, please, to Exhibit 2024. That was
19 the other of the two documents I handed you a few
20 minutes ago. And this, again, is the rebuttal
21 declaration that you provided in the claim construction
22 proceedings in the district court, right?

1 A. Yes.

2 Q. I'd like to direct your attention to paragraph
3 12. Let me know when you have that.

4 A. I'm with you.

5 Q. The first sentence of that paragraph quotes some
6 claim limitations. I'll read it, and bear with me on
7 the quotation marks. The first sentence reads, quote,
8 "I understand that Dr. Schubert that the terms 'improves
9 an off-state white appearance of the wavelength
10 conversion component' and 'improves an off-state white
11 appearance of the wavelength conversion component'
12 should be given their plain and ordinary meaning," end
13 quote.

14 Did I read that correctly?

15 A. With the exception of there was no end quote
16 after "meaning."

17 Q. That was me referring to the Court Reporter that
18 I was going to finish reading. But thank you for the
19 clarification.

20 A. Oh, okay. Well, I -- I apologize. Now you see
21 why my wife -- my first wife divorced me there.

22 Q. Hey, I'm not going to get into that.

1 So the -- in that sentence, you were noting that
2 Dr. Schubert had said that the plain and ordinary
3 meaning of those terms should apply, correct?

4 A. Yes.

5 Q. And at the end of paragraph 12, you said that
6 you disagree with Dr. Schubert, right?

7 MR. BROWN: Objection.

8 BY MR. MCMAHON:

9 Q. Let me retract that and clarify.

10 The last two words, the last sentence of
11 paragraph 12 reads, "I disagree." Right?

12 A. The last two sentence -- words of that paragraph
13 say, "I disagree."

14 Q. And by that sentence, you mean you are
15 disagreeing with Dr. Schubert's opinion that the plain
16 and ordinary meaning should -- should apply to those two
17 claim limitations, right?

18 MR. BROWN: Object- -- objection.

19 THE WITNESS: No. I think what I'm
20 saying is I disagreed with -- with that
21 particular -- I'm sorry. Can you ask your question
22 again? I'm getting lost in reading and then

1 forgetting your question.

2 BY MR. MCMAHON:

3 Q. Sure.

4 The opening sentence of paragraph 12 sets forth
5 Dr. Schubert's opinion that the off-state white
6 appearance claim limitations should be given their plain
7 and ordinary meaning, right?

8 A. I think what I'm disagreeing with is
9 Dr. Schubert's recharacterizing of those terms, and he
10 rephrases that in his -- his own words, which I'm
11 quoting there right before the term "I disagree" -- the
12 sentence, "I disagree." So he tries to clarify what it
13 means to him, and I -- I'm not in agreement with that.

14 Q. Okay. So let me try and understand what you're
15 saying in paragraph 12. Do you agree with Dr. Schubert
16 that the plain and ordinary meaning should apply to the
17 off-state white appearance claim limitations?

18 MR. BROWN: Objection.

19 THE WITNESS: No, for similar reasons.

20 There's various different terms in that statement
21 that have no -- no specification, guidance or no
22 bounds given, that make that claim limitation

1 indefinite.

2 BY MR. MCMAHON:

3 Q. And yet you told the PTAB that you applied the
4 plain and ordinary meaning to that limitation -- those
5 two limitations, correct?

6 A. Again, because indefiniteness is not something
7 that the PTAB can rule on, as I understand it.

8 MR. MCMAHON: Objection. Move to strike
9 as nonresponsive.

10 BY MR. MCMAHON:

11 Q. Dr. Doolittle, I'm not asking what the PTAB can
12 or cannot rule on. I'm asking what you told the PTAB.
13 What you told the PTAB is that you applied the plain and
14 ordinary meaning of those two claim limitations,
15 correct?

16 MR. BROWN: Objection. Asked and
17 answered.

18 THE WITNESS: For that declaration.

19 BY MR. MCMAHON:

20 Q. When you say "for that declaration," what do you
21 mean?

22 A. For the PTAB IPR deposition -- sorry. For the

1 IPR declaration, I used the plain and ordinary meaning.

2 Q. So you provided two different opinions, one to
3 the PTAB and one to the district court, right?

4 MR. BROWN: Objection.

5 THE WITNESS: I wouldn't classify them as
6 different. They're under different specifications
7 and different guidelines, I guess is what -- is I
8 would -- I would, in layman's terms, determine it.

9 BY MR. MCMAHON:

10 Q. Same patent, right?

11 A. It is the same patent, yeah.

12 Q. Same patent claims, right?

13 A. Yes, it is.

14 Q. Same patent claim limitations, right?

15 A. Yes, it is.

16 Q. Same patent specification, right?

17 A. Yes, it is.

18 Q. Same file history to that patent, right?

19 A. Yes, it is.

20 Q. Okay. Let's jump ahead to page 5 of

21 Exhibit 2024, paragraph 20.

22 A. (Complying.)

1 Q. This is the first paragraph of Section 9 of
2 Exhibit 2024. And Section 9 is entitled, open quote,
3 "Corresponds to an average particle size that improves
4 the off-state white appearance of the wavelength
5 conversion component," closed quote, "(Claim 21)," end
6 quote.

7 Did I read that correctly?

8 A. I believe you did.

9 Q. And in paragraph 20, you state, quote, "I
10 discussed in my opening declaration that this term is
11 indefinite because neither the claim language nor the
12 specification provide any guidance on how to measure the
13 claimed 'average particle size,'" end quote.

14 Did I read that correctly?

15 A. I believe you did.

16 Q. And in paragraph 21, the next paragraph, you
17 note your understanding that Dr. Schubert had opined
18 that the plain and ordinary meaning should apply to this
19 claim term, right?

20 A. I have read the section in its entirety. Can
21 you repeat your question now?

22 Q. Sure.

1 At the beginning of paragraph 21, you note that
2 Dr. Schubert had opined that the plain and ordinary
3 meaning should apply to this claim limitation, right?

4 A. I note that and then quote his -- his
5 characterization of what that means.

6 Q. And in the last sentence of paragraph 21, you
7 wrote, "For the reasons discussed above in Section 6, I
8 disagree," right?

9 A. I did write that, yes.

10 Q. You were disagreeing with Dr. Schubert there,
11 right?

12 A. I was disagreeing with his characterization of
13 what those terms would mean there, yes.

14 Q. You were disagreeing with Dr. Schubert's opinion
15 applying the plain and ordinary meaning, right?

16 MR. BROWN: Objection.

17 THE WITNESS: I was disagreeing in --
18 with what he recharacterizes as the plain and
19 ordinary meaning there that I have quoted there.

20 BY MR. MCMAHON:

21 Q. In these two paragraphs, paragraphs 20 and 21 of
22 Exhibit 2024, you did not apply the plain and ordinary

1 meaning of this claim limitation, right?

2 MR. BROWN: Objection.

3 THE WITNESS: In these paragraphs, I
4 refer back to my main claim construction
5 declaration, where I determined that the claim term
6 was indefinite.

7 BY MR. MCMAHON:

8 Q. And in concluding that the claim term was
9 indefinite, you are specifically not applying the plain
10 and ordinary meaning, correct?

11 MR. BROWN: Objection.

12 THE WITNESS: Well, as I said, it's --
13 it's part of analysis, but it's also the file
14 history, the specification and other things that I
15 listed in that section I read earlier, a part of my
16 analysis for claim construction.

17 BY MR. MCMAHON:

18 Q. Okay. In the district court, you told the
19 district court that this claim limitation that I read a
20 few minutes ago at the heading of Section 9 of
21 Exhibit 2024 is indefinite, right?

22 A. I'm sorry, there was a lot of references there.

1 Can you go a little slower and repeat that, please?

2 Q. Sure. I'm referring to Exhibit 2024.

3 A. Okay.

4 Q. Heading 9 on page 5, which is for the claim
5 limitation, quote, "corresponds to an average particle
6 size that includes the off-state white appearance of the
7 wavelength conversion component," closed quote, "(Claim
8 21)."

9 Do you see that section?

10 A. I see that section.

11 Q. And you opined to the district court that that
12 claim limitation is indefinite, right?

13 A. I -- as I discussed in my other declaration that
14 I referenced in the first sentence in paragraph 20, yes.

15 Q. Whereas you told the PTAB that you applied the
16 plain and ordinary meaning of that claim limitation,
17 right?

18 A. I -- again, the -- for the same reasons I've
19 espoused before, the PTAB doesn't deal with
20 indefiniteness, so that -- that's what I applied for
21 that declaration.

22 Q. Let's go back to paragraph 2023 -- sorry. Let's

1 go back to Exhibit 2023, paragraph 31, page 7.

2 A. (Complying.)

3 Q. Do you have that?

4 A. Paragraph 31. I'm -- I'm there. I haven't read
5 it yet. Go ahead.

6 Q. Go ahead and read it and then I'll ask the
7 question.

8 A. I'm with you.

9 Q. In paragraph 31 you set forth your understanding
10 of the standard for determining indefiniteness of patent
11 claims, right?

12 A. Yes.

13 Q. And you wrote that that standard is, quote,
14 "whether the," open quote, "claims read in light of the
15 specification delineating the patent and the prosecution
16 history failed to inform with reasonable certainty those
17 skilled in the art about the scope of the intervention,"
18 closed quote.

19 Did I read that correctly?

20 A. Yes. And that time you left your quote out --
21 your end quote. Sorry. I'm trying to bring some levity
22 here. I apologize.

1 Q. I appreciate it.

2 A. If that's inappropriate, please tell me and I'll
3 try to refrain from telling really bad jokes. I
4 apologize.

5 Q. In general I would like to avoid that.

6 A. Okay.

7 Q. In paragraph 31, you quoted the Supreme Court's
8 Nautilus decision, right?

9 A. I don't know that that's the Supreme Court, but
10 it looks like "S.CT" would be the Supreme Court, yes.

11 Q. Fair enough. Fair enough. Thank you.

12 So indefiniteness, as you understand it, means
13 that one of ordinary skill in the art is unable to
14 determine the scope of the invention, correct?

15 A. Well, I would say it a little bit more nuanced.
16 I would say failed to inform with reasonable certainty.
17 But other than that, I would agree with you.

18 MR. MCMAHON: Let's go off the record.

19 (Recess.)

20 BY MR. MCMAHON:

21 Q. Dr. Doolittle, before we broke we were talking
22 about the declarations you provided in connection with

1 the PTAB and also the district court cases. Do you
2 recall that?

3 A. Yes.

4 Q. Okay. In your declaration to the PTAB -- that's
5 Exhibit 1002 -- you applied the language of the
6 challenged claims to the prior art, correct?

7 A. Yes.

8 Q. And consistent with what you wrote in paragraph
9 32, you did so using the plain and ordinary meaning of
10 those claim -- the claim language, right?

11 A. With the previously stated caveats of what's at
12 the end of that paragraph, yes.

13 Q. "Unless otherwise specified"?

14 A. Right.

15 Q. So unless otherwise specified somewhere in your
16 declaration, Exhibit 1002, you applied the plain and
17 ordinary meaning of the challenged claim language?

18 A. Yes.

19 Q. Okay. And you were able to understand that
20 claim language in order to apply it to the prior art,
21 right?

22 A. Understand it in terms of what I wrote in the

1 declaration when I was analyzing the declaration, yes.

2 Q. You signed that declaration on August 26, 2024,
3 correct?

4 A. That appears to be correct, yes.

5 Q. And as we established earlier, you signed your
6 first declaration in the district court -- that's
7 Exhibit 2023 -- on November 6, 2024, right?

8 A. That appears to also be correct.

9 Q. A few months after you signed your PTAB
10 declaration?

11 A. That is correct, yes.

12 Q. And Exhibit 2024, your rebuttal declaration in
13 the district court, you signed on November 20, 2024,
14 correct?

15 A. That also appears to be correct, yes.

16 Q. Okay. Do you stand by the entire content of
17 your PTAB declaration, Exhibit 1002?

18 A. Yes.

19 Q. And same question for the other two: Do you
20 stand by the content of your declaration to the district
21 court, Exhibit 2023?

22 A. Yes.

1 Q. And do you stand by the content of your -- of
2 Exhibit 2024, your rebuttal declaration in the district
3 court?

4 A. Yes.

5 Q. Okay. What, if anything, did you do to prepare
6 for the deposition today?

7 MR. BROWN: Objection. I'll just caution
8 the witness. You can answer, but be careful not to
9 disclose the substance of any communications you
10 had with the lawyers at Radulescu.

11 THE WITNESS: Yes. So I read all the
12 documents that I had in -- in relation to this case
13 -- or I should say I read the vast majority of the
14 documents that were -- I had in relation to this
15 case, including my declarations, my --
16 Dr. Schubert's declaration, the patents and other
17 relevant documents.

18 BY MR. MCMAHON:

19 Q. Approximately how much time did you spend
20 preparing for the deposition?

21 A. Well, it was spread out in -- in -- over several
22 days, because I have a -- I'm not a full-time expert. I

1 do this on the side. I have a professorship and an
2 active research program.

3 I will just say I don't know, but it's more than
4 10, less than 30 hours, I'd say.

5 Q. Did you -- and I'm not looking for any
6 privileged or work product information, but did you
7 prepare on your own or did you meet with anyone?

8 A. Yesterday I met with Mr. Brown.

9 Q. For approximately how long?

10 A. Roughly -- roughly 9:00 to 5:00, roughly
11 speaking.

12 Q. I just handed you a copy of -- excuse me, my
13 throat is raw today -- Exhibit 1001. That is the '678
14 Patent.

15 Did you see that?

16 A. I see that. Did you need to put a sticker on it
17 or anything?

18 Q. No. It's marked.

19 A. Okay. I apologize.

20 Q. Thank you. And just to -- to clarify on that,
21 most the documents that we will talk about today have
22 already been marked. They've already been filed with

1 the PTAB, so they're labeled. Those two may be the only
2 exceptions.

3 MR. BROWN: This is the label down here,
4 the text.

5 THE WITNESS: Okay. Thank you. I see
6 that now.

7 BY MR. MCMAHON:

8 Q. And so aside from the two -- Exhibits 2023 and
9 2024 -- those have the yellow stickers that we created
10 today. Most of the other documents, you will see an
11 exhibit marker in the footer of the document, just like
12 counsel just pointed to.

13 A. Thank you for the clarification.

14 Q. Certainly.

15 So this Exhibit 1001 is the '678 Patent, right?

16 A. Yes, it is.

17 Q. And this is the patent you've analyzed because
18 it contains the claims that are challenged in the IPR
19 proceeding, right?

20 A. That is correct.

21 Q. Okay. One of the elements that the '678 Patent
22 describes is a diffusing layer, right?

1 A. You're saying one of the claim elements -- is
2 that what you're referring to when you say "elements"?
3 Are you specifically referring to the claim elements?

4 Q. Thank you for clarifying. I didn't meaning to
5 specific to claim limitations. I meant to be more broad
6 just as to the feature of a diffusing layer. But you're
7 right, it does appear, for example, in Claim 1.

8 A. I'm sorry. Is there a question pending? I'm
9 sorry.

10 Q. Sure. Just confirming that the light-diffusing
11 layer is one of the features that's described and
12 claimed in the '678 Patent.

13 A. Yes. I apologize if I caused any confusion.

14 Q. No worries.

15 The -- and in one embodiment -- for example, in
16 Figure 1 -- the light-diffusing layer is element 44,
17 correct?

18 And, for convenience, I'd also refer you to
19 column 8, line 19, which may be helpful.

20 A. Did you say "Figure 1"?

21 Q. Figure 1, yes.

22 MR. BROWN: Did you say "44"?

1 BY MR. MCMAHON:

2 Q. My apologies. Let me retract that. Let's go to
3 Figure 2. So let me --

4 A. 44 wasn't in Figure 1, is the reason why the
5 long pause and the -- I was --

6 Q. Let me retract that whole clar- -- that whole
7 question and try again.

8 Referring to Figure 2 and also to column 8, line
9 19. The diffusing layer is element 44, right?

10 A. Yes.

11 Q. And the '678 Patent explains that that diffusing
12 layer 44 should include particles of a light-diffractive
13 material, right?

14 A. That -- I will -- if it's okay if I just answer
15 your question and assume that these are generic terms.
16 If you're asking for the specific phrase, please let me
17 know, and I'll have to go and look it up and verify that
18 your wording is the same as the wording in the patent.
19 Otherwise it will take a long time.

20 So I'll just answer the series of questions
21 regarding these elements as generic terms, because I
22 think I messed you up when I said -- asked you if -- the

1 claim element or what have you.

2 Q. That's fine. And it's a good point on clarity.
3 I will be more specific with the question.

4 In column 8, lines 19 to 21, the '678 Patent
5 explains that, quote, "the diffusing layer 44 comprises
6 a uniform-thickness layer of particles of a
7 light-diffractive material, preferably titanium dioxide
8 (TiO₂)," end quote?

9 A. Yes.

10 Q. I read this correctly?

11 A. Yes.

12 Q. So the '678 Patent teaches that that diffusing
13 layer 44 in this embodiment should include particles of
14 a light-diffractive material?

15 A. Yes.

16 Q. And preferably, the '678 Patent teaches, those
17 particles should be titanium dioxide, correct?

18 A. That is one option, yes.

19 Q. And in that same sentence, the '678 Patent
20 teaches that that diffusing layer 44 should be of a
21 uniform thickness, right?

22 MR. BROWN: Objection.

1 THE WITNESS: In -- in that -- yes, in
2 that particular instance describing Figure 2, yes.

3 BY MR. MCMAHON:

4 Q. And I'd like you to skip ahead, please, to
5 column 13, line 17.

6 A. (Complying.)

7 Column 13 -- I'm sorry. What was the line?

8 Q. Line 17.

9 A. I'm with you. Sorry. I apologize.

10 Q. Just wanted to give you a moment to read.

11 In this part, in column 13, beginning at line
12 17, the '678 Patent explains that the selection of the
13 weight loading of the light-diffractive material should
14 strike a balance between improving emission color
15 uniformity with the emission angle and the decrease in
16 luminous efficacy of the lamp, right?

17 A. I believe that's the summary of what it says,
18 yes.

19 Q. And that balance is because as you increase the
20 weight loading, that may improve the color uniformity
21 but decrease the luminous efficacy, right?

22 A. In general, yes.

1 Q. So there's a tradeoff?

2 A. In general, yes. It's not the only component
3 that affects it; but, yes, in general, that is true.

4 Q. And the tradeoff is that with -- with more color
5 uniformity, you give up some luminous efficacy?

6 A. In general, yes. But there's more to it than
7 that, but, yes.

8 Q. Okay. I'd like to jump ahead to the last page
9 of the patent, the claims, Claim 22.

10 Claim 22 is a dependent claim that adds a
11 further feature here. I'll just read Claim 22: Quote,
12 "The device of Claim 19 in which the light-diffusing
13 layer is configured to obtain substantially uniform
14 color for emitted light from the light-emitting device
15 for emission angles over a plus or minus 60-degree range
16 from an emission access," end quote.

17 Did I read that correctly?

18 A. Yes.

19 Q. So this is the '678 Patent describing that, in
20 at least one embodiment, you would want to select the --
21 the particles in the light-diffusing layer in order to
22 provide a substantially uniform color over a range of

1 angles from minus 60 degrees to plus 60 degrees relative
2 to the emission access, right?

3 A. Well, again, in general, but there's more to it
4 than that. For example, you're talking about weight
5 loading as an example. There's other things like
6 thickness, for example. You can get the same effect by
7 just having the same weight loading but just have a
8 thicker layer to get the same features. So it's not
9 entirely just that.

10 But in general, that's what that claim is -- is
11 addressing. There's others, as well.

12 Q. One aspect of the light-diffusion layer as
13 described in the '678 Patent is that it can be designed
14 in a way that it reduces the quantity of phosphor that
15 is required to accomplish the wavelength conversion,
16 right?

17 A. I would agree that was known before the '678,
18 but I would agree that it -- that could be an outcome of
19 the '678, as well.

20 Q. So I want to make sure that -- that our
21 questions and answers are matching.

22 MR. MCMAHON: So I'm going to object and

1 move to strike that part as nonresponsive.

2 BY MR. MCMAHON:

3 Q. My question is about the 68 -- '678 Patent.

4 We'll talk about the prior art separately later. For
5 now my question is simply, does the '678 Patent explain
6 that you can design the light-diffusing layer in order
7 to reduce the quantity of phosphor material required to
8 generate a selected color of emitted light. And I will
9 direct you to column 3 at lines 25 to -- 21 to 25.

10 A. Yes. And I would say that this terminology is
11 actually more accurate than what's in the claim and what
12 you've using as weight loading, where it says "the
13 concentration per unit area," which would factor in
14 various thicknesses that I mentioned for all the terms,
15 as well.

16 Q. And the '678 Patent explains that the
17 light-diffusing layer in -- as it's described in the
18 patent, increases the probability that a photon will
19 result in the generation of photoluminescence by
20 reflecting some of those photons back to the
21 wavelength-conversion layer, right?

22 A. I'm sorry, I got lost in the first part of that

1 long question. If you don't mind, I'll listen more
2 closely the second time. I apologize.

3 Q. Certainly.

4 The '678 Patent explains that the
5 light-diffusing layer as described in the patent
6 increases the probability that a photon will result in
7 the generation of photoluminescence -- photoluminescent
8 light by directing light back down to the
9 wavelength-conversion layer?

10 A. I'd say it -- that's one possibility, yes.

11 Q. And the '678 Patent teaches that this may
12 provide up to a 40 percent reduction in the amount of
13 phosphor material required to accomplish the wavelength
14 conversion?

15 A. That is what the '678 says in column 3, about
16 middle of the page, if I remember correctly.

17 Q. Thank you.

18 The '678 Patent also teaches that the average
19 particle size of the particles in the light-diffusion
20 layer may be selected such that the diffractive material
21 scatters more blue light than yellow light, right?

22 A. I would say that it uses a prior figure that's

1 -- I think that is in dispute -- and we can talk about
2 it if you'd like -- that -- that already described that.
3 I would say that there's no data in the '678 whatsoever
4 that connects at all with that figure, and, therefore, I
5 would have to answer the question to say the patent
6 actually doesn't teach that. It teaches based on the
7 fact that the particle size used for all the data in
8 that patent is 5 microns, which is not the particle size
9 that would give the disparity in blue light versus the
10 other that's a much larger particle size, by over a
11 factor of 20.

12 MR. MCMAHON: Objection. Move to strike
13 as nonresponsive.

14 BY MR. MCMAHON:

15 Q. Let me ask a more specific question. In column
16 4, beginning at line 5 -- beginning at line 4,
17 actually -- let me know when you have that.

18 The '678 Patent reads, quote, "For example, for
19 blue light radiation sources, the light-diffractive
20 particle size can be selected such that the particles
21 will scatter blue light relatively at least twice as
22 much as they will scatter light generated by the at

1 least one phosphor material," end quote.

2 Did I read that correctly?

3 A. You read that correctly, yes.

4 Q. And the patent continues, quote, "Such a
5 light-diffusing layer ensures that a higher proportion
6 of the blue light emitted from the wavelength-conversion
7 layer will be scattered and directed by the
8 light-diffractive material back into the
9 wavelength-conversion layer, increasing the probability
10 of the photon interacting with the phosphor material
11 particle and resulting in the generation of
12 photoluminescent light," end quote.

13 Did I read that correctly?

14 A. That's what the patent says.

15 Q. And the patent continues in column 4, quote, "At
16 the same time, phosphor-generated light can pass through
17 the diffusing layer with a lower probability of being
18 scattered," end quote.

19 Did I read that correctly?

20 A. You read that from the patent correctly.

21 Q. And the patent continues, quote, "Since the
22 diffusing layer increases the probability of blue

1 photons interacting with the phosphor material particle,
2 less phosphor material can be used to generate a
3 selected emission color," end quote.

4 Did I read that correctly?

5 A. I believe you did.

6 Q. The patent continues, quote, "Such an
7 arrangement can also increase luminous efficacy of the
8 wavelength conversion component/device," end quote.

9 Did I read that correctly?

10 A. Yes.

11 Q. And the patent continues, quote, "Preferably,
12 the light-diffractive material has an average particle
13 size of less than about 150 nanometers where the
14 excitation radiation comprises blue light," period, end
15 quote.

16 Did I read that correctly?

17 A. I believe you did.

18 Q. And the last sentence of that paragraph reads,
19 "When the excit-" -- quote, "When the excitation
20 radiation comprises UV light, the light-diffractive
21 material may have an average particle size of less than
22 about 100 nanometers," end quote.

1 Did I read that correctly?

2 A. I believe you did.

3 Q. And the patent teaches there that the selection
4 of particle size will be different depending on whether
5 the LED is emitting blue light versus UV light, correct?

6 A. To avoid controversy, I'll just stipulate that
7 that is in the patent as you accurately read. Whether
8 or not we're talking teaches, in terms of being able to
9 -- to follow in a claim, for example, is where my -- my
10 delineation is -- would say that it doesn't actually
11 teach what is necessary to make that happen.

12 I don't disagree that that's in the patent as
13 you accurately read it, but the word "teaches" that you
14 used in your question is where -- I think there's some
15 dispute there as to whether there is an accurate -- if
16 there is enough information there for someone like
17 myself to go and practice the -- the claim of the
18 patent.

19 Q. Every word I just read appears in column 4 of
20 the patent, right?

21 A. I -- I believe every word you read, you read
22 accurately, yes.

1 Q. Thank you.

2 You would agree that the particle size in a
3 light-diffusion layer would be selected differently
4 for blue light than for UV light, correct?

5 A. In -- in general, the answer to that question is
6 no. But in -- in certain applications, you would. But
7 that's, again, not what the data from '678 is presenting
8 here.

9 MR. MCMAHON: Objection. Nonresponsive.
10 Move to strike.

11 BY MR. MCMAHON:

12 Q. Let's turn to the prior art.

13 I've just handed you what is -- what's
14 previously marked as Exhibit 1005 and has been -- this
15 is U.S. published patent application Number U.S.
16 2009/0057699. And we have, for shorthand, referred to
17 this as the Basin 2007 reference, right?

18 A. Yes. Yes.

19 Q. You're familiar with this?

20 A. Yes.

21 Q. And Basin 2007 is directed to LEDs used in
22 camera flashes, right?

1 A. Among other things, including projection
2 applications, according to the abstract.

3 Q. And Basin 2007 addresses applications using blue
4 LEDs, right?

5 A. Yes.

6 Q. Basin 2007 does not address applications using
7 UV LEDs, right?

8 A. So I would answer that and say that, in general,
9 it just describes, for example, in Claim 1, a
10 semiconductor light-emitting diode. It further limits
11 its claims to Claim 18 to be an LED that emits blue.

12 So given that, I would say that Basin is not
13 restricting its claims, certainly, to just blue, based
14 on Claim 1 being the independent claim of -- I'm sorry,
15 Claim 18 being an dependent claim on Claim 1.

16 Q. There is nowhere in Basin 2007 that mentions UV
17 light, right?

18 A. I would have to read word for word just to rule
19 out no, and throughout the patent. I'll be glad to do
20 that if you want me to take the time, but I'll just
21 simply speed things along and say I don't recall the
22 words "UV" being in there.

1 Q. Fair enough.

2 Basin 2007 describes a phosphor layer, right?

3 A. Yes, it does.

4 Q. It's a single YAG phosphor layer, right?

5 A. So I'd have the same answer, just in a different
6 way, is that Claim 1 requires a phosphor layer, and then
7 there's a restriction in Claim 11 that it be a YAG
8 phosphor layer, yttrium aluminum oxide garnet.

9 Q. Basin 2007 does not mention any phosphor layer
10 other than YAG, right?

11 A. It does mention red phosphors and green
12 phosphors, which is known in the art could be other
13 phosphors other than YAG.

14 Q. Where are you looking right now?

15 A. So at the bottom of column -- page 2. I'm
16 sorry, I don't see column numbers on -- on page --

17 Q. Can you use the paragraph numbers?

18 A. Oh, I apologize.

19 Q. No, it's all right.

20 A. I was looking for that.

21 So the bottom of paragraph 27 on up to the
22 beginning of the next column, it talks about red

1 phosphors and green phosphors. And some of those -- the
2 yellow phosphors certainly would be YAG, but in general,
3 the red phosphor may not be, or the -- the green
4 phosphor may be a different version, as well.

5 Q. Okay. YAG is yttrium aluminum oxide --

6 A. Garnet.

7 Q. -- garnet?

8 Thank you.

9 A. I'm sorry for interrupting you. You stalled
10 there. Trying to help you out.

11 Q. I -- I appreciate it. You clearly know the
12 stuff better than I do.

13 Okay. Let's go on to -- did I give you Basin
14 2005 yet? I don't think I did.

15 (Tendered.)

16 So I've just handed you Exhibit 1006, previously
17 marked. This is U.S. patent publication number U.S.
18 2007/0045761. And for convenience, we have referred to
19 this as the Basin 2005 reference.

20 Do you agree?

21 A. Yes.

22 Q. Basin 2005 is directed to LEDs that are used in

1 applications involving long energization, right?

2 A. I'm sorry, say that again. There was some
3 rumbling of papers. I'm sorry.

4 Q. Sure.

5 Basin 2005 is directed to LED applications where
6 the LEDs stay on for a long time, a longer energization
7 application?

8 A. I think that's a narrowing of it beyond what it
9 was intended.

10 Q. Well, as an example, Basin 2005 addresses
11 headlamps for automobiles, right?

12 And that's in paragraph 10.

13 A. Again, I said it's a little bit too narrow.
14 Where it says "one use of the warm white LED is in
15 headlamps for automobiles," that's not to say that
16 that's the only use.

17 Q. But that use does involve long energization,
18 right?

19 A. I guess that depends on your commute, right?

20 Q. It's an awfully short commute if you are using a
21 flash bulb to get you home.

22 A. It -- but it was also a form of a projector, as

1 -- as we just talked about. For Basin 2007, a projector
2 source would be certainly -- a head -- a headlight would
3 be a projector. There's multiple different projector
4 forms that are out there, as well. So it's a general
5 classification.

6 Abstract. If you're looking -- I'm sorry.

7 Q. No, sorry.

8 A. If you're taking time looking for that term,
9 it's in the abstract of Basin 2007.

10 Q. I appreciate that. I'm looking at something
11 else, but thank you.

12 Basin 2005 primarily addresses UV LEDs, right?

13 A. I would not agree with that.

14 Q. Do you disagree that it addresses UV LEDs?

15 A. No. Claim 1 clearly says that it emits light
16 having a blue or shorter wavelength, so that would
17 include UV LEDs.

18 Q. So you do agree that it addresses UV light?

19 A. Did I misunderstand your question before? Did
20 you say it does not or does? I apologize if I
21 misunderstand the question. Maybe we should back up to
22 clarify.

1 Q. Sure.

2 Basin 2005 addresses applications involving UV
3 light, correct?

4 A. Among others, including blue, according to Claim
5 1.

6 Q. And in the application to UV light, Basin 2005
7 teaches using two different phosphor layers, right?

8 A. Can you ask your question again?

9 Q. Sure.

10 Basin 2005 is directed to LEDs containing two
11 separate phosphor layers, right?

12 MR. BROWN: Objection. Form.

13 THE WITNESS: I don't think that was the
14 prior question. But I would say that it has
15 single, it has -- and it certainly has two phosphor
16 layer embodiments in it.

17 BY MR. MCMAHON:

18 Q. For example, in paragraph 11, Basin 2005
19 addresses an example where the first phosphor may be
20 yellow, yellow-green or green -- e.g., a YAG phosphor --
21 and the second phosphor may be red, e.g., a calcium
22 sulphate phosphor.

1 A. It does say that, but it also has embodiments
2 where it's a single phosphor.

3 Q. In the next sentence in paragraph 11, it
4 provides a second example where there are two phosphors.
5 The first one is red and the second one is yellow,
6 yellow-green or green, so YAG, right?

7 A. I'm not sure what the question is. You said
8 "right" after you read the statement.

9 Q. I'm just saying that's an example that is
10 provided in Basin 2005, right?

11 A. What is provided? I'm sorry.

12 Q. What I just read. And I'll read it again. Open
13 quote, "In another embodiment, the first phosphor is
14 red, and the second phosphor is yellow, yellow-green or
15 green," end quote.

16 A. That is actually read from that paragraph.

17 MR. MCMAHON: Let's go off the record for
18 a second.

19 (Recess.)

20 THE WITNESS: There was a pending
21 question, and I think prior to that, that I -- I
22 didn't answer about the blue --

1 BY MR. MCMAHON:

2 Q. No, I think you answered everything.

3 A. -- blue UV -- sorry, two phosphors and UV or
4 something like that. You answered -- and then you
5 changed the question.

6 Q. You --

7 A. Because I had read through and found the answer,
8 if you're still interested in that question.

9 Q. I thought I covered everything. If there's a
10 question I left hanging, I withdraw it.

11 A. Okay.

12 Q. Dr. Doolittle, I've just handed you a document
13 we've previously marked as Exhibit 1011. This is U.S.
14 patent publication number 2010/0124243. And we refer to
15 this as "the Hussell reference."

16 MR. BROWN: I believe you gave us Van
17 Woudenberg rather than Hussell.

18 MR. MCMAHON: My apologies. Hold on to
19 that one. We'll get to that eventually.

20 THE WITNESS: I thought that was a really
21 clever lawyering trick. You guys are really good.

22 BY MR. MCMAHON:

1 Q. Nope, definitely not. Here you go.

2 Okay. Now I have hand -- handed you a copy of
3 Hussell, which was previously marked as Exhibit 1011.
4 Do you see that?

5 A. I do.

6 Q. And you've -- you've analyzed this reference?

7 A. Yes.

8 Q. Hussell addresses replacement applications for
9 conventional incandescent or fluorescent lights, right?

10 A. In general, yes.

11 Q. And Hussell describes -- I'm referring to
12 paragraph 48. Hussell describes scattering light by
13 texturing the inner and outer surfaces of the tube wall,
14 112, right?

15 A. I'm sorry, 48? I apologize. I'm catching up to
16 you.

17 Q. No need to apologize.

18 A. Okay, I've read that now. What was your
19 question?

20 Q. Sure. Hussell described scattering light by
21 texturing the inner and outer surfaces of the tube wall,
22 112, right?

1 A. It ends in that paragraph by saying "other
2 light-guiding patterns may also be used." But in
3 general, yes.

4 Q. And Hussell does not specifically describe
5 adding an additional layer to scatter the light, right?

6 A. It does not describe adding an other light
7 layer, unless you're talking about the photo conversion
8 layer. Is that what you're referring to?

9 Q. By additional, I mean beyond the photo
10 conversion layer. So other than the -- the
11 wavelength-conversion layer, Hussell does not describe
12 adding an additional layer to scatter the light, right?

13 A. Unless you interpret it through the "other
14 light-guiding patterns may also be used." It doesn't
15 specifically call that out.

16 Q. Okay. Hussell doesn't describe using titanium
17 dioxide or any other material to obscure the color of
18 the wavelength conversion tube wall, right?

19 A. Is it -- as far as I recall, when you're
20 answering -- asking a -- it isn't in here, again, I'd
21 have to read the whole thing. But, no, I don't recall
22 that being anywhere in -- in Hussell.

1 Q. So I just handed you a copy of Exhibit 1020,
2 which you were referring to as Van Woudenberg.

3 Do you recognize that?

4 A. I do.

5 Q. Van Woudenberg addresses -- and I'm referring to
6 the abstract here, at the end of the abstract --
7 auxiliary lights in mobile phones are down-light units,
8 right?

9 A. That's -- that's one of the places it says is an
10 example, yes.

11 Q. And Van Woudenberg addresses the off-state white
12 appearance of the light, correct?

13 A. That is correct.

14 Q. And Van Woudenberg suggests that you should use
15 a residual current to keep the light energized and
16 create that white appearance, right?

17 A. That is, in general, what it's trying to do,
18 yes.

19 Q. Van Woudenberg doesn't say anything about adding
20 additional layers to maintain a white appearance,
21 correct?

22 A. And I didn't use it for that purpose in my

1 analysis, but I would agree with that. I used it for
2 the fact that it was specifying the wavelengths of the
3 blue LED. That's all I used it for.

4 Q. Van Woudenberg doesn't say anything about using
5 titanium dioxide?

6 A. Again, I'D have to look through the whole thing,
7 but I don't recall that being in there. I used this for
8 the wavelength of the blue LED.

9 I'd be glad to explain further, if you would
10 like, what I mean by that.

11 Q. All good. Thank you. You can set that one
12 aside. We're done with that for right now.

13 So the next series of questions, I'm going to
14 ask you about your declaration. Feel free to refer to
15 the declaration or refer to any of the other documents.
16 If there's any other document you need that you don't
17 have, let me know and I'll try to get it to you.

18 But I'm --

19 A. Clarifying question: Which declaration?

20 Q. Thank you. The -- the PTAB declaration.

21 I think we're finished with the district court
22 declaration, so you can set those aside.

1 A. Thank you.

2 Q. Do you have the exhibits all organized?

3 A. Yes, I believe so. I'm sorry. That's just my
4 nature to do that.

5 Q. Totally fine.

6 So I want to ask you some questions about what
7 you did or did not say in your declaration. And these
8 questions are going to be specifically directed to
9 what's in your declaration. Do you understand?

10 A. In general, yes.

11 Q. Okay. And I'm not looking for any new opinions
12 or any information you did not provide in your
13 declaration. I just want to make sure I fully
14 understand what is in your declaration. Do you
15 understand?

16 A. That -- that -- I understand. And I will make
17 the caveat again: If you're asking me word for word
18 what's in my declaration, that was ten months ago, so
19 I'm going to spend a lot of time looking things up. If
20 you believe something is in my declaration and you want
21 to speed things along, you can point me to a particular
22 section. That will speed things along. So it's your

1 choice.

2 Q. No, that's fine.

3 And you -- you read through the declaration in
4 preparation for today, right?

5 A. I did.

6 Q. Yeah. Okay.

7 So if you need to look at the declaration to
8 answer any of my questions, feel free to do that. You
9 can take your time. I just want to be sure that what
10 I'm looking for is what's in your declaration, not some
11 new information that's not in your declaration. Do you
12 understand?

13 MR. BROWN: Objection. To the extent you
14 need to provide new information, feel free to do
15 so.

16 MR. MCMAHON: Okay. I'm going to
17 specifically overrule that objection.

18 BY MR. MCMAHON:

19 Q. I'm asking you -- the scope of my question --
20 and I want to make sure we're clear on this. The scope
21 of my questions are limited to your declaration. I am
22 not looking for any information that's not in your

1 declaration. Do you understand?

2 MR. BROWN: Same objection.

3 THE WITNESS: I hear both -- I hear both
4 attorneys saying different things. So I will try
5 my best to answer the question as best as I can.

6 BY MR. MCMAHON:

7 Q. Okay.

8 A. That's -- that's all I can say.

9 Q. In your declaration you did not opine that any
10 of the prior art references taught using a
11 light-diffusing layer to reflect light back to a
12 wavelength-conversion layer, correct?

13 A. Again, it's a long document, ten months ago.
14 And I will say that I know that we talked about in here
15 increased intensity, which would be a byproduct of that,
16 for example; increased luminous intensity specifically.
17 So I will say certainly indirectly I did. Whether I
18 said those specific words or not, I can't recall.

19 Q. Sitting here today, can you point me to any
20 opinion in your declaration that addressed the prior art
21 at issue in this case, teaching using a light-diffusing
22 layer to reflect light back to a wavelength-conversion

1 layer?

2 MR. BROWN: Objection. Are you asking
3 him to read it?

4 BY MR. MCMAHON:

5 Q. I'm asking if, sitting here today, you can point
6 me to any opinion in your declaration in which you
7 opined that any of the prior art you've discussed taught
8 using a light-diffusing layer to reflect light back to a
9 wavelength-conversion layer.

10 MR. BROWN: Same objection.

11 BY MR. MCMAHON:

12 Q. And to be clear, Dr. Doolittle, I'm talking
13 about in your declaration.

14 I'll state for the record, Dr. Doolittle, that
15 you're taking some time to review the prior art
16 references, and that's fine, but my question is limited
17 to the scope of your declaration. I'm not looking for
18 new opinions on the prior art that were not provide in
19 your declaration.

20 A. I'll clarify why I'm doing that, is that the
21 prior art has just a few pages of text, and my
22 declaration has 110 pages of text. And I know the

1 specific passage I'm looking for, and so when I find the
2 specific wording, I can scan my document, as opposed to
3 reading the full 110 pages here. That will tell me
4 essentially what section to look in my -- my
5 declaration. I apologize if that -- my methods were not
6 quite clear.

7 Having reviewed what I wanted to review, would
8 you mind asking your question one more time?

9 Q. Sure.

10 In your declaration, you did not opine that any
11 of the prior art references taught using a
12 light-diffusing layer to reflect light back to a
13 wavelength-conversion layer?

14 A. As that was not one of the claim elements of the
15 '678 Patent, I did not opine on that, with the exception
16 that I noted earlier that it's buried in the idea that
17 the luminous output is increased, which is a byproduct
18 of that interior function, wasn't relevant to the claim.

19 Q. And you did not opine in your declaration that
20 any of the prior art references taught using a
21 light-diffusing layer to reduce the amount of material
22 necessary for wavelength conversion, correct?

1 A. Could you repeat the question?

2 Q. Sure.

3 In your declaration, you did not opine that any
4 of the prior art references taught using a
5 light-diffusing layer to reduce the amount of material
6 necessary for wavelength conversion?

7 A. As that was not part of the -- of any of the
8 claims of the '678 Patent -- again, that was an interior
9 function that is certainty a design choice -- I did not,
10 as far as I recall, opine on -- on that statement.

11 MR. MCMAHON: Okay. Let's go off the
12 record.

13 (Recess.)

14 BY MR. MCMAHON:

15 Q. Dr. Doolittle, I'd like to go back to your
16 declaration, Exhibit 1002, and continue some of the
17 questions -- or continue the type of questions I was
18 asking before, where I'm going to ask you whether
19 something is in your declaration or not. I'm not
20 looking for new opinions, new information. Just want to
21 know, if you have opined on it, where in your
22 declaration you said it. Do you understand?

1 A. I do.

2 Q. So the first one is, you did not explain in your
3 declaration why one of ordinary skill in the art would
4 have combined teachings involving a flash bulb with
5 teachings involving an automobile headlight?

6 MR. BROWN: Objection.

7 BY MR. MCMAHON:

8 Q. Correct?

9 A. I -- I think that's mischaracterizing Basin, for
10 example. I'm -- as I previously said, Basin actually
11 has the -- both those application has projectors as well
12 as flash objects in it. So I don't know how to answer
13 your question as a yes or no because I think it
14 mischaracterizes what Basin does.

15 MR. MCMAHON: So objection as
16 nonresponsive. Move to strike.

17 BY MR. MCMAHON:

18 Q. My question is not about Basin in particular.
19 My question is a very specific one, just on the terms of
20 the question itself. Is there any place in your
21 declaration that you talked about the motivation for one
22 of ordinary skill in the art to combine the teachings

1 involving a flash lamp, a camera flash, with the
2 teach- -- with other teachings involving an automobile
3 headlight?

4 MR. BROWN: Objection.

5 THE WITNESS: I -- I find the question
6 irrelevant to the claims that I was analyzing. And
7 I'd -- I'll add to your statement -- I'll agree and
8 add that I also didn't discuss the internal
9 combustion engine either because neither one of
10 those are relevant to the claims of the -- of the
11 '678 Patent.

12 BY MR. MCMAHON:

13 Q. So your answer is, no, you did not discuss that
14 motivation to combine?

15 MR. BROWN: Objection.

16 THE WITNESS: I think I answered your
17 question as a no, with the caveat that it was not
18 relevant to any of the claims. The series of
19 questioning so far has been not relevant to the
20 claims that I was asked to analyze.

21 BY MR. MCMAHON:

22 Q. In your declaration you did not explain why one

1 of ordinary skill in the art would've combined teachings
2 regarding blue LEDs with teachings regarding UV LEDs,
3 correct?

4 MR. BROWN: Objection.

5 THE WITNESS: I don't think I -- to the
6 best of my memory, I don't think that there was any
7 teaching that -- that did not -- well, I don't
8 think there was any teaching, as best I recall,
9 that combined blue and UV LEDs of any kind.

10 BY MR. MCMAHON:

11 Q. So, just to confirm, in your declaration you did
12 not provide any opinion regarding why one of ordinary
13 skill in the art would've combined teachings involving
14 blue LEDs with teachings including UV LEDs?

15 MR. BROWN: Objection.

16 THE WITNESS: If I can clarify. Because
17 I think I answered that question differently, so I
18 want to clarify my answer. I interpret your
19 question as combining blue and UV LEDs. Your
20 question is teachings about blue and combining
21 teachings about UV LEDs; is that correct?

22 BY MR. MCMAHON:

1 Q. That's correct. So let me restate the question
2 for clarity.

3 In your declaration, you did not opine on why
4 one of ordinary skill in the art would've combined
5 teachings directed to blue LEDs with teachings directed
6 to UV LEDs, right?

7 MR. BROWN: Objection.

8 THE WITNESS: I don't recall that being
9 at any of the issues in the claims that refers to
10 -- to blue LEDs, and that's what I discussed in my
11 declaration.

12 BY MR. MCMAHON:

13 Q. So the answer is, no, you did not provide that
14 opinion --

15 MR. BROWN: Objection.

16 BY MR. MCMAHON:

17 Q. -- correct?

18 A. I am -- I'll just have to say I don't recall,
19 because your question is combining multiple things that
20 I -- I know that several of the -- of the patents talk
21 about blue LEDs and UV LEDs and several of them talk
22 about just blue LEDs, yeah. So why UV LEDs are being

1 discussed when the claims are talking about blue LEDs, I
2 don't know why we're talking about that, but I'll leave
3 it to you guys that know better than me.

4 Q. So I'm just looking for an answer to the
5 question and not the surrounding commentary, okay. Is
6 there any -- sitting here today, is there any place in
7 your declaration you can cite an opinion you have
8 provided that explained why one of ordinary skill in the
9 art would've combined teachings directed to blue LEDs
10 with other teachings directed to UV LEDs?

11 MR. BROWN: Objection.

12 THE WITNESS: I think that
13 mischaracterizes what I stated, and I'll say that
14 -- to answer your question directly, there -- with
15 the asterisk that it mischaracterizes what I said,
16 there is, as far as I know, no reason to combine UV
17 and blue LEDs, because the claims refer to blue
18 LEDs. And that's what I discussed in my
19 declaration.

20 BY MR. MCMAHON:

21 Q. Titanium dioxide has a different effect on the
22 light emitted from blue LEDs as compared to the light

1 emitted from UV LEDs, correct?

2 A. In general, no. Depends on what type and form
3 of titanium dioxide and particles of titanium dioxide,
4 the size of the particles, the roughness of the
5 particles. There's a lot of factors. So I have to
6 answer that question, in general, no, but it can,
7 depending on the form.

8 Q. Titanium dioxide is transparent to light of all
9 visible colors, right?

10 A. Titanium dioxide is roughly 3.2 eV band gap. So
11 I'd have to convert that into the wavelength to -- to do
12 it, and at this point I'd say that it would be
13 marginally absorbing at the deep violet blue boundary.

14 Q. Titanium dioxide absorbs UV light, right?

15 A. It can.

16 Q. If you could turn to page -- paragraph 46 in
17 your declaration. That's on page 15.

18 A. Page 46 or paragraph?

19 Q. Page 15, paragraph 46, middle of the paragraph.

20 A. Yes.

21 Q. Do you have that?

22 A. Yes.

1 Q. And I'm looking at the sentence that begins with
2 the word "because." And I'm going to skip to the second
3 clause of that sentence and read that. After the comma,
4 it begins, quote, "the 3.0 to 3.2 eV band gap titanium
5 dioxide semiconductor particles are transparent to all
6 visible colors but absorb UV light," end quote.

7 Did I read that correctly?

8 A. You read that correct.

9 Q. So --

10 A. And that's what I was saying, that the 3 point
11 -- 3.2 eV band gap was approximate value.

12 Q. In -- when using UV LEDs, the phosphor absorbs
13 all of the light from the LED, right?

14 A. Could you further clarify which light you're
15 talking about from the LED? Are you talking about the
16 primary light? Are you talking about UV light? Are you
17 talking about -- which phosphor? Because some phosphors
18 don't absorb certain parts of blue and other phosphors
19 do. I mean...

20 Q. I'm saying -- referring to UV LEDs generally and
21 saying that generally the phosphor absorbs all of the UV
22 light, correct?

1 A. It depends on the choice of phosphor.

2 Q. Can you turn to paragraph 52, please, on page
3 18. The last sentence of paragraph 52, I'll just read
4 that: Quote, "UV LEDs operate similarly, except they
5 generally absorb all of the light from the LED and emit
6 blue, red, yellow and/or green, such that the
7 combination appears white," end quote.

8 Did I read that correctly?

9 A. You read that correctly, including the caveat
10 that you didn't have in the question, nor in my answer,
11 "generally absorb."

12 Q. I actually did say "generally" in the question,
13 but we'll move on from that.

14 A. I apologize if I missed that word. That was why
15 I was making the distinction. There are some phosphors
16 that do not absorb all of the light. And if the
17 phosphor, whether in general -- whether it absorbs all
18 of the light depends on the thickness of the phosphor,
19 the type of phosphor, the shape of the phosphor, the
20 size of the phosphor. All of those things factor in.

21 Q. Speaking of phosphors, in your declaration you
22 did not explain why one of ordinary skill in the art

1 would've combined teachings about one type of
2 phosphor -- YAG, for example -- with teachings involving
3 a different type of phosphor, correct?

4 MR. BROWN: Objection.

5 THE WITNESS: My declaration addressed
6 the '678 claims, and the claims are, in general,
7 just talking about phosphors. They do have the
8 provision in Claim 3 that there could be more than
9 one -- it says "at least one phosphor material"
10 there in that claim. So, clearly, there would be a
11 motivation to talk about -- or -- or to use
12 materials that refer to more than one phosphor
13 material, and that's what I did.

14 BY MR. MCMAHON:

15 Q. Dr. Doolittle, can you point me to the paragraph
16 in your declaration where you provided an opinion that
17 teachings regarding one type of phosphor can be used
18 with teachings regarding a different type of phosphor?

19 MR. BROWN: Objection.

20 THE WITNESS: Okay. So to answer your
21 question, Shimizu talks about all kinds of
22 phosphors, and in paragraph 102 I talk about

1 "Shimizu discloses a prior art white light LED
2 light source. It includes a detailed discussion of
3 the components of the white light emitted by the
4 white light source" -- "the white light LED source
5 as referenced above." That -- that reference has
6 multiple different phosphors in it. Figures 8 --
7 if I'm doing this from memory, Figures 18 through
8 22, 23, whatever the last figure is, all have
9 different phosphors in them.

10 MR. MCMAHON: Objection. Move to strike
11 as nonresponsive.

12 BY MR. MCMAHON:

13 Q. Dr. Doolittle, I'm not asking about the content
14 of any of the prior art. I'm asking about the content
15 of your declaration. Where -- so you pointed to
16 paragraph 102. That's fine.

17 A. Which is what I pointed to, yes.

18 Q. Okay. So I see paragraph 102. Is there any
19 other paragraph in your declaration in which you have
20 opined that one of ordinary skill in the art would have
21 been motivated to combine the teachings about one type
22 of phosphor with other teachings about a different type

1 of phosphor?

2 MR. BROWN: Objection.

3 THE WITNESS: Is the question,
4 motivation? Because 102 definitely talks about
5 having different phosphors as part of the elements
6 of the white light LED.

7 BY MR. MCMAHON:

8 Q. You've identified 102, so that's fine. I'm
9 asking if there's any other paragraph in which you've
10 opined in your declaration that one of ordinary skill in
11 the art would have been motivated to combine teachings
12 about one type of phosphor with other teachings about a
13 different type of phosphor?

14 MR. BROWN: Objection.

15 THE WITNESS: So the key of what you're
16 saying is the motivation to -- to combine? Is that
17 what you're asking? I'm -- because I've -- I think
18 I've answered your question by showing you that
19 Shimizu does have multiple phosphors in it. And as
20 I do call that in -- out as -- indirectly as
21 elements of the white light LED.

22 So I'm -- I'm trying to answer -- figure

1 out what I didn't answer in your question that you
2 objected to, so I can answer it correctly.

3 MR. MCMAHON: So, objection. Move to
4 strike the discussion of Shimizu as nonresponsive.

5 BY MR. MCMAHON:

6 Q. What I'm looking for is words on the page of
7 your declaration in which you have opined that one of
8 ordinary skill in the art would have been motivated to
9 combine the teachings regarding one type of phosphor
10 with teachings regarding a different type of phosphor.

11 MR. BROWN: Objection.

12 THE WITNESS: I was -- suppose I would
13 have known this -- how to apply it to multiple
14 different phosphors, so that -- that's a given.
15 But if you're looking for words on the page, again
16 I would point you to Section 102, which you did not
17 seem to appreciate as -- as fulfilling that.

18 MR. MCMAHON: So, again, I'm going to
19 move to strike the nonresponsive portion of your
20 answer.

21 BY MR. MCMAHON:

22 Q. I understand you pointed to section -- to

1 paragraph 102. What I'd like to know is, is there any
2 other paragraph -- and that's fine. I accept your
3 answer, paragraph 102. What I'd like to know is, is
4 that the only one, or is -- are there other paragraphs
5 in your declaration in which you have addressed the
6 motivation of one of ordinary skill in the art to
7 combine teachings regarding one type of phosphor with
8 other teachings regarding a different type of phosphor?

9 MR. BROWN: Objection.

10 THE WITNESS: I'm trying to answer your
11 question, and I keep going back to 102, which
12 you've rejected. And so I'm -- I will have to just
13 answer the question in the following way, is that
14 beyond what I've already answered, which you didn't
15 seem to accept, I do not recall in my declaration
16 whether that's in there or not.

17 BY MR. MCMAHON:

18 Q. And to be clear, Dr. Doolittle, I'm not
19 rejecting or -- or declining to accept your answer on
20 paragraph 102. I accept that. That was your answer. I
21 just want to make sure that I have exhausted the
22 paragraphs in your declaration that address this topic.

1 If you are aware, sitting here today, of any other
2 paragraph in your declaration that addresses whether one
3 of ordinary skill in the art would've been motivated to
4 combine teachings about one type of phosphor with
5 teachings about a different type of phosphor, I'd like
6 you to point me to those paragraphs today so I know
7 about them. If you don't recall, that's fine.

8 MR. BROWN: Objection. I think you did
9 reject his answer when you moved to strike it as
10 nonresponsive, which -- I don't know why you keep
11 on doing that. But it seems like you're suggesting
12 to him that you don't like the answer and so I
13 believe that's what the issue is.

14 MR. MCMAHON: So let me be clear about
15 that. I move to strike the discussion of Shim- --
16 of what's in Shimizu.

17 Let me pause for a second.

18 (Discussion off the record.)

19 MR. MCMAHON: So what I move to strike as
20 nonresponsive is the discussion of the contents of
21 Shimizu, because that's not what I'm asking about.

22 BY MR. MCMAHON:

1 Q. I'm asking about the contents of your
2 declaration. You've pointed to paragraph 102, and I
3 accept that. That's your answer. I just want to know
4 if that answer is complete or if there are other
5 paragraphs in the declaration that address this topic.

6 MR. BROWN: Is that a question?

7 MR. MCMAHON: Yes.

8 BY MR. MCMAHON:

9 Q. So when -- to clarify the record, let me ask
10 again.

11 You've identified paragraph 102. What I'd like
12 to know is, is there any other paragraph in your
13 declaration in which you opined about the motivation for
14 one of ordinary skill in the art to combine the
15 teachings about one type of phosphor with teachings
16 about a different type of phosphor.

17 MR. BROWN: Objection. Asked and
18 answered.

19 THE WITNESS: As -- given what's going on
20 here, I -- I have to answer it in the following
21 way: Shimizu teaches multiple phosphors. It
22 teaches blue LEDs. It teaches -- it teaches the

1 light-diffusing layers. And -- and as such, since
2 I included that in the elements of the white light
3 LED -- hopefully all of us have read Shimizu at
4 this point, and by the time we sit at the table
5 here today we know what's in Shimizu. I think
6 that's the answer to your question, is...

7 MR. MCMAHON: I'm sorry I have to keep
8 doing this, but again I'm going to object as
9 nonresponsive and move to strike.

10 BY MR. MCMAHON:

11 Q. I'm not asking about what's in Shimizu. I'm
12 asking about what's in your declaration, and --

13 A. Shimizu is in my declaration.

14 Q. But -- okay. Let me distinguish between two
15 things. We have prior art -- various prior art
16 references. They teach certain things. We also have
17 your opinions. I'm here to ask about your opinions,
18 what -- the words on your page. And if -- if your
19 counsel is going to point to something in your
20 declaration that supports the notion that it would be
21 obvious to combine teachings about one type of phosphor
22 with teachings about a different type of phosphor in

1 your declaration, I'd like to know which paragraphs
2 those are. I can't think of anyone better than you, as
3 the author, to point me to those paragraphs.

4 You've pointed me to 102. That's fine. Are
5 there any other paragraphs, sitting here today, that you
6 can point me to that address this topic?

7 MR. BROWN: Objection. I move to strike
8 that as nonresponsive.

9 THE WITNESS: Okay. So, yes, for other
10 paragraphs, I will continue to say that in
11 paragraph 214, it -- Shimizu is discussed in terms
12 of white light LEDs again in that paragraph, and is
13 incorporated into Stokes by reference. And, again,
14 it's talking about -- Shimizu talks about multiple
15 phosphors. As the patent doesn't describe -- limit
16 itself to a single phosphor, the -- there's no
17 reason to restrict it to -- to one phosphor.

18 BY MR. MCMAHON:

19 Q. Okay. So paragraph 214?

20 A. Just --

21 Q. Any others?

22 MR. BROWN: Same objection.

1 THE WITNESS: So in 215 I say, "A POSA
2 would have been motivated to use a white light LED
3 light source disclosed by Stokes and Shimizu as a
4 conventional white light LED for that of
5 Krummacher."

6 So there's -- there's an example again of
7 using Shimizu, which has multiple phosphors in it.

8 BY MR. MCMAHON:

9 Q. Okay. Paragraph 215. Any others?

10 MR. BROWN: Same objection.

11 BY MR. MCMAHON:

12 Q. And for purposes of this question, it's
13 sufficient to just point me to the paragraph numbers. I
14 don't need any further explanation.

15 MR. BROWN: Objection.

16 THE WITNESS: Well, for the same reasons
17 that Basin talks about having multiple phosphors,
18 red, yellow and blue, for example, the entire
19 section on 47, ground 1, for example, which
20 incorporates Basin's teachings in it, would again
21 be the motivation. It's clear that Basin talks
22 about multiple phosphors, as well as the Shimizu.

1 BY MR. MCMAHON:

2 Q. You're referring to paragraph 107?

3 A. I'm talking about the entire section of -- under
4 ground 1, which involves Basin, for example. Since
5 Basin talks about multiple phosphors, and I've
6 incorporated Basin into the teaching -- if you read
7 Basin, you'll see that there was, in fact, multiple
8 phosphors there as the patent in claim -- was it claim
9 element -- I wanted to say 3. Claim element 3 talks
10 about "comprises a mixture of at least one phosphor."

11 Q. So you're saying that paragraphs 107 through --
12 through 125 all address the motivation to combine
13 teachings about one type of phosphor with teachings
14 about another type of phosphor?

15 MR. BROWN: Objection.

16 THE WITNESS: I'm saying that they --
17 they incorporate references which -- I talk about
18 the references in detail that have multiple
19 phosphors in them. That's -- that's your
20 motivation, I guess.

21 BY MR. MCMAHON:

22 Q. So, Dr. Doolittle, you were hired to provide an

1 opinion. You did that in a declaration. You have a
2 rather lengthy declaration. It's petitioner's burden,
3 with your support, to identify the basis for each
4 ground, including the motivation to combine. I'm just
5 trying to find the paragraphs I can look to for finding
6 a particular motivation to combine; the motivation being
7 the motivation to combine teachings about one type of
8 phosphor with teachings about another type of phosphor.

9 You've identified a few paragraphs. If that's
10 all the paragraphs, that's fine. I'm just looking for
11 which paragraphs can I look to and can I cite the board
12 to -- which -- which paragraphs would you identify for
13 the board if asked where you have provided an opinion
14 that one of ordinary skill in the art would have been
15 motivated to combine the teachings about one type of
16 phosphor with the teachings about a different type of
17 phosphor.

18 MR. BROWN: Objection. Counsel's
19 testifying again. And misstates the law.

20 THE WITNESS: In an attempt to answer
21 that, I'd just say that I am a professor. I'm a
22 researcher. I'm not a lawyer. So you guys can do

1 the law thing back and forth. That -- that's
2 y'all's prerogative.

3 When I'm asked to compare references to
4 look and see if there's something in the prior art
5 that would invalidate something in the claims,
6 there's -- there's things that are very obvious.
7 And when I say "obvious," I mean in the nonlegal
8 way, meaning that things are clear. For example,
9 if you ask me to compare two cars, are these -- is
10 this 1990 car the same -- is it also a car as is a
11 2025 car, I don't have to look at the paint and
12 analyze the paint to tell that they're cars, right.

13 That's the level that -- this is a
14 packaging patent, largely. Right. The LEDs --
15 even '678 says it's a conventional LED, it's
16 available. These are off-the-shelf things, is what
17 we're talking about, right. The phosphors were
18 well known. That stretches back hundreds of years
19 to fluorescent lights, right. There was some --
20 obviously there's some innovations that happen over
21 time, but these phosphors are well known.

22 So I think what you're asking me to do is

1 to go into a level of detail that I felt like was
2 unnecessary because the phosphor that's in '678 is
3 not specified in the claims. It's not specified if
4 it's one or more. It says both are covered in
5 Claim 3. And as such, I -- I used references that
6 talk about single phosphors, double phosphors, even
7 three phosphors in some of these references. Did I
8 compare the paint on an older car to a newer car?
9 That's up to you, as attorneys, to determine if --
10 if my level of my report is -- is detailed enough.

11 But for a POSA, there's no question that
12 every element that I've cited in my report that's
13 in '678 -- every element is in multiple references
14 that were prior to it.

15 BY MR. MCMAHON:

16 Q. Are you finished?

17 A. Yes, please.

18 MR. MCMAHON: Objection. Nonresponsive.

19 Move to strike.

20 BY MR. MCMAHON:

21 Q. Dr. Doolittle, I'm just looking for an
22 identification of paragraph numbers in your declaration.

1 A. I've given you --

2 MR. BROWN: Objection. Asked and
3 answered.

4 THE WITNESS: I've given you several.
5 I'm -- several paragraphs that I'll stand on.

6 BY MR. MCMAHON:

7 Q. Sitting here today, are there any other
8 paragraphs you would identify?

9 MR. BROWN: Objection. Asked and
10 answered multiple times.

11 THE WITNESS: As -- as beyond what I've
12 already answered, I will say that multiple ones of
13 these patents have multiple phosphors in them, and
14 I reference those in my report.

15 MR. MCMAHON: Objection. Nonresponsive.
16 Move to strike.

17 BY MR. MCMAHON:

18 Q. Can you identify any other paragraph numbers in
19 your declaration on this topic?

20 A. At this point --

21 MR. BROWN: Sorry. Let me --

22 THE WITNESS: Sorry.

1 MR. BROWN: Objection. Asked and
2 answered.

3 THE WITNESS: At this point in this
4 discussion, I'll just answer and say that beyond
5 the paragraphs that I've talked about, there may be
6 other references to other patents that I -- I --
7 would also have multiple phosphors in them. But at
8 this point, I would just say I cannot recall
9 specifically those paragraphs.

10 MR. MCMAHON: Okay. Thank you.

11 Let's go off the record.

12 (Recess.)

13 BY MR. MCMAHON:

14 Q. Dr. Doolittle, I'd like to ask a few questions
15 about what -- about the disclosure in the '678 Patent.
16 So if -- you might want to grab that, keep it handy.

17 We talked a little bit about these topics this
18 morning, but I'd like to go into a little more detail.
19 So, first, do you agree that the '678 Patent provides
20 support for the idea of having a diffusing layer of
21 uniform thickness?

22 MR. BROWN: Objection.

1 BY MR. MCMAHON:

2 Q. And for your convenience, I -- I direct you to
3 column 8, line 19, but feel free to look at other parts
4 of the patent if you want.

5 A. I'm sorry, what row was -- you said "column
6 8" -- what?

7 Q. Line 19.

8 A. The patent says that the diffusing layer 44
9 comprises a uniform thickness layer of particles of a
10 light-diffractive material, preferably titanium dioxide,
11 TiO₂. I think you read that line before, so it's there.

12 Q. So there is support?

13 MR. BROWN: Objection.

14 THE WITNESS: Well, it's in the -- it's
15 in the -- the -- the description of Figure 2 for
16 sure.

17 BY MR. MCMAHON:

18 Q. Okay. What about the idea of -- sorry. Bear
19 with me. Strike that.

20 Does the '678 Patent provide support for the
21 idea of configuring a diffusing layer to obtain
22 substantially uniform color for emitted light from the

1 LED for angles over a range of plus or minus 60 degrees
2 from the emission access?

3 MR. BROWN: Objection.

4 BY MR. MCMAHON:

5 Q. And for that one, for convenience, I'd direct
6 you to Claim 22.

7 A. Since you worded the question "support," I -- I
8 would have to say that while the claim does make the
9 claim of -- of substantially uniform color for emitted
10 light, so on, so on, so on, so -- for plus and minus
11 60 degrees, I would say there's -- because of the
12 wording of the -- your question involving support, I
13 would say that there's -- that -- that -- only
14 marginally so, I guess I would say, because it only
15 teaches that with the large particles in the data that's
16 supported in the patent.

17 Q. Can you explain that a little bit more?

18 A. So in my view, '678 is a little bit of an odd --
19 oddly written patent in that, for example, graphs from
20 Figure 4 all the way through Figure 7 and 8 -- all of
21 that data is for 5-micron particles, and then it turns
22 around and shifts and suddenly starts talking about blue

1 light and pulls the figure, which is the contested
2 figure, Figure 10, from the literature.

3 So all the supporting data for the '678 Patent,
4 Figures 4 through 8 that talk about uniformity, talk
5 about color changing and those kinds of things, come
6 from a different particle size that is substantially
7 different from what is used to try to get the blue
8 greater than the yellow kind of stuff in Figure 10.

9 So since you used the term "support," I would
10 have to say -- if I am restricted to a yes-or-no answer,
11 I would say no. If I'm restricted to -- allowed to
12 verify -- elaborate, I would say marginally at best.

13 Q. Okay. So just to clarify, your answer is -- is
14 either "no" or "marginally at best," right?

15 A. Yes.

16 Q. And my follow-up question, which I think you
17 have at least in part already answered, is, why?

18 And maybe you fully answered that, but is there
19 anything else you would say about why you believe that
20 the support -- there is no support or, at best, there is
21 marginal support for that idea?

22 A. The reason why I say it is that, again, there

1 seems to be two concepts, if you will, that are being
2 discussed and claimed. There has been a lot of -- some
3 of the claims go toward blue being scattered more than,
4 say, yellow or green or what have you. Others just talk
5 about uniformity and intensity.

6 The uniformity and intensity, which is what
7 you're asking the question about, is all based on
8 5-micron particles that -- in my estimation, there's a
9 lot of -- there's a lot of disparity between the two
10 ideas. There's not any data shown, for example, for the
11 blue being disbursed more than -- than the yellow.
12 That's all the theoretical curve from DuPont's work.

13 And so when you're -- when you're talking about
14 what it would be able to do to -- to -- there's not any
15 real way to unify these two ideas in the '678 Patent.
16 There is in some of the prior art references, but not in
17 the '678 Patent.

18 Q. So would you agree that for 5-micron particles,
19 the '678 Patent provides support for the idea of
20 obtaining substantial -- sorry. Let me start that
21 question over.

22 Would you agree that for 5-micron particles, the

1 '678 Patent provides support for configuring the
2 diffusing layer to obtain substantially uniform color
3 for emitted light over a range of plus or minus
4 60 degrees from the axis of emission?

5 A. As does the prior art.

6 Q. But just to be clear, for the '678 Patent, your
7 answer is yes for 5-micron particles?

8 A. Impractically so. I would say that someone with
9 -- a POSA would look at this data that's in here and
10 have serious concerns about how to implement it, but --
11 but it's here. It's in the patent.

12 MR. BROWN: Did you say impractically or
13 in practically?

14 THE WITNESS: In -- not practical.

15 Sorry.

16 BY MR. MCMAHON:

17 Q. Okay. Would you agree that the '678 Patent
18 provides support for the idea of configuring the
19 light-diffusing layer to substantially reduce the
20 quantity of phosphor material required to generate a
21 selected color of emitted light?

22 A. Well, I would actually say in some ways it -- it

1 teaches away from that in that, for example, the remote
2 phosphor in column 2, roughly middle of the page, it
3 says, "The remote phosphor device" -- which is the topic
4 of '678, is remote phosphor devices. "Remote phosphor
5 devices typically use a more" -- "a much larger layer of
6 phosphor materials as compared to non-remote phosphor
7 devices."

8 So that's -- that was known, but it -- it
9 teaches that in that way. So in some sense it does
10 discuss, as we talked about earlier, reducing the
11 phosphor content. But it's also using a remote phosphor
12 device, which uses much, much, much more phosphor than a
13 non-remote device would use.

14 Q. Have you finished?

15 A. Yes.

16 Q. If we go back to column 3, that's -- that's the
17 excerpt we discussed this morning, starting around line
18 21. I'll just give you a minute to find that.

19 A. Okay.

20 Q. You find it?

21 A. Yes.

22 Q. And I'm looking at the text that continues on

1 through line 32, with the figure 40 percent.

2 Do you see that?

3 A. Are we -- are we in column 2?

4 Q. Column 3.

5 A. I apologize. Okay.

6 Q. No problem. Column 3, lines 21 through 32.

7 A. I'm with you.

8 Q. And let me clarify a couple things. Would you
9 agree that in -- in that text that I just highlighted in
10 column 3, it ends with a discussion of reducing the
11 quantity of phosphor material required to generate a
12 given color emission product; e.g., by up to 40 percent
13 -- would you agree that that means a reduction compared
14 to the amount of phosphor -- phosphor material you would
15 need without the diffusing layer?

16 A. If you're restricting the subject to just remote
17 phosphor devices alone, I would agree. If you involve
18 all types of LEDs, including the non-remote phosphors, I
19 would disagree, because the remote phosphor would have
20 many -- much, much more phosphor in that device than a
21 non-remote phosphor would.

22 Q. Okay. So I --

1 A. So I would agree and disagree with your -- under
2 certain conditions.

3 Q. Let me unpack that a little bit.

4 If I understand you correctly, I think you're
5 saying that, by definition, a remote phosphor device is
6 going to require more phosphor than a non-remote
7 phosphor device.

8 A. In general, yes.

9 Q. And if we focus just on remote phosphor devices,
10 you can configure, as the '678 Patent describes, the
11 light-diffusing layer to reduce the amount of phosphor
12 required compared to a remote phosphor device without
13 the light-diffusing layer. Would you agree with that?

14 A. Say that last part again.

15 Q. Yeah, there's a lot built into that. Let me try
16 that again.

17 Focusing only on remote phosphor devices. So
18 let's set aside non-remote phosphor devices. And I want
19 to compare two things. One is a remote phosphor device
20 without a light-diffusing layer, and the other is a
21 remote phosphor device with a light-diffusing layer.
22 Would you agree that in the latter, you can configure

1 that light-diffusing layer to reduce the amount of
2 phosphor required compared to the remote phosphor device
3 without a light-diffusing layer?

4 A. It's not in -- not true in every situation. For
5 example, the phosphor layer may already be thin enough
6 to where if you thin it down, you would not have good
7 absorption. The phosphor may be substantially
8 inefficient, that you need to have more volume of it,
9 depending on what colors you're trying to get and what
10 phosphors you're trying to use.

11 But with those caveats and probably a dozen
12 other design constraints that you would have to factor
13 in, it is -- it is certainly stated in the patent that
14 that is a possibility.

15 Q. Okay. So in at least some cases, the '678
16 Patent provides support for using the light-diffusing
17 layer to reduce the amount of phosphor required?

18 A. Again, "support" is the -- is a strong word.
19 It's -- it hints at the possibility of it. It doesn't
20 show you how. It doesn't teach you how to do that. It
21 does not say how often light you have to bounce back
22 into the phosphor. It doesn't say what the bounds of

1 the phosphor thickness need to be. It more or less -- I
2 say -- I would use the word "hints," as opposed to
3 "support."

4 Q. So just to clarify, your answer on the question
5 about support is, no, it does not provide support?

6 A. Using the word "support," I would say that's too
7 strong of a word. It hints at it. It's mentioned in
8 the patent but doesn't describe how to do it.

9 Q. Okay. And then my follow-up question is the
10 why. You may have already answered that, but is there
11 anything you would add to why you believe that the '678
12 Patent only hints at that and doesn't support the idea?

13 A. Because, like with a lot of the questions that
14 have been asked today, there are so many other design
15 constraints that, you know, as I understand it -- and if
16 I'm wrong on the law, please correct me -- I have to
17 have a reasonable -- reasonable chance of performing
18 some sort of experiment to figure out all these
19 complicated details that aren't explained here in the
20 '678 Patent, not just for this particular topic, but
21 several of the other topics that you've brought up. And
22 because there's such a sparsity of support, to use your

1 word, for these statements, I won't use "support." I
2 would use "hints at," as opposed to supporting.

3 Q. And that's because there are other parameters,
4 other factors that would influence whether or not you
5 reduce the amount of phosphor?

6 A. Yes. Manufacturing parameters, even, that I
7 didn't mention is -- you don't want the phosphor to be
8 so thin that it has pinholes, or you don't want the
9 phosphor to be so thin that your -- your particles start
10 to agglomerate at the interfaces, which they tend to do
11 when it's thin. There's a lot of factors involved with
12 that, that just making the statement, eh, you can make
13 this -- the phosphor thinner if you do this -- maybe you
14 can, maybe you can't. It depends on so many other
15 factors that I -- I don't believe it supports, to use
16 your word, the making it thin, as much as I'd say it
17 hints at this possibility.

18 Q. Are those other factors within the knowledge of
19 one of ordinary skill in the art?

20 A. I would say it would take substantial
21 experimentation to -- to do that. Most of the stuff
22 I've described is empirically derived, where you do it

1 and you check it out, does it work. You take a
2 cross-section, you look and see if the particles are
3 agglomerating. You measure the light. Is it too thin?
4 It's -- is some areas being not uniform anymore or the
5 -- the light coming out is not uniform.

6 It would take substantial amount of
7 experimentation to do what -- what is described in that
8 one little sentence. And you'll notice the claims, I
9 don't think, if I'm -- I don't recall any of the claims
10 addressing some bound of shrinking the thickness of the
11 phosphor. I think the reason is they didn't do it.
12 It's not in the patent. They don't know. And without
13 substantial experimentation, I don't see that anyone
14 else would know.

15 Q. Is that experimentation within the capabilities
16 of one of ordinary skill in the art?

17 A. Well, I -- I would say that, substantial cost
18 and time, yeah, I'm sure that someone could do that with
19 substantial cost and time. But it's certainly not
20 described in enough detail for me to call it support of
21 that statement.

22 Q. Are there any -- you've -- you've referred to a

1 lot of other factors and parameters and you've
2 identified some of them. Are there any of those factors
3 or parameters that would affect this conclusion that
4 would be beyond the -- the knowledge of one of ordinary
5 skill in the art?

6 A. I haven't done -- that's -- there's so many of
7 these factors. I try to be very exact in my answers,
8 and I'd have to really dig into that and list out all
9 the factors and then compare it to what we've defined as
10 a person of ordinary skill in the art, and see if that
11 falls into that or whether that would take some
12 specialized skill, specialized tooling, for example. It
13 may take specialized tooling. That -- if you -- if
14 you're trying to, for example, deposit or -- or,
15 depending on the method of deposition, the phosphor to a
16 thinner layer, it may be beyond the tooling that you can
17 do.

18 And so perhaps in theory it's possible. But in
19 practice, the tool may not be able to do it. So there
20 would be things like that that I would think you would
21 have to look into that would be tool dependent, method
22 dependent.

1 Q. So you're saying it could be a scenario where,
2 sure, you have a light-diffusing layer that would allow
3 you to get by with less phosphor, but as a practical
4 matter, you can't build the device with less phosphor?

5 A. There could be situations where that could come
6 up because of manufacturing restrictions.

7 Q. Would you agree that the '678 Patent provides
8 support for the idea that average particle size may be
9 selected such that the light-diffracted material
10 scatters more blue light than yellow light?

11 A. I would say there is absolutely zero
12 experimental information in the '678 Patent to show that
13 that's possible. I would say that the physics of that
14 have been known since the '70s. And the DuPont figure
15 that they included is -- well, it's a theoretical
16 figure, at least hints to the physical mechanism that
17 has been known since the '70s.

18 So if you're counting on that one DuPont Figure
19 10, then at least a figure is there. I don't think it's
20 unique. I don't think it's original to the '678, but it
21 is -- there is a figure there that describes that.

22 Q. Would one of ordinary skill in the art, bringing

1 to the table the knowledge of one of ordinary skill in
2 the art, understand how to select that particle size
3 based on what we read in the 68 -- '678 Patent?

4 A. Based on what we read in the '678 Patent?

5 Q. Yeah. I'm sorry, I don't mean to just say
6 "read." I should say based on the disclosure in the
7 '678 Patent, including the figures.

8 A. I think -- there's a -- I run into this a lot, I
9 mean, especially when we just say that, as an academic,
10 we're probably the worst about this. When we write a
11 patent, oftentimes we -- we will include theoretical
12 data and we won't necessarily provide the reader with
13 enough information to actually implement it.

14 So if you're asking me if there's theoretical
15 data in the '678 Patent that supports the scattering of
16 blue light over other wavelengths more so, the DuPont
17 Figure 10 is a theoretical paper that has been around
18 for at least a decade -- well, roughly a decade before
19 the '678, but it's there. But when you factor in other
20 things, it's got -- the theoretical paper has an
21 absolute particle size, and every single one of those
22 curves is -- is determined by a particle of known size.

1 And as someone manufacturing these things, we
2 don't have that luxury. We have an average. We have a
3 distribution. So you need to know the distribution of
4 particle sizes, but then you would -- then what is the
5 particle size? They're not round. They're -- they
6 could be the shape of a potato. They could be the shape
7 of a long string, even, in some rare cases. They're
8 not -- so what is the average? Because if -- on along
9 the access of the long length, it may not scatter the
10 blue light. In fact, it most likely wouldn't. But
11 along the axis of the short length of our potato, it
12 might.

13 So is there enough information for me to
14 practice that out of the '678? Absolutely not. Is --
15 is there enough information to -- for me to understand
16 what they're trying to go for? Yeah, but I need a
17 distribution of particle sizes. I need a -- I need the
18 size, shape -- even the way that you measure the
19 particle size would vary. How do we -- how do I connect
20 a real world particle, that's not ideal, to the theory
21 of that perfectly spherical particle that DuPont's
22 figure, Figure 10 in the '678 Patent, uses? I don't

1 have an answer for that. As a person with a lot of
2 experience in this, I don't have a way to connect the
3 theoretical particle size to the absolute average with a
4 distribution to tell whether I'm truly going to scatter,
5 for example, light twice as much that's in blue than --
6 than the other one. What do those curves look like if
7 you took a distribution of particle sizes?

8 Q. Okay. Earlier I mistakenly handed you
9 Krummacher. Do you still have it?

10 A. I do.

11 Q. I finally get to use it. I just have to find my
12 Krummacher.

13 So I've got a question, but I'm going to direct
14 you, before I start asking it, to paragraph 39, which is
15 on page 3. And my question is -- well, actually, let me
16 just read part of paragraph 39. Paragraph 39 begins,
17 quote, "In this exemplary embodiment, the
18 light-scattering translucent layer 6 contains
19 light-scattering particles 10 which, as illustrated in
20 Figure 2, serve to scatter environmental light 13,
21 striking the optoelectronic component from the outside."

22 Did I read that correctly?

1 A. I believe you did.

2 Q. So in that sentence, am I correct to understand
3 that Krummacher is -- is describing scattering of light
4 that's coming from outside the device?

5 A. Only for Figure 2. Figure 1 does from inside of
6 the device.

7 Q. Where in Krummacher is that -- is that
8 description of scattering from inside the device?

9 Actually, strike that. We can move on.

10 Krummacher does not describe 440-nanometer light
11 specifically, correct?

12 A. I don't think any -- any of the patents,
13 including '678, limit it to 440-nanometer light
14 specifically. There's a range above and including
15 440-nanometer. Is that what you're referring to in your
16 question?

17 Q. I guess what I'm saying is, Krummacher doesn't
18 mention specific wavelengths at all. Am I right about
19 that?

20 A. In a terse scan through, I believe that's
21 correct.

22 Q. You can set Krummacher aside for now.

1 Let's go back to your declaration. I'll give
2 you a paragraph number in just a minute. Page 47,
3 paragraph 107. This is where you begin your analysis
4 for ground 1, correct?

5 A. Yes.

6 Q. Ground 1 is based on the combination of Basin
7 2007 and Basin 2005, correct?

8 A. That is correct.

9 Q. I'd like to walk through this and just make sure
10 I understand what references you're pointing to for what
11 parts of the claims. So for purposes -- if we jump
12 ahead to paragraph 110, that's where you first address
13 the preamble. Do you see that?

14 A. Yes.

15 Q. And for the preamble, you're relying solely on
16 Basin 2007, right?

17 A. That will be correct.

18 Q. And the same for limitation 1A beginning in
19 paragraph 112; you rely solely on Basin 2007, right?

20 A. Yes. It has the phosphor in it. That's what
21 I'm relying on, is Basin 2007.

22 Q. And then starting at paragraph 114, limitation

1 1B, again relying solely on Basin 2007, correct?

2 A. Yes. Basin 2007 has the submicron TiO₂
3 particles in it, so that's what I relied on there.

4 Q. And then starting at paragraph 116, limitation
5 1C, here you're relying solely on Basin 2007, right?

6 A. Yes. Basin says, you know, it makes the -- if
7 you have the TiO₂ granules in the encapsulate, it makes
8 the LED appear whiter than -- than the LED in the off
9 state.

10 Q. And, Dr. Doolittle, for the sake of efficiency,
11 I'm just looking for yes or no. I just want to know if
12 there's -- I don't need to know what you're relying on,
13 just whether you're relying on anything other than the
14 reference that you identify there.

15 So starting at paragraph 119, limitation 1D, in
16 this section you rely on two references. One is Basin
17 2007 and the other is Basin 2005, correct?

18 A. I do, in this section, rely on two references.

19 Q. Okay. For Claim 2, starting at paragraph 126,
20 this section -- let me begin with a clarification:
21 Claim 2 depends from Claim 1, right?

22 A. Yes.

1 Q. So Claim 2 includes all of the limitations of
2 Claim 1?

3 A. Yes.

4 Q. Okay. I want to focus on just the -- the
5 additional limitation that's recited in Claim 2, not the
6 other limitations in Claim 1, which we already talked
7 about. Do you understand?

8 A. I do.

9 Q. Okay. So for the limitation that is recited
10 just in Claim 2, you rely solely on Basin 2007, correct?

11 A. So we're talking about Section, on page 55, 126?
12 Is that what you're referring to?

13 Q. Yes.

14 A. That is correct, just Basin 2007.

15 Q. The next section is -- in your declaration is
16 Claim 3, beginning with paragraph 130. And in this
17 section, for purposes of Claim 3, you rely on both Basin
18 2005 and Basin 2007, correct?

19 A. Claim 3?

20 Q. Yes.

21 A. So I'm answering these questions in a weird way
22 because all these claims depend on Claim 1, but you've

1 asked me to eliminate Claim 1 from the mix. It's a very
2 strange way to do an analysis. That's not what I did
3 here. I, of course, included everything that depends on
4 whatever.

5 But I do reference in that section, for the
6 section under Claim 3, paragraph 132 -- sorry, 130 to
7 136, I do reference both Basin 2005 and Basin 2007.

8 Q. Thank you for clarifying.

9 A. And that -- that clarification also applies to
10 Claim 2, the same question you asked me, to eliminate
11 all the other aspects of Claim 1, which, again, is a
12 very unusual way to analyze it.

13 Q. Thank you for clarifying that, as well.

14 Claim 6 is another dependent claim. And for my
15 question, I just want to the focus on the features
16 recited only in Claim 6, not the other features in the
17 claims from which it depends. And here, you rely solely
18 on Basin 2007, correct?

19 A. Actually, I include both. In paragraph 140 I
20 talk about which -- Basin 2005 has a lot of detail on
21 the manufacturing, and so I incorporate some of Basin
22 2005 in here, as well.

1 Q. Thank you for catching that. I missed that one.

2 Okay. So for Claim 6, you rely on both Basin
3 2005 and 2007?

4 A. Yes.

5 Q. Claim 7, I think you rely only on Basin 2007,
6 correct?

7 A. Yes. Taken, again -- separated from -- from
8 Claim 3, which depends on Claim 1, which -- I'm not sure
9 if you want me to include Claim 3, since it depends on
10 Claim 7 -- 7 depends on Claim 3. I'm trying to follow
11 the logic of your analysis, but you didn't specifically
12 ask me to exclude Claim 3 from that, so...

13 Q. No, you're following the logic perfectly. I'm
14 -- I'm trying to shorthand this a little bit and, for
15 the sake of efficiency and avoiding redundancy, not go
16 back and do Claim 1 again and again.

17 A. Okay.

18 Q. In Claim 7, you rely on Basin 2007 for the --
19 the weight loading of the titanium dioxide, right?

20 A. That is what Claim 7 is about, the weight
21 loading of the scattering material.

22 Q. And Basin 2007 discloses weight loading between

1 1 and 10 percent of the weight of the silicone, right?

2 A. Yes, for the submicron particles that are in
3 Basin versus the -- the super micron 5-micron particles
4 that are in -- in '678.

5 Q. Okay. Claim 9 is another dependent claim from
6 Claim 1, and I think there you only rely on Basin 2007,
7 correct?

8 A. Yes.

9 Q. Claim 10, I believe, is the same; you rely only
10 on Basin 2007?

11 A. Only 2007 for Claim 10 when you exclude Claim 1,
12 which you've asked.

13 Q. And the same is true of Claim 16, right?

14 A. Yes.

15 Q. For Claim 17, in paragraphs 154 and 155, you
16 rely only on Basin 2007, right?

17 A. I actually include 156, which is Basin 2007 in
18 view of 2005.

19 Q. And that's -- I was going to ask you about that
20 separately. Just to clarify, 150 -- paragraph 154 does
21 not refer to any prior art; that's just setting up the
22 claim language, right?

1 Sorry, I did not mean for that to be a tricky
2 question. Paragraph 154 does not expressly refer to any
3 prior art?

4 A. That is correct.

5 Q. Paragraph 155 expressly refers to Basin 2007,
6 right?

7 A. Yes. And you're correct. I think that, if I
8 may clarify why 156 has it, you're asking me a separate
9 question. You're asking me to take Claim 1 out, right.
10 And so if I answered your question with taking Claim 1
11 out you would need Basin 2005. But in -- in all of
12 these, whether it -- you know, is basically saying that
13 in every single one of these claims that comes from
14 Claim 1, Basin 2005 is included just to define the paint
15 on the car, if you will. A POSA knows that blue -- --
16 what blue is. There's no question, if you ask any LED
17 person, that says what a blue light-emitting diode is,
18 we know what that is.

19 But it's my understanding that you guys, as
20 attorneys, need it written. And so I'm just using Basin
21 2005 basically as it is written, blue LEDs have this
22 wavelength range.

1 Q. And in -- you refer to Basin 2005 in paragraph
2 156, right?

3 A. I do refer to Basin 155 -- 156 there.

4 Q. But you didn't do that, for example, in
5 paragraph 150 or 147. Is there a reason for that?

6 A. You're saying 150, Claim 10? It looks like
7 it -- for clarity, it should be there, right. And so
8 anytime a claim comes from Claim 1, which I depended on
9 using Basin -- both Basin references, anything that has
10 that dependency would -- would also feed through to
11 here.

12 I think it's -- I think, as your example of
13 questioning points out, it's understood, right, because
14 you're trying to skip over the redundancy of that just
15 like in writing this -- you know, if -- if Claim 3 comes
16 from -- sorry, Claim -- what is it -- 17, for example,
17 comes from Claim 1, I don't think I expressly needed to
18 have Basin 2005 in there. But it's -- it's certainly
19 more rigorous, if you will, to have it there. I think
20 your answer -- your questioning -- line of questioning
21 certainly supports that, as well, because we all
22 understand what you're talking about.

1 Q. And so just to clarify, for Claim 17, the
2 feature that is recited just in Claim 17, you're relying
3 only on Basin 2007 for that teaching, but you mention
4 Basin 2005 in paragraph 156 because you used it in Claim
5 1?

6 A. No. I mean, Basin 2005 has these -- these --
7 let me show you the figures. Sorry.

8 Q. And to be clear, Dr. Doolittle, I'm not looking
9 for a new opinion. I'm just trying to clarify the
10 opinion you have in your declaration. Am I correct that
11 in your declaration, in paragraphs 154 through 156,
12 you're only relying on Basin 2007 to disclose the
13 feature of Claim 17, not Basin 2005?

14 A. So both Basin 2005 and 2007 both describe
15 dome-shaped lenses or lenses in general, and that's why
16 it's included here. I don't know that I -- it would
17 look like that in this -- in my declaration, I did
18 not -- did not reference the -- the dome-shaped lens in
19 -- that's in the 2005 reference, which is on page 3.

20 Q. Okay. So in your declaration you relied only on
21 Basin 2007 for Claim 17?

22 A. Taken in isolation from Claim 1, as you've

1 asked, yes. But then, as I said, this -- that's not how
2 I did the analysis. So Basin 2005 is in that analysis.

3 Q. And maybe to ask it in a more precise way, for
4 purposes of Claim 17, you are relying on Basin 2005 only
5 for the specific wavelength of light; everything else
6 comes from Basin 2007, correct?

7 A. That's the predominant reason. I mean, as you
8 pointed out in this -- this case here, you know, there's
9 -- in -- in paragraph 41 of Basin 2005, there is a lens
10 there. It's just a shape -- a desired shape that would
11 fit into this discussion of the dome or elongated
12 dome-shaped light-diffusing layer. So it does fit in
13 that section, as well.

14 But certainly the predominant reason why I'm
15 using Basin 2005 throughout is to define the wavelengths
16 for you guys, as opposed to what I already know, that --
17 what blue LEDs are. It's more than 440 nanometers, is
18 where blue is.

19 MR. MCMAHON: Objection. Nonresponsive.

20 Move to strike.

21 BY MR. MCMAHON:

22 Q. I'm only asking about what's in your

1 declaration, Dr. Doolittle. I'm not asking for any new
2 opinions. I'm just trying to clarify that, as presented
3 in your declaration, your opinion for Claim 17 in ground
4 1 is based solely on Basin 2007, except for the specific
5 wavelength of light, for which you relied on Basin 2005;
6 is that correct?

7 MR. BROWN: Objection. You can file a
8 motion to exclude at the appropriate time if you'd
9 like.

10 THE WITNESS: Could you ask the question
11 again? I'm sorry.

12 BY MR. MCMAHON:

13 Q. Sure.

14 Within the scope of your declaration, your
15 opinion for Claim 17 under ground 1 was -- is based
16 solely on Basin 2007, except for the specific wavelength
17 of light, for which you relied on Basin 2005, correct?

18 A. I would say the -- my written opinion here. But
19 as I've expressed to you in verbiage -- in words today,
20 Basin 2005 also has the same support.

21 MR. MCMAHON: Objection. Nonresponsive.
22 Move to strike.

1 BY MR. MCMAHON:

2 Q. Dr. Doolittle, I'm just trying to explore what's
3 in the declaration. I understand you may have other
4 opinions on all sorts of things. For my time today, I'd
5 like to explore the opinions that you have disclosed to
6 us in your declaration.

7 A. Okay.

8 Q. So as to what's in your declaration, your
9 opinion for Claim 17 is -- under ground 1 is focused
10 solely on Basin 2007, except for the specific wavelength
11 of light, for which you relied on Basin 2005; is that
12 correct?

13 MR. BROWN: Objection.

14 THE WITNESS: I would say that I
15 didn't -- in the writing of this, I did not limit
16 it in the way that you're saying. I did include
17 paragraph 156, which says Basin 2007 in view of
18 Basin 2005. And I think, in -- in general, I use
19 Basin as you've described throughout these -- this
20 ground 1 -- ground 1 analysis in the way that you
21 describe, but I leave it open because I -- because
22 of the way I wrote it here, to include the

1 paragraph that is in Basin that describes a lens --
2 Basin 2005 that describes a lens.

3 BY MR. MCMAHON:

4 Q. Okay. Can you direct me to any paragraph in
5 ground 1 in which you've referred to the lens of Basin
6 2005?

7 A. No.

8 Q. Thank you.

9 For Claim 18, I believe it's the same situation;
10 you have relied exclusively on Basin 2007, except for
11 the specific wavelength of light in Claim 1, for which
12 you rely on Basin 2005; is that correct?

13 A. To save time on what we just went through with
14 the Claim 17, I'll just simply say that I discussed the
15 wavelength conversion component in reference to Basin
16 2007, but, again, Claim 18 descends from 17, which
17 descends from 1, so I have to have Basin 2005 included.

18 Q. Thank you for clarifying.

19 Claim 19 is an independent claim; it does not
20 depend on Claim 1. And here you rely solely on Basin
21 2007, correct, in your declaration?

22 MR. BROWN: I could use a break when

1 there's a good time to stop.

2 THE WITNESS: You might have found an
3 error there in that one, is that Claim 19 does have
4 the 440-nanometer phrase that every POSA would
5 know, for example. But you guys, as attorneys,
6 need to see it in writing, and so I should have
7 relied on Basin 2005 for that aspect of that -- of
8 that -- of that portion of the claim.

9 BY MR. MCMAHON:

10 Q. It's not mentioned there in your declaration,
11 right?

12 A. It does not appear to be, unless I'm missing it.

13 MR. MCMAHON: Okay. We can take a break.

14 (Recess.)

15 BY MR. MCMAHON:

16 Q. So, Dr. Doolittle, earlier, in one of our
17 discussions, you drew a distinction between remote
18 phosphor and non-remote phosphore. Do you recall that?

19 A. Yes.

20 Q. Does remote versus non-remote phosphor affect
21 any of your opinions in this case?

22 A. In terms of the '678 claims, they are general

1 enough that I -- I would say that it does not. In terms
2 of some of the questions you asked, it did. In terms of
3 phosphor usage and those kinds of questions, it does.

4 Q. In your -- in your declaration -- this is
5 another one of these questions where I'm just asking
6 about the content of your declaration. In your
7 declaration, did you provide any explanation as to why
8 one of ordinary skill in the art would have been
9 motivated to combine teachings related to remote
10 phosphors with teachings related to non-remote
11 phosphors?

12 MR. BROWN: Objection.

13 THE WITNESS: So, again, my -- my
14 declaration was analyzing the claims, and that
15 wasn't an aspect of the claims. So it wouldn't be
16 in that.

17 BY MR. MCMAHON:

18 Q. Some of the prior art you applied involved
19 remote phosphors, right?

20 A. Yes.

21 Q. And some involved non-remote phosphors?

22 A. Yes.

1 Q. Okay. Did -- in your -- in your declaration,
2 did you provide any opinion explaining why one of
3 ordinary skill in the art would have been motivated to
4 combine teachings from remote phosphors with teachings
5 from non-remote phosphors?

6 MR. BROWN: Objection.

7 THE WITNESS: Again, the claims did not
8 call that out. The claims were written more
9 general, and I addressed the claims. And, as such,
10 that's -- that's what's in my declaration.

11 BY MR. MCMAHON:

12 Q. Okay. But -- but just to be clear, you did
13 combine teachings from prior art related to remote
14 phosphors with other teachings from prior art involving
15 non-remote phosphors, right?

16 MR. BROWN: Objection.

17 THE WITNESS: I did not -- scratch that.

18 I -- scratch that. Let me look.

19 I don't recall at this late time of the
20 day.

21 BY MR. MCMAHON:

22 Q. We've been going for quite some time and we've

1 taken a bunch of breaks, lunch break and other breaks.
2 During any of those breaks, did you discuss the
3 substance of your testimony with your counsel?

4 A. No, I did not.

5 MR. MCMAHON: I pass the witness.

6 MR. BROWN: I have no questions.

7 MR. MCMAHON: Then I think we're
8 finished.

9 (The deposition was concluded at 3:38
10 p.m.)

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DISCLOSURE

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12 and Registered Professional Reporter
13 Commission Expires 10-22-2028
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2 COUNTY OF FULTON:

3 I hereby certify that the foregoing transcript was
4 reported, as stated in the caption, and the questions
5 and answers thereto were reduced to typewriting under my
6 direction; that the foregoing pages represent a true,
7 complete, and correct transcript of the evidence given
8 upon said hearing, and I further certify that I am not
9 of kin or counsel to the parties in the case; am not in
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CAPTION

The Deposition of WILLIAM A. DOOLITTLE, PH.D.,
taken in the matter, on the date, and at the time and
place set out on the title page hereof.

It was requested that the deposition be taken by
the reporter and that same be reduced to typewritten
form.

It was agreed by and between counsel and the
parties that the Deponent will read and sign the
transcript of said deposition.

CERTIFICATE OF REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

Before me, this day, personally appeared, WILLIAM
A. DOOLITTLE, PH.D., who, being duly sworn, states that
the foregoing transcript of his deposition, taken in the
matter, on the date, and at the time and place set out
on the title page hereof, constitutes a true and
accurate transcript of said deposition.

*If no changes need to be made on the following two
pages, place a check here ____, and return only this
signed page.*

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DEPOSITION ERRATA SHEET

Assignment No: 586716

Case Caption: SAVANT TECHNOLOGIES LLC d/b/a GE LIGHTING
and LEDVANCE LLC -vs- FEIT ELECTRIC COMPANY, INC.,

Witness: WILLIAM A. DOOLITTLE, PH.D.

DECLARATION UNDER PENALTY OF PERJURY I declare
under penalty of perjury that I have read the entire
transcript of my deposition taken in the captioned
matter or the same has been read to me, and the same is
true and accurate, save and except for changes and/or
corrections, if any, as indicated by me on the
DEPOSITION ERRATA SHEET hereof, with the understanding
that I offer these changes as if still under oath.

_____ There are no changes noted.

_____ The following changes are noted:

Page No.____ Line No.____
Should read:

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11 SIGNATURE OF DEPONENT

12 WILLIAM A. DOOLITTLE, PH.D. _____

13 Sworn to and subscribed before me
14 this ____ day of _____, ____.

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1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

2 I, Mary Susan DiFilippantonio, RPR, RMR, CRR, Court
3 Reporter and Notary Public within and for the State of
4 Georgia, do hereby certify:

5 That WILLIAM A. DOOLITTLE, PH.D., the witness whose
6 deposition is hereinbefore set forth, was duly sworn by
7 me before the commencement of such deposition and that
8 such deposition was taken before me and is a true record
9 of the testimony given by such witness.

10 I further certify that the adverse party, SAVANT
11 TECHNOLOGIES LLC d/b/a GE LIGHTING and LEDVANCE LLC, was
12 represented by counsel at the deposition.

13 I further certify that the deposition of WILLIAM A.
14 DOOLITTLE, PH.D., occurred at the offices of Regus -
15 Main Street Office Center, 320 West Lanier Avenue, Suite
16 200, Fayetteville, Georgia, on Tuesday, June 10, 2025,
17 commencing at 9:45 a.m., to 3:38 p.m.

18 I further certify that I am not related to any of
19 the parties to this action by blood or marriage, I am
20 not employed by or an attorney to any of the parties to
21 this action, and that I am in no way interested,
22 financially or otherwise, in the outcome of this matter.

1 IN WITNESS WHEREOF, I have hereunto set my hand on this
2 17th day of June, 2025.

3 My commission expires:

4 October 22, 2028

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Susan DeFilippantonio

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8 NOTARY PUBLIC IN AND FOR THE STATE OF GEORGIA.

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