In the Matter Of:

MICROCHIP TECHNOLOGY INC. v

APTIV TECHNOLOGIES AG

HENRY HOUH

December 18, 2024

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1 IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

2 _____

3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4 _____

5 MICROCHIP TECHNOLOGY INC.,
Petitioner,

6

7 V.

8 APTIV TECHNOLOGIES AG AND APTIV TECHNOLOGIES LIMITED,
Patent Owner.

9 _____

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Case No. IPR2024-00228
11 U.S. Patent No. 9,619,420

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ORAL VIDEOTAPED DEPOSITION
HENRY H. HOUH
DECEMBER 18, 2024
VOLUME 1

ORAL VIDEOTAPED DEPOSITION OF HENRY H. HOUH, via Zoom, produced as a witness at the instance of the Petitioner and duly sworn, was taken in the above-styled and numbered cause on the 18th day of December, 2024, from 9:01 a.m. to 5:04 p.m., before Melinda Barre, Certified Shorthand Reporter in and for the State of Texas, reported by computerized stenotype machine, all parties appearing remotely via web videoconference, pursuant to the rules of procedure and the provisions stated on the record or attached hereto.

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APPEARANCES
(ALL APPEARED VIA ZOOM VIDEO CONFERENCE.)

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EXHIBITS

EXHIBIT	DESCRIPTION	PAGE
Exhibit 0001	Screenshot of Figure 4, USB Hub Module	129
Exhibit 1082	Document Entitled "Independent Claims"	132

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THE VIDEOGRAPHER: We are on the record on December 18, 2024 at approximately 9:01 a.m. Eastern Time for the remote deposition of Dr. Henry Houh in the matter of Microchip Technology Inc. versus Aptiv Technologies AG and Aptiv Technologies Limited.

My name is Caylob Suarez, and I'm the videographer on behalf of Lexitas. Will counsel please introduce themselves and the party they represent, beginning with the party noticing this proceeding.

MR. JENSEN: This is Travis Jensen from the law firm Orrick, Herrington & Sutcliffe; and I represent the petitioner, Microchip Technology Inc.

MR. BLUMENKOPF: This is Bryan Blumenkopf from Morrison & Foerster. I'm here on behalf of the patent owner, Aptiv Technologies.

Before we begin I'd like to state for the record that we made Dr. Houh available in person. Petitioner has elected to take his deposition remotely via videoconference.

THE VIDEOGRAPHER: Thank you. Will the court reporter please swear or affirm the witness.

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HENRY H. HOUH,
having been first duly sworn, testified as follows:
EXAMINATION
QUESTIONS BY MR. JENSEN:
Q. Good morning, Dr. Houh. My name is Travis Jensen and I represent the petitioner in the five IPR proceedings at issue today and I will be taking your deposition.
A. Good morning.
Q. And for the record, let me just identify the five IPR proceedings that we're talking about today. Those are IPR2024-00228, IPR2024-00229, IPR2024-00230, IPR2024-00495, and PGR2024-00011.
Do you understand, Dr. Houh, that you're here today to be deposed in connection with each of those proceedings?
A. Yes.
Q. Could you state and spell your name, please.
A. My name is Henry Houh. That's spelled H-e-n-r-y. The last name is spelled H-o-u-h.
Q. And, Dr. Houh, where do you normally reside?
A. I live in Lexington, Massachusetts.
Q. Where are you located today?
A. I am at the Morrison Foerster office in downtown Boston in the Hancock building.

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Q. Is anyone else physically with you?
A. Yes.
Q. Who is that?
A. It's Mr. Blumenkopf.
Q. Anyone else?
A. No.
Q. And I'm not physically present with you, correct?
A. You're not. That's right.
Q. Have you and I ever met before, Dr. Houh?
A. I don't think so. I don't recall.
MR. BLUMENKOPF: Counsel, if you don't mind, before we begin in substance, I just want to confirm our understanding of the parameters today. Our understanding is you're limited to 10 1/2 hours for the cross-examination, followed by up to 2 hours of redirect and then up to 1.5 of re-cross across all five proceedings. Is that your understanding?
MR. JENSEN: I'd have to double-check. That generally sounds right. I know it could spill over into two days but I don't -- hopefully we don't have to use all that time for any party.
MR. BLUMENKOPF: Sure.
MR. JENSEN: We'll see.
MR. BLUMENKOPF: Thank you.

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BY MR. JENSEN:
Q. Dr. Houh, approximately how many times have you been deposed as an expert witness?
A. I've lost count long ago; but it's close to, you know, 200 times, give or take a bit.
Q. Were those primarily patent cases?
A. Yes.
Q. Can you give me an approximate -- well, let me ask this question. Strike that.
Of the roughly, you know, 200 depositions that you've done, approximately how many of those have been in connection with IPR proceedings?
A. My best estimate is about three-quarters of them, maybe two -- two-thirds to three-quarters, around there.
Q. And of the depositions that you've done in IPR proceedings, roughly what percentage of those have been for the petitioner versus the patent owner?
A. Probably -- of the IPR proceedings I've done, I probably am for petitioner about 90 percent of the time and patent owner the rest.
Q. Given the number of depositions that you've done, I think we can probably summarize what I call some of the ground rules because it sounds like you're familiar with the deposition format; but let me just ask

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a few questions in that regard.
Do you understand today that you're giving testimony for five IPR proceedings?
A. I understand one of them is PGR. I'm not a lawyer. I don't really understand the difference between an IPR and -- I know there's some differences, but I think there's four IPRs and one PGR.
Q. Thank you for that clarification. That's right. Would it be okay if I generically refer to those as the five IPR proceedings today?
A. Sure.
Q. Is there any reason you cannot give truthful testimony today, Dr. Houh?
A. No.
Q. And I take it you've done a number of virtual depositions before as well. Is that correct?
A. Yes.
Q. Let me know if you have any technical difficulties. You may have experienced some if you've done a number of these depositions before, but we want to make sure that we can both hear and see what we need to. So will you let me know if you experience any technical difficulties today?
A. I'll try; but if we get connected [sic], you might not hear from me that we've gotten disconnected

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1 somehow.
2 Q. You provided in advance a zip file with a
3 number of exhibits in it. Were you provided a copy of
4 that file with the exhibits?
5 A. Yes.
6 Q. Do you have that, like, locally on your
7 computer there?
8 A. Yes.
9 Q. Okay. I don't anticipate we'll use most of
10 those, but we wanted to make sure you had the set of
11 materials available locally. I expect that we'll be
12 using the screen share feature of Zoom for much of the
13 deposition, but we wanted to ensure that you had a local
14 electronic copy of the files as well.
15 If we have any additional exhibits, we'll
16 use the Chat feature and just drop them in the Chat.
17 Are you familiar with how to access the Chat feature and
18 to click on a link?
19 A. Yes. I have that open, the Chat window, that
20 is.
21 Q. Okay, great. If you find any of my questions
22 unclear, will you let me know so I can try to clarify or
23 rephrase?
24 A. Sure. I'll try.
25 Q. Throughout the course of the deposition,

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1 counsel for patent owner may object. If he does so,
2 he's objecting to my question, not your answer.
3 However, unless you're instructed by your counsel not to
4 answer on the basis of privilege, you must still answer
5 my question. Do you understand that?
6 A. Yes.
7 Q. Perhaps most importantly, we'll be taking
8 periodic breaks today. If at any time you'd like a
9 break, just let me know; and we'll try to accommodate as
10 long as there is not a question pending. Is that all
11 right?
12 A. Sure. Thank you.
13 Q. Apart from the Zoom application what programs,
14 if any, do you have open on your computer?
15 A. There is a window to some of the documents from
16 that zip file.
17 Q. Any other programs?
18 A. No. Although I just noticed I think the
19 document folder is not complete here, but we can deal
20 with that as it arises.
21 Q. Well, what do you mean by "not complete"?
22 A. I thought I remembered seeing different folders
23 for every different proceeding, but this document folder
24 only appears to have 27 files in it and no directories.
25 Q. And you're right. There should be, I think, a

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1 number of directories and more than 27 files there.
2 MR. JENSEN: Let's go off the record for
3 just a moment.
4 THE VIDEOGRAPHER: The time is 9:11 a.m.
5 We're now going off the record.
6 (Recess taken)
7 THE VIDEOGRAPHER: The time is 9:14 a.m.
8 We're now back on the record.
9 BY MR. JENSEN:
10 Q. All right. So during the break we confirmed
11 that there are some files that still need to be -- by
12 "files" I mean the exhibits that we provided that need
13 to be copied onto the laptop. But my understanding is
14 that Dr. Houh has some hard copies, and we should be
15 able to proceed at least in the interim while they get
16 the rest of the files.
17 So let's start -- Dr. Houh, let me ask.
18 What hard copy materials do you have with you?
19 A. I have in front of me four hard copies of each
20 of the patents, the four patents; and then I have copies
21 of my supplemental declaration for each of the five
22 cases we talked about earlier.
23 Q. Okay. And so there are -- even though there
24 are -- I'm sorry. Go ahead. It looks like you weren't
25 done.

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1 A. I'm sorry. I forgot. There's some huge boxes
2 on the corner of the table with, I think, more printed
3 materials in them; but I'm not sure what's in them.
4 Q. Okay. This is additional hard copy materials;
5 but the ones that you have sort of at the ready are the
6 four patents and your five supplemental declarations,
7 one for each of the IPRs?
8 A. Yes, that's right.
9 Q. Okay. And even though there's five IPRs, you
10 understand that there are four Aptiv patents, correct?
11 A. Yes.
12 Q. And let me just identify those, and you can
13 confirm these are what you have. And these have all
14 been premarked in the proceedings.
15 Exhibit 1003 is U.S. patent 9,619,420. Is
16 that right?
17 A. Yes.
18 Q. And Exhibit 1005 is U.S. patent 9,645,962?
19 A. I have that patent; but, unlike the '420, which
20 is marked in the lower right-hand corner as
21 Exhibit 1003, this version of the '962 I have doesn't
22 appear to be marked with an exhibit number in the lower
23 right. So I won't really know if you refer to it as
24 1005. I'll have to think about it.
25 Q. Okay. I'll represent to you that that is

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1 Exhibit 1005 in the proceedings, and the copy that we
2 provided should have that marking on it.
3 Is Exhibit 1009 U.S. patent 11,176,072?
4 A. Well, I have that; but I don't have the marking
5 in the lower right. So I'm not sure what exhibit this
6 is.
7 Q. I'll represent to you that that's Exhibit 1009.
8 And Exhibit 1011 is U.S. patent 11,681,643?
9 A. Same issue there. This one doesn't appear to
10 be marked with the exhibit number, the copy that I have.
11 Q. Okay. I'll represent to you that that's the
12 Exhibit 1011.
13 In view of the fact that some of the paper
14 copies you have don't have the exhibit numbers on them,
15 would it be okay if I refer to the patents by the last
16 three digits of their patent number?
17 A. Yes. That would make it much easier.
18 Q. Okay.
19 A. Thank you.
20 Q. And do you recognize these four patents as the
21 Aptiv patents that are being challenged in the IPRs?
22 A. Yes, I do.
23 Q. Before being contacted about this case, had you
24 ever heard of a company called Unwired Technology?
25 A. I mean, I can't be sure about that.

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1 Q. But sitting here today, you don't recall having
2 heard of them before this case?
3 A. I mean, I don't have a memory of hearing about
4 it before this case; but it could be possible still. I
5 just don't remember.
6 Q. Before being contacted about this case, had you
7 heard of Aptiv Technologies?
8 MR. BLUMENKOPF: Objection, form.
9 A. I don't recall having heard of them before this
10 case.
11 BY MR. JENSEN:
12 Q. Before being contacted about this case, had you
13 heard of a company called Aptiv Services US?
14 MR. BLUMENKOPF: Objection, form.
15 A. I don't have a memory of hearing about them
16 before this case.
17 BY MR. JENSEN:
18 Q. Before being contacted about this case, had you
19 ever heard of the four Aptiv patents that are being
20 challenged?
21 A. I don't think so.
22 Q. Do you know who Eric Welch is?
23 A. I mean, I don't think I do; but it's possible.
24 I know someone named Welch.
25 Q. Do you know anyone by the name of Scott

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1 Andrews?
2 A. I don't think I know -- I can't recall anyone
3 that I know by the name of Scott Andrews.
4 Q. Do you know who Robert Dezmelyk is? The last
5 name is spelled D-e-z-m-e-l-y-k.
6 A. No, I don't think so.
7 Q. If you look on -- you can pick any of the
8 patents. If you look on the cover sheet of one of the
9 patents, do you see the named inventors listed?
10 A. Yes.
11 Q. And those are Robert Voto; Craig Petku,
12 P-e-t-k-u; and Shyam Babuyeda, S-h-y-a-m,
13 B-a-b-u-y-e-d-a?
14 A. I'm sorry. What was the question?
15 Q. Did you see those inventors listed on the
16 patent?
17 A. Yes, I do.
18 Q. Do you know any of them?
19 A. No, I don't think so.
20 Q. And I think last name for now. Do you know
21 Michael Dreon, D-r-e-o-n?
22 A. No, I don't. I've not met him personally.
23 Q. Do you know who he is?
24 A. I believe I reviewed some documents and maybe
25 some testimony on something related to -- I think

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1 they're listed in my declarations.
2 Q. Apart from coming across his name in connection
3 with this case, do you know Michael Dreon?
4 A. No. I've not met him personally.
5 Q. Have you ever spoken with him?
6 A. No.
7 Q. Are you aware that there is a related district
8 court case on the same patents at issue in the IPR?
9 A. I'm vaguely aware.
10 Q. Have you submitted any expert reports in the
11 district court case?
12 A. No.
13 Q. Have you done any work on the district court
14 case?
15 A. No.
16 Q. So your involvement has been limited to the IPR
17 proceedings?
18 A. Yes.
19 Q. You mentioned that you have a copy, a hard
20 copy, of some of your declarations with you, correct?
21 A. Yes.
22 Q. And how many declarations do you have?
23 A. I have five.
24 Q. And that's one for each of the IPR proceedings,
25 correct?

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A. Yes.
Q. You also prepared another declaration in connection with the -- well, strike that. Let me ask this.
Do you know what a patent owner preliminary response is in an IPR proceeding?
A. Yes.
Q. Did you prepare a declaration in connection with the patent owner preliminary responses filed in the five IPRs?
A. Yeah. I think that I did, to the best of my recollection right now.
Q. Do you have a copy of those declarations with you?
A. They're not in front of me. I don't know if they're in those boxes over there.
Q. Okay. Are there any notes or markings on any of the hard copy documents you have, Dr. Houh?
A. No.
Q. Yeah. Let me just ask counsel.
MR. JENSEN: Do you know, is there a hard copy of the POPR declaration available for Dr. Houh?
MR. BLUMENKOPF: No, counsel does not. We can pull one during a break if needed.
MR. JENSEN: Yeah. I wanted to start with

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that. So I'm happy to maybe just do the screen share for now just to introduce the exhibits. So let me go ahead and do that.
BY MR. JENSEN:
Q. Dr. Houh, did you prepare a declaration for each of the patent owner preliminary responses for the five IPRs?
A. I mean, it was a while ago. Maybe. I just can't remember which ones or if it was all or some of them. I don't remember at this point.
Q. Well, let me go ahead. Let's try the screen share feature here.
Dr. Houh, are you able to see my screen?
A. Yes, except part of it's obscured because I have this -- oh, there. Okay. Sorry. I've gotten rid of that pop-up box. Yes, I can see.
Q. And this is an exhibit that has been premarked as Exhibit 2001 in PGR2024-00011.
Do you recognize this document? And I'm happy to flip to whatever page you would like and show you your signature at the end of the declaration on page 57.
A. I mean, yeah. What you showed me looks kind of -- makes it look like it, yes. And I can see the exhibit number now as well.

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Q. Okay. And is this a copy of the declaration that you prepared for the PGR proceeding?
A. It appears to be.
Q. Okay. And rather than introduce every one of these POPR declarations, I think we'll use this one for -- I'll call it a representative declaration because I think four of them are identical to one another. They were just filed in the different proceedings. And one of them, I think, is slightly different; but I'm not sure that we'll need to use that at all today.
I'll refer to this Exhibit 2001 today as your patent owner preliminary response or POPR declaration. Is that okay?
A. Sure.
Q. And let me introduce the other five declarations that you had prepared, which are all numbered Exhibit 2019 in their respective IPR proceedings and are titled Supplemental Declaration of Henry Houh. Are those the five hard copy declarations that you have with you, Dr. Houh?
A. Yes.
Q. And I'll just do the screen share again here. I think I'm still sharing the screen. Okay.
So I just want to walk through each one of these very briefly and confirm that these are the same

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declarations that you have hard copies of with you starting with the declaration in the PGR20240-00011. Is this a copy of your supplemental declaration in that proceeding?
A. Well, from the first two pages it looks the same as my first two pages.
Q. And that's a 90-page document with your signature on the last page?
A. Yes, I see that.
Q. Okay. And the next one is Exhibit 2019 in the '230 proceeding. Is this a copy of your declaration in the '230 proceeding?
A. Yes, looks like it.
Q. And that's an 84-page document?
A. Yes.
Q. All right. Next is Exhibit 2019 in the '229 proceeding. Is that a copy of your declaration in the '229 proceeding?
A. Yes, looks like it.
Q. And that's a 135-page document?
A. Yes.
Q. And next we have a copy of your declaration in the '228 proceeding. Is that right?
A. Yes, looks like it.
Q. And that's a 142-page document?

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A. Yes.
Q. Last we have a copy of your declaration in the '495 proceeding. Is that right?
A. Yes.
Q. And that's a 111-page document?
A. Yes.
Q. And is that your signature on the last page of each of the five declarations?
A. Yes, it is.
Q. And as with the patent numbers, where needed I'll refer to these declarations by the patent to which they pertain, the three-digit patent number. Is that okay?
A. Sure. Well, there are two for the '420 patent. I'm not sure how you want to refer to those.
Q. Thank you for mentioning that. If we need to distinguish between those, I can give you the IPR number as well on the front page. If you ever have a question, though, about which declaration we're discussing, will you let me know?
A. Yes.
Q. And you'd agree that there's a lot of material that is common among the various declarations?
A. Sure.
Q. Okay. And what are the dates on the

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declarations that you have, Dr. Houh?
A. Four of them are dated October 23rd of this year. The '420 '495 case -- what I mean by that is the '420 patent with the IPR number ending in 495, that's dated November 20th of this year.
Q. And what is the date of Exhibit 2001, which is your POPR declaration?
A. That one's dated April 18th, 2024.
Q. So the POPR declaration was prepared and submitted before the other five declarations?
A. Yes. That's my understanding, although I -- that's this one for the PGR '11 case. I don't recall offhand the dates of the other ones, but I'm pretty sure --
Q. And I'll represent to you that the dates of the other ones are before October 23rd, 2024. Four of them are all dated April 18th, and they're identical to one another except for the cover page.
So the question I wanted to ask is were your supplemental declarations -- and those are the five that you have the hard copies of with you. Were your supplemental declarations intended to supersede or replace your POPR declaration or to supplement your POPR declaration?
MR. BLUMENKOPF: Objection, form.

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A. I mean, my newer declarations are supplemental declarations. They're not intended to replace anything. I think I stand by all my opinions that I've submitted in this case.
BY MR. JENSEN:
Q. When you submitted your respective declarations, Dr. Houh, did each of them contain a complete and accurate statement of your opinions regarding the validity of the challenged claims for the patent at issue?
MR. BLUMENKOPF: Objection, form.
A. I mean, they contained all my written opinions with respect to the case they were submitted for.
BY MR. JENSEN:
Q. Did each of them contain a complete and accurate statement of your opinions?
MR. BLUMENKOPF: Objection, form.
A. I mean, I think they're a complete and accurate statement of my written opinions I submitted for each respective case.
BY MR. JENSEN:
Q. You qualified that with the phrase "written opinions." Do you have some unwritten opinions about the patents in these cases that are not in your report?
MR. BLUMENKOPF: Objection, form.

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A. I mean, I don't have anything else written down that is not submitted -- unsubmitted with respect to what I submitted. I mean, there are -- these are my written opinions that are submitted with respect to this case, with the respective cases.
BY MR. JENSEN:
Q. Yeah. And I'm trying to drill down if there's some significance on that qualifier "written opinions." Did you have some unstated opinions about the patents in these cases? Strike that.
Do you have any unwritten opinions about the validity of the patents in these cases?
MR. BLUMENKOPF: Objection, form.
A. I mean, I think the opinions with respect to each respective case are what I've submitted in the declarations.
BY MR. JENSEN:
Q. Okay. That's what I was asking. Thank you.
Have any of your opinions regarding the validity of the challenged claims changed since submitting your declarations?
A. No.
Q. When was the last time that you reviewed your declarations?
A. I'm sorry. By the way, I think you're asking

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about validity; but I think I'm -- I don't know if there's a distinction here, but my declarations are directed at the patentability.

Q. With that clarification, I'm happy to use those terms interchangeably or use whichever term you would prefer.

A. I mean, I'll understand it if you say that; but my understanding is IPR challenges are directed to patentability of patents as opposed to validity. Again, I'm not a lawyer, so that's my understanding.

Q. If that's your understanding, I'm happy to use the word "patentability." So let me just ask the question again.

Have any of your opinions regarding the patentability of the challenged claims changed since submitting your declarations?

A. No.

Q. And when you submitted your respective declarations, did each contain a complete and accurate statement of your opinions regarding the patentability of the challenged claims for the patent at issue?

MR. BLUMENKOPF: Objection, form.

A. I mean, in at least some of the cases I think I have two declarations. So they're -- I don't know if -- so those are my opinions. I mean, it may be that

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they're not entirely overlapping, if that's your question. But, you know, the declarations I submitted in the case would be what my opinions are for each respective case.

BY MR. JENSEN:

Q. At the outset I always like to ask the witness if they have identified any errors, apart from typos, that they would like to correct. Is there anything that you would like to correct in your declarations, Dr. Houh?

MR. BLUMENKOPF: Objection, form.

A. I didn't see anything in my review.

BY MR. JENSEN:

Q. And I may have already forgotten if you answered this. When was the last time that you reviewed your declarations?

A. Within the last week.

Q. Have you submitted any errata sheets to your declarations?

A. No, I don't think so.

Q. And I may sometimes refer to the declaration as a report just out of habit. Will you understand that if I refer to your report, that it's synonymous for your declaration?

A. Yes. And I might do the same thing as well.

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Q. Were there any materials you would like to have reviewed when forming your patentability opinion but did not have access to?

MR. BLUMENKOPF: Objection, form.

A. I mean, I can't think of anything at the moment.

BY MR. JENSEN:

Q. What did you do to prepare your declarations?

A. I think I probably reviewed the patents, the prosecution history, the list of materials I've considered that I have in each declaration.

Q. Do you have a normal process that you follow when preparing an expert declaration?

MR. BLUMENKOPF: Objection, form.

A. I mean, I don't think of it as my own normal process; but I think I typically start with reviewing the patents and the prosecution histories. And that's where I typically always start.

BY MR. JENSEN:

Q. Did your review of the patents include reviewing the claims of the patents?

A. Yes. Even claims that are not, you know, necessarily part of the case. I reviewed the full set of claims.

Q. And is that true regardless of whether you're

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preparing an expert report for a petitioner or a patent owner?

A. Yes, generally. I don't do anything differently, I don't think.

Q. And then after you have looked at the claims in the patent, do you review the prior art?

MR. BLUMENKOPF: Objection, form.

A. Perhaps at some point I'll look at what, you know, the prior art is either for -- well, I mean, in some of the cases there's potential prior art maybe, right? But in a case where the prior art's been presented already and a petition has been written up and I'm reviewing it, then I'll look at the prior art that was in each of the challenges.

BY MR. JENSEN:

Q. And you mentioned that you started with the patent; and I assume that means the patent that is, you know, being challenged or the patent at issue. Is that right?

A. Yes.

Q. Why do you (transmission interference)?

A. Well, so I know the area of the patent. Are you talking about what the case is about to start with?

Q. Who prepared the first draft of your declarations?

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1 MR. BLUMENKOPF: Objection, form.
2 A. I mean, I don't remember in this case. I think
3 sometimes I do. Sometimes the attorneys do.
4 BY MR. JENSEN:
5 Q. Who assisted in preparing your declarations?
6 MR. BLUMENKOPF: Objection, form.
7 A. Aside from me and the attorneys, I -- they're
8 my opinions. I stand by them in the end. That's what I
9 signed as the submitted declarations. But there is --
10 it can be a collaborative process. So there are edits
11 made back and forth with the attorneys and myself.
12 BY MR. JENSEN:
13 Q. So putting aside the attorneys, were there any
14 nonlawyers that assisted in preparing your report?
15 MR. BLUMENKOPF: Objection, form.
16 A. I mean, sometimes I understand that paralegals
17 may do cite checking. I'm not an attorney.
18 BY MR. JENSEN:
19 Q. Apart from anybody related to the law firm,
20 were there any nonattorneys that helped you in preparing
21 your declarations?
22 A. No.
23 Q. You don't have like an assistant or somebody
24 like that that you use?
25 A. I do not, no.

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1 Q. Okay. Did you rely on any lawyers in preparing
2 your declarations?
3 MR. BLUMENKOPF: Objection, form. I'd
4 caution Dr. Houh not to reveal any privileged
5 communications with counsel.
6 A. Well, sometimes there's a legal understanding
7 section typically in my declarations. I'm not a lawyer.
8 So, you know, that's my understanding of the law as
9 provided by, I think, typically the -- how I understand
10 it from the attorneys.
11 BY MR. JENSEN:
12 Q. Apart from the legal standards section of your
13 declarations, did you rely on any lawyers in preparing
14 your declarations?
15 MR. BLUMENKOPF: Objection, form.
16 A. Well, I rely on the evidence and other
17 exhibits. So I don't think so unless I say that
18 somewhere. But no, aside from the legal section I try
19 to rely on the documents and exhibits and things I've
20 reviewed.
21 BY MR. JENSEN:
22 Q. If there are any errors or mistakes in your
23 declarations, are those attributable to you?
24 MR. BLUMENKOPF: Objection, form.
25 A. You seemed to exclude typos earlier when you

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1 were talking about errors. Are you still doing that?
2 BY MR. JENSEN:
3 Q. Yeah. With that clarification.
4 A. Well, I mean, these are my opinions. I don't
5 think they contain errors. These are my opinions that
6 I've submitted in these declarations.
7 Q. If there are any errors, though, would those be
8 your errors or the lawyers' errors?
9 MR. BLUMENKOPF: Objection, form.
10 A. I mean, I don't think that there are errors
11 that I saw, as I mentioned earlier. But it's my
12 declaration ultimately and my opinions.
13 BY MR. JENSEN:
14 Q. Apart from the legal standards section of your
15 declarations, did you rely on anything the patent
16 owner's lawyers told you for your declarations?
17 MR. BLUMENKOPF: Objection, form. Again,
18 I'd caution Dr. Houh not to reveal any privileged
19 communications.
20 A. I mean, I think I tried to cite the documents
21 and exhibits that I did rely on in support of various
22 statements. I mean, there may be in some cases things
23 that you might think needed to be supported; but I think
24 all my statements are based on typically a review of the
25 materials that I've listed that I've considered.

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1 BY MR. JENSEN:
2 Q. When were you first contacted about working on
3 these IPRs?
4 A. I mean, I don't remember exactly. It was
5 certainly before the date of the earliest declaration I
6 submitted.
7 Q. Well, that's telling me exactly nothing. How
8 long have you been working on these IPRs, Dr. Houh?
9 A. I think I started sometime this year.
10 Q. 2024?
11 A. Yes.
12 Q. Like in the springtime?
13 A. It could have been earlier. It could have been
14 in the winter sometime. I just don't have a memory of
15 an exact date off the top of my head.
16 Q. Roughly how much time have you spent working on
17 these IPRs up to and including today?
18 A. I don't have that from memory. It's hard. I
19 wouldn't know exactly.
20 Q. Can you give me a range.
21 A. I mean, it would be hard to. It's probably
22 around 100 hours or more; but, again, I can't really
23 give you even a -- I can't give you a -- I don't know
24 how accurate that would be, but it's probably around
25 there or more.

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1 Q. And that would be including your work on all of
2 the IPRs?
3 A. Yes, all these matters in front of us today.
4 Q. What did you do to prepare for today's
5 deposition?
6 MR. BLUMENKOPF: I'd caution Dr. Houh not
7 to reveal any privileged communications with counsel.
8 A. Well, I reviewed my declarations, the patents
9 and other materials in the case; and I met with
10 attorneys.
11 BY MR. JENSEN:
12 Q. What attorneys did you meet with?
13 A. I met with Bryan, Andrew, Clint, and Michael.
14 I don't remember his name at the moment.
15 Q. How many attorneys were there that you met
16 with?
17 A. I think it's around four at different times.
18 Q. Since you mentioned the different times, how
19 many meetings did you have with counsel to prepare for
20 the deposition today?
21 A. I think three.
22 Q. And when did those meetings start?
23 A. I think they started last week.
24 Q. In aggregate, approximately how many hours did
25 you spend with the attorneys preparing for your

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1 deposition?
2 A. I'd say around 15-ish.
3 Q. Did you speak with any nonlawyers to prepare
4 for your deposition?
5 A. No.
6 Q. Did you review any deposition transcripts to
7 prepare for your deposition today?
8 A. Yes, yes, yes.
9 Q. What deposition transcripts were those?
10 A. I reviewed at least some of the ones that I've
11 cited to and provided excerpts of in my declarations.
12 Q. Let's turn to your '643 declaration at
13 paragraphs 20 to 25.
14 MR. BLUMENKOPF: Just to clarify, Counsel,
15 you're referring to the supplemental declaration?
16 MR. JENSEN: Yeah.
17 BY MR. JENSEN:
18 Q. If I want to refer to the POPR declaration,
19 I'll call it the POPR declaration. Everything else
20 refers to the -- I call it the main declarations.
21 A. You said paragraphs 20 to 25?
22 Q. Yes.
23 A. That looks like, if I have this right, kind of
24 the understanding of the law sections, A, B and C.
25 Q. Yeah. So paragraphs 20 to 25 is where you set

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1 forth your understanding of the relevant legal
2 standards, correct?
3 A. Yes. I think that's right.
4 Q. Who informed you of the legal standards that
5 you used in this case?
6 MR. BLUMENKOPF: Objection, form. And I
7 would caution Dr. Houh not to reveal any privileged
8 communications.
9 A. I mean, I think the understanding is based on
10 what the attorneys have outlined here.
11 BY MR. JENSEN:
12 Q. And are those the attorneys at Morrison &
13 Foerster that you're referring to?
14 A. Yes, although I'm not sure which one of them
15 but generally.
16 Q. Did you apply the legal standards in
17 paragraphs 20 to 25 when forming your opinions?
18 MR. BLUMENKOPF: Objection, form.
19 A. I mean, to the extent I needed to for the
20 different parts of my declarations, I would have applied
21 these when needed.
22 BY MR. JENSEN:
23 Q. When forming your opinions, did you apply any
24 other legal standard not listed in your report?
25 MR. BLUMENKOPF: Objection, form.

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1 A. I mean, I think they should all be listed. If
2 there's an individual case that you think is not, we can
3 look at those.
4 BY MR. JENSEN:
5 Q. So if we look at paragraphs 20 to 24, that's
6 where you set forth your understanding of the
7 obviousness test to be used. Is that right?
8 A. I mean, I think those paragraphs include the
9 obviousness section paragraphs that are in my '643
10 supplemental declaration.
11 Q. And paragraphs 20 to 24 represent a complete
12 statement of your understanding of the obviousness
13 standard?
14 MR. BLUMENKOPF: Objection, form.
15 A. I think for the purposes I needed them for this
16 declaration, I think they should be.
17 Well, there's also a secondary
18 considerations section somewhere else. Maybe it would
19 include that because if it's directed to obviousness,
20 there are secondary considerations of nonobviousness, as
21 I understand them.
22 BY MR. JENSEN:
23 Q. And you reference secondary considerations of
24 nonobviousness at the end of paragraph 23, correct?
25 A. Yes. But I think I outlined specifically some

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1 of the secondary -- more details elsewhere is what I'm
2 saying.
3 Q. Yeah. Are you referring to the section
4 starting in paragraph 139?
5 A. Yes. That was what I was thinking of.
6 Q. So going back to paragraph 23, you identify
7 four factors that may be taken into account when
8 analyzing obviousness, correct?
9 A. I do see four enumerated items in paragraph 23.
10 Q. And the fourth one is the secondary
11 considerations factor, correct?
12 A. Yes.
13 Q. What weight did you give the secondary
14 considerations factor in your obviousness analysis?
15 MR. BLUMENKOPF: Objection, form.
16 A. Well, I mean, they're secondary. So the
17 primary things to consider are these -- the other issues
18 of obviousness with respect to the prior art, but these
19 are secondary considerations.
20 BY MR. JENSEN:
21 Q. Did you give the secondary considerations less
22 weight than the other three factors listed in
23 paragraph 23?
24 MR. BLUMENKOPF: Objection, form.
25 A. I mean, my opinions are in my declaration. So

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1 I'm not -- I don't see -- there are certainly fewer
2 pages of analysis directed to the secondary
3 considerations in my report. So, you know, there are a
4 lot more pages directed to other factors besides
5 secondary considerations in my report.
6 BY MR. JENSEN:
7 Q. I'm showing another exhibit on the screen here.
8 And this is titled Supplemental Declaration of Henry
9 Houh, Ph.D. in Support of Petitioners' Reply in
10 IPR2024-00043. Do you see that?
11 A. Yes.
12 Q. And this, I think, was Exhibit 1028 in that
13 proceeding as shown in the lower right-hand corner. Do
14 you see that?
15 A. Yes.
16 Q. And is that your signature on the last
17 page dated October 7th, 2024?
18 A. Yes.
19 Q. I want to direct your attention to paragraph 82
20 of this declaration. Can I just have you read that
21 paragraph aloud, please.
22 A. It says, "I understand that even if a nexus is
23 established, secondary considerations cannot overcome a
24 strong prima facia case of obviousness."
25 Q. That's fine just to there. That's okay. I

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1 meant the first sentence. So thank you for reading
2 that.
3 Did you apply that same understanding when
4 forming your opinions of the challenged patents in the
5 Aptiv IPRs?
6 MR. BLUMENKOPF: Objection, form.
7 A. I mean, the respective sections on secondary
8 considerations lay out all of my -- my opinions directed
9 towards secondary considerations in these cases at issue
10 in this matter.
11 BY MR. JENSEN:
12 Q. Yeah. And I'm asking a slightly different
13 question, which is did you apply the same legal standard
14 that you stated you understood in paragraph 82 of your
15 declaration in IPR2024 No. 43 when forming your opinions
16 in the Aptiv IPRs?
17 MR. BLUMENKOPF: Objection, form.
18 A. I mean, that paragraph that I read doesn't say
19 that you can never establish nonobviousness based on --
20 even if a nexus is established; otherwise, what would be
21 the point of secondary considerations?
22 So I think I appropriately applied what I
23 did, and I've laid out my reasons why I think there are
24 the case for secondary considerations of nonobviousness
25 in these respective cases that we're talking about today

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1 in this deposition.
2 BY MR. JENSEN:
3 Q. Do you agree with me, Dr. Houh, that even if a
4 nexus is established, the secondary considerations
5 cannot overcome a strong prima facia case of
6 obviousness?
7 MR. BLUMENKOPF: Objection, form.
8 A. I mean, I stand by all my opinions in cases
9 I've submitted.
10 BY MR. JENSEN:
11 Q. Respectfully, that's not answering my question
12 at all, Dr. Houh.
13 Do you agree and understand in the Aptiv
14 IPRs that even if a nexus is established, secondary
15 considerations cannot overcome a strong prima facie case
16 of obviousness?
17 MR. BLUMENKOPF: Objection, form.
18 A. I've laid out the reasons why I think there is
19 a case for secondary considerations of nonobviousness
20 that I stand by in this case.
21 I understand maybe it's someone else that
22 may ultimately decide, the PTAB panel or whatever,
23 whether that's the case. But I've laid out the case
24 that I think is for secondary considerations in my
25 respective declarations.

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1 MR. JENSEN: Move to be strike.
2 BY MR. JENSEN:
3 Q. That's totally nonresponsive, Dr. Houh. You're
4 answering a question I'm not asking. All right?
5 In your declarations in the Aptiv IPRs you
6 do not include a statement like the one you have in
7 paragraph 82 in the document we're looking at, correct?
8 MR. BLUMENKOPF: Objection, form.
9 A. Well, you know, I can look at that section.
10 BY MR. JENSEN:
11 Q. Go ahead and take a look at the legal standards
12 section in paragraphs 20 to 25; and if you want to look
13 at the secondary considerations section in that
14 paragraph 139, go ahead and take a moment to review
15 those sections.
16 A. I have looked at some of those paragraphs, and
17 I don't see this statement from the FuboTV/Aylo case. I
18 don't see that exact statement.
19 Q. What date was your declaration submitted in the
20 Fubo case?
21 A. October 7th this year.
22 Q. That was like two or three weeks before you
23 submitted the declarations in the Aptiv cases, correct?
24 A. Four of them, I think.
25 Q. For four of them, right? And so what I'm

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1 trying to understand is if you had a -- the same or a
2 different understanding in the Aptiv declarations that
3 you had in the Fubo declaration in paragraph 82. So
4 I'll just ask a clean question.
5 When you submitted your declarations in
6 the Aptiv case, did you understand that even if a nexus
7 is established, secondary considerations cannot overcome
8 a strong prima facie case of obviousness?
9 MR. BLUMENKOPF: Objection, form.
10 A. So I understand that's not saying that can
11 never happen; otherwise, what would be the point of
12 secondary considerations?
13 BY MR. JENSEN:
14 Q. Is it your opinion, Dr. Houh -- strike that.
15 Is it your understanding that secondary
16 considerations can overcome a strong prima facie case of
17 obviousness?
18 A. Well, I'm not familiar with all the case law
19 and cases that have ever been put forth in front of the
20 PTAB. So I think ...
21 Q. Which is why I'm asking the question, right?
22 I'm asking about your understanding, not what the cases
23 say. I want to know what understanding did you apply.
24 And I want to know did you apply in the
25 Aptiv declarations the same understanding that you

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1 expressed in paragraph 82, the first sentence of the
2 Fubo declaration?
3 MR. BLUMENKOPF: Objection, form.
4 A. So with these cases I did lay out my
5 understanding, and I laid out a case for why -- not only
6 why the patents -- what the combinations set forth in
7 the various petitions we're talking about today are not
8 operable combinations and why, furthermore, there are
9 these secondary considerations that would have supported
10 why the combinations in the obviousness case is not
11 obvious, in fact.
12 MR. JENSEN: Move to strike that as
13 totally nonresponsive.
14 BY MR. JENSEN:
15 Q. It's a yes or no question, Dr. Houh. Did you
16 apply the same understanding in the Aptiv IPRs that you
17 set forth in the first sentence of paragraph 82 of your
18 Fubo declaration, or did you apply a different
19 understanding?
20 MR. BLUMENKOPF: Objection, form.
21 A. I don't think there's -- I'm not sure what the
22 issue is, but I laid out the secondary considerations.
23 I think maybe it's up to the PTAB to decide whether or
24 not they would overcome obviousness, and I laid out the
25 reasons why I think they should with respect to the

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1 cases that we're talking about today.
2 MR. JENSEN: Move to strike as
3 nonresponsive.
4 BY MR. JENSEN:
5 Q. We can call the board on this, Dr. Houh, to get
6 you to answer a simple yes or no question. This
7 shouldn't be controversial. This shouldn't be a hard
8 question to answer.
9 MR. BLUMENKOPF: Counsel, Dr. Houh has
10 testified repeatedly to the standards he applied in his
11 declarations in the Aptiv matter.
12 MR. JENSEN: He hasn't answered the
13 question.
14 BY MR. JENSEN:
15 Q. Well, let me ask this. Okay? Let me ask this.
16 If we go back to your Aptiv declaration
17 and look at paragraphs 20 to 25 and paragraph 139, you
18 do not express any understanding regarding whether
19 secondary considerations can overcome a strong prima
20 facie case of obviousness, correct?
21 A. I think there's only a mention in one paragraph
22 of secondary considerations. I want to point out that
23 even in this Fubo case, the declarations in that, this
24 is not within the -- I don't think that's within the
25 legal understandings section. I'm just looking at this

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one page. But I think it's -- the legal understandings section is typically much more in the front.
Q. Yeah. So in the Aptiv declaration in the legal standards section and in the secondary considerations section, you do not set forth any understanding that even if a nexus is established, secondary considerations cannot overcome a strong prima facie case of obviousness, correct?
A. Well, as I was saying, I don't think this section that we're looking at from the Fubo case, I don't believe that's in the legal understandings section. But, again, I don't have this statement in either of the cases, the Fubo case or these cases, in the legal understandings section.
Q. Well, putting aside where you put it, right, you stated in the Fubo case, "I understand that even if a nexus is established, secondary considerations cannot overcome a strong prima facie case of obviousness," correct?
A. Well, I mean, that's just part of the overall declaration in the Fubo case based on what I laid out as whatever the challenges were.
Q. Where did your understanding come from that you set forth in paragraph 82?
MR. BLUMENKOPF: Objection, form.

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A. I mean, it would have probably been based on the facts of that particular case with respect to working with the attorneys for that particular case.
BY MR. JENSEN:
Q. And the attorneys in this case, in the Aptiv case, did not instruct you regarding whether secondary considerations can overcome a strong prima facia case of obviousness, did they?
MR. BLUMENKOPF: Objection, form.
Counsel, you're asking for communications with counsel here. You need to ask a different question.
BY MR. JENSEN:
Q. Did you set forth any such understanding in your Aptiv declarations?
MR. BLUMENKOPF: Objection, form.
A. I laid out in the legal section my understanding of the legal section, and then I provided more details with respect to the secondary considerations as to what they were in the respective sections in my supplemental declarations in this case. And they are a different set of -- none of the patents between this case overlaps with this other case you're talking about. The challenges are different. The facts of each of the cases are different.
BY MR. JENSEN:

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Q. Do you think the legal standard is different between the cases?
A. Just to clarify, the facts of what the challenges are, what they were and that -- between what the various patents were. And, again, this is a statement; but I don't believe -- in the FuboTV case that statement is not within the legal understandings section. It's just an understanding that I listed there. That's based on what's laid out in the Fubo petition in my declaration in that case.
Q. Does the same understanding that you set forth in paragraph 82 of your Fubo declaration apply to your Aptiv declarations, or is the legal section that is in your Aptiv declarations complete and accurate on its own?
MR. BLUMENKOPF: Objection, form.
A. So I laid out in these matters the legal understanding and I've laid out issues with the secondary considerations in each of the matters in these cases and I stand by those. I do stand by my opinions in this case.
BY MR. JENSEN:
Q. In the Aptiv cases do you know whether secondary considerations can overcome a strong prima facie case of obviousness?

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A. Well, I've laid out my opinions; and I think it's up to the PTAB to determine what applies and whether there is a strong prima facie case and whether or not the secondary considerations laid out, if the PTAB believes they can overcome that. But I think that's something for the PTAB to decide.
Q. In your opinion, can secondary considerations in the Aptiv case overcome a strong prima facie case of obviousness?
MR. BLUMENKOPF: Objection, form.
A. Well, I've laid out the case why I think in this case they are nonobviousness. So I don't think that the combinations laid out by petitioner in these cases are not obvious. So I think this is different than the facts of the Fubo petition.
BY MR. JENSEN:
Q. Putting the Fubo petition aside, would you agree with me that if there were a strong prima facie case of obviousness in the Aptiv IPRs, that the strong prima facie case of obviousness could not be overcome by secondary considerations?
MR. BLUMENKOPF: Objection, form.
A. I mean, as I said, I don't think that's the case here. I don't think there is a strong case -- I think there's the case for nonobviousness, as I've laid

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1 out. The combinations I -- I have a whole section with
2 enumerated points underneath that section why the
3 petitioner's combinations are nonobviousness.
4 So I don't believe that there is a
5 strong -- the facts of this case are very different
6 because I have opinions that lay out why the
7 combinations proposed by petitioner in each of the cases
8 are not obvious.
9 BY MR. JENSEN:
10 Q. And this is the exact point I'm trying to get
11 at, right?
12 Is it your opinion that there is not a
13 strong prima facie case of obviousness in the Aptiv
14 IPRs?
15 MR. BLUMENKOPF: Objection, form.
16 A. I have laid out why I think these combinations
17 are not obvious in the declarations for the Aptiv IPRs.
18 BY MR. JENSEN:
19 Q. Do you think there is a strong prima facie case
20 of obviousness in the Aptiv IPRs?
21 MR. BLUMENKOPF: Objection, form.
22 A. Well, my opinion is that they're not obvious.
23 So I think the facts of this case are very different
24 than the facts of the Fubo petition.
25 BY MR. JENSEN:

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1 Q. Yeah. And I'm not asking you about the Fubo
2 petition at all, right? I'm asking only about the Aptiv
3 IPRs.
4 I'm trying to figure out, Dr. Houh, if you
5 have rendered an opinion in your report that
6 notwithstanding -- and it could be an alternative
7 opinion, right? But do you have any opinion in the
8 Aptiv IPRs as to whether the secondary considerations
9 would overcome a strong prima facie case of obviousness?
10 A. I've laid out my case for why I think the
11 challenged combinations are not obvious, the art laid
12 out by petitioner are not -- why they're incorrect about
13 why there's obviousness. And I've laid out my reasons
14 and my opinions for why there are secondary
15 considerations.
16 I'm not the PTAB judges. So I think the
17 PTAB judges get to decide how strong the case --
18 Q. Yeah. The PTAB judges will decide. I'm just
19 asking about your opinions, and I can't tell whether you
20 have an opinion on this issue or not. I'm just trying
21 to ferret it out.
22 Do you have an opinion whether in the
23 Aptiv IPRs there is a strong prima facie case of
24 obviousness?
25 MR. BLUMENKOPF: Objection, form.

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1 A. I've laid out my reasons why in the Aptiv case
2 the combinations set forth in the challenges are not
3 obvious. So that's my opinion. You know, maybe
4 petitioner and petitioner's expert believes that; but my
5 opinion is that they're not obvious.
6 BY MR. JENSEN:
7 Q. I'm asking a slightly different question, and I
8 apologize for interrupting there, right?
9 Do you have an opinion in the Aptiv IPRs
10 whether the IPR petitions make out a prima facie case of
11 obviousness?
12 MR. BLUMENKOPF: Objection, form.
13 A. I don't know what the -- I'm not a lawyer, and
14 I don't know what the PTAB -- how the PTAB views that
15 standard.
16 But what I'm saying in this case is that I
17 don't -- in each of the petitions I have -- sorry. In
18 each of the supplemental declarations I've submitted I
19 do have a section on why I think the -- what's wrong
20 with the obviousness case set forth by petitioners, and
21 I stand by those opinions. So clearly I don't think the
22 obviousness case is correct as set forth by petitioners;
23 and, furthermore, I have a secondary considerations
24 section.
25 Again, the facts of the Fubo case are

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1 different, the Fubo petition are different than what are
2 laid out here. But I don't have opinions -- my opinions
3 in this case are that for the reasons I've laid out it
4 would not have been obvious to make the combinations set
5 forth in the petitions as I've laid out in the
6 respective declarations.
7 BY MR. JENSEN:
8 Q. Yeah. Let's look at your declaration
9 paragraph 106, the last line and a half there. Can you
10 read that aloud, please, just this highlighted section.
11 A. Well, I'll read the whole sentence. "This
12 hindsight analysis improperly fails to consider evidence
13 of how the POSITA would not have been motivated to make
14 the proposed combination; the petition fails to make a
15 prima facie case of obviousness for at least these
16 reasons."
17 Q. What did you mean when you said "the petition
18 fails to make a prima facie case of obviousness"?
19 A. It's the reasons. For example, the petition
20 uses hindsight analysis. So I think these are the
21 reasons why I disagree that there is even a case for
22 obviousness.
23 Q. So you would agree with me that the petition
24 fails to make a strong prima facie case of obviousness
25 because, in your opinion, it doesn't even make a prima

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1 facie case of obviousness, correct?
2 MR. BLUMENKOPF: Objection, form.
3 A. I guess I wouldn't disagree with the logic that
4 you used in that sentence, in that question.
5 BY MR. JENSEN:
6 Q. Well, is it your opinion, Dr. Houh, that the
7 petition fails to make a prima facie case of
8 obviousness?
9 A. For the reasons I've outlined in my
10 declaration, yes.
11 Q. And because your opinion is that the petition
12 does not make a prima facie case of obviousness, you
13 didn't have to determine whether the secondary
14 considerations could overcome a prima facie case of
15 obviousness?
16 MR. BLUMENKOPF: Objection, form.
17 A. I mean, these are my opinions as I've laid out
18 here. So I don't believe there is.
19 I think there are all sorts of errors in
20 the obviousness case that I've laid out in my
21 declaration. One of them is hindsight analysis. And I
22 stand by what I've said in these cases. I stand by
23 these declarations. They're my opinions.
24 BY MR. JENSEN:
25 Q. Yeah. And what I'm trying to ask is do you

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1 have an opinion, Dr. Houh, that even if there were a
2 prima facie case of obviousness in the Aptiv IPRs, that
3 it would be overcome by the evidence of secondary
4 considerations?
5 MR. BLUMENKOPF: Objection, form.
6 A. I don't believe there is a -- I don't believe
7 the petition made a prima facie case of obviousness for
8 the reasons I've outlined in my section.
9 BY MR. JENSEN:
10 Q. And my question is slightly different.
11 Did you render an alternative opinion that
12 even if there were a strong prima facie case of
13 obviousness, that it would be overcome by the secondary
14 considerations?
15 MR. BLUMENKOPF: Objection, form.
16 A. I mean, I don't think I address that because I
17 don't believe -- you know, my opinions in this case are
18 that there's -- the combinations are not obvious for the
19 reasons I've laid out here, including using hindsight
20 analysis. So I don't believe there is a case -- I don't
21 believe the petition has made a prima facie case of
22 obviousness for the reasons I've outlined here.
23 BY MR. JENSEN:
24 Q. And because of that you did not render an
25 alternative opinion that even if there were a strong

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1 prima facie case of obviousness, it would be overcome by
2 secondary considerations, correct?
3 MR. BLUMENKOPF: Objection, form.
4 A. Well, I don't remember every word in my
5 declarations; but I don't recall that offhand.
6 BY MR. JENSEN:
7 Q. Okay. All right. As part of forming your
8 opinions, Dr. Houh, did you perform any testing?
9 MR. BLUMENKOPF: Objection, form.
10 A. I don't believe I said anything about that in
11 my declarations, but they are what they are. I just
12 don't remember every word.
13 BY MR. JENSEN:
14 Q. And you don't recall doing any product testing,
15 correct?
16 MR. BLUMENKOPF: Objection, form.
17 A. I mean, I don't recall that for the purposes of
18 this case.
19 BY MR. JENSEN:
20 Q. And maybe I can ask sort of a threshold
21 question. Were you provided any Microchip or Aptiv
22 products?
23 MR. BLUMENKOPF: Objection, form.
24 A. No.
25 BY MR. JENSEN:

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1 Q. Did you ask for any such products?
2 MR. BLUMENKOPF: Objection, form.
3 A. I don't think so.
4 BY MR. JENSEN:
5 Q. Why not?
6 A. Well, this is -- this petition is directed
7 towards -- sorry.
8 I was focused on responding to the
9 petition. The petition is about the prior art, not
10 about the -- not mainly about the products. But there I
11 think are some sections with respect to Aptiv's in the
12 nexus section, I believe, that I relied on evidence
13 that's in the record. And I don't think any of those
14 refer to actual products; but they refer to descriptions
15 and things to the extent necessary for, I think, the
16 nexus analysis.
17 Q. And is that the Aptiv dual-role hub product
18 that you're referring to in the secondary considerations
19 section?
20 MR. BLUMENKOPF: Objection, form.
21 BY MR. JENSEN:
22 Q. And I can direct you if it's helpful, Dr. Houh,
23 to paragraph 156 in the '643 declaration.
24 A. It does refer to Aptiv's dual-role hub; but
25 it's also referring to the Boston 2 chip, which I think

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1 I discuss throughout this section as well.
2 Q. What's the relationship between the Boston 2
3 chip and the Aptiv dual-role hub?
4 MR. BLUMENKOPF: Objection, form.
5 A. Well, I say in this section with respect to the
6 preamble of claim 1 in the table in paragraph 156 of the
7 '643 supplemental declaration that the -- to the extent
8 the preamble is limiting, the Boston 2 chip in Aptiv's
9 dual-role hub and it goes on. But that outlines at
10 least some of the relationship.
11 BY MR. JENSEN:
12 Q. So the Boston 2 chip is included as part of the
13 Aptiv dual-role hub?
14 MR. BLUMENKOPF: Objection, form.
15 A. What it says there, yeah. It's outlining the
16 relationship of the Boston 2 chip in the Aptiv dual-role
17 hub. That's what it says there.
18 BY MR. JENSEN:
19 Q. Have you ever personally seen an Aptiv
20 dual-role hub, Dr. Houh?
21 A. I don't think I've seen it outside of a car, if
22 that's what you mean.
23 Q. Have you seen an Aptiv dual-role hub in a car?
24 A. Well, to the extent it might not actually be
25 visible, I probably couldn't see it if it was not

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1 visible. I don't know the electronic components to
2 every car that I've ever seen or sat inside.
3 Q. In connection with these proceedings, did you
4 look at an actual Aptiv dual-role hub product?
5 MR. BLUMENKOPF: Objection, form.
6 A. I mean, I can't remember if any of the data
7 sheets or anything I looked at might have had
8 photographs or anything. So I just can't remember
9 what's in all the materials I considered every page.
10 BY MR. JENSEN:
11 Q. Putting aside like photographs or pictures, I'm
12 asking about the actual, physical product. Did you look
13 at one of those in connection with this case?
14 MR. BLUMENKOPF: Objection, form.
15 A. I don't think I did.
16 BY MR. JENSEN:
17 Q. Why not?
18 MR. BLUMENKOPF: Objection, form.
19 A. Because what I relied on were the materials
20 that I listed; and I think I was able to show why, for
21 example, there's a nexus based on the exhibits that I
22 cited in my supplemental declarations.
23 BY MR. JENSEN:
24 Q. Are you familiar, Dr. Houh, with the term
25 "priority date"?

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1 A. Generally, yes.
2 Q. And what is your understanding of what the
3 priority date refers to?
4 A. I think the priority date refers to the -- so
5 I'm not a lawyer; but, you know, there's some chain of
6 events leading up to the issuance of a patent. And
7 there are rules, as I understand, to go back to a
8 particular date where you could -- the invention was
9 actually laid out.
10 That would be the date, I think, I would
11 use in various cases to define prior art before that
12 date. And I understand that date can be challenged or
13 moved earlier for various reasons or moved later for
14 various reasons due to, you know, the documents in the
15 prior art not supporting the claims at issue or things
16 like that.
17 So I'm not a lawyer, but that's typically
18 what I understand a priority date would be. I would
19 consider prior art before that date in -- if a
20 petitioner were challenging it, prior art after a
21 priority date wouldn't be applicable for the use in any
22 challenges.
23 Q. Would you agree with me, Dr. Houh, that the
24 priority date is the date that you use to evaluate the
25 knowledge of a POSITA?

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1 MR. BLUMENKOPF: Objection, form.
2 A. So I would -- in my analysis I would use a
3 priority date as the date to consider certain things for
4 the purposes of determining obviousness or understanding
5 the plain and ordinary meaning of claim terms and things
6 like that.
7 So I understand that would be as of --
8 like, for example, claim interpretation. In plain and
9 ordinary meaning my understanding is that it would be
10 based on the specification and the prosecution history
11 as of the priority date, and that's typically what I
12 apply.
13 MR. BLUMENKOPF: Counsel, if there's a
14 window for a break, we've been going for about an hour
15 and a half.
16 MR. JENSEN: Yeah. Let me just finish a
17 couple more questions.
18 BY MR. JENSEN:
19 Q. Would you agree with me, Dr. Houh, that it's
20 important to evaluate the knowledge and understanding of
21 a POSITA as of the priority date for a given patent?
22 MR. BLUMENKOPF: Objection, form.
23 A. I think it's important for various issues that
24 may arise in a particular case.
25 BY MR. JENSEN:

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Q. What priority date did you use for the patents in this case?
MR. BLUMENKOPF: Objection, form.
BY MR. JENSEN:
Q. And I can direct you to paragraph 27 of your report.
A. So with respect to the '643 patent, this paragraph says that the -- "I understand that for the claims of the '643 patent, a priority date of September 6, 2016 should apply."
And I know there might be slight differences in some of them, but I think we need to look at each case separately to show what the priority dates I applied for each case were.
Q. And the one you just read, that was for the '643 patent, correct?
A. Yes.
Q. And for the '072 patent we can look at your report in that case and go to paragraph 27.
A. Okay.
Q. And what is the priority date that you used for the '072 patent?
A. Yeah. So I understand that for the claims of the '072 patent a priority date of September 6, 2016 should apply.

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Q. Where did that understanding come from?
MR. BLUMENKOPF: Objection, form.
A. I'm often informed of that. And also I may just confirm that looking at the patent, absent any other issues challenging party dates in a case.
BY MR. JENSEN:
Q. Yeah. And in this case where did the understanding that you recite in paragraph 27 come from?
MR. BLUMENKOPF: Objection, form.
BY MR. JENSEN:
Q. And I'm trying to get at, is that something that you came up with on your own, that was your own understanding, or was that understanding provided to you by the lawyers?
MR. BLUMENKOPF: Objection, form.
A. I mean, I don't know. I don't remember exactly where. It may have come from what the petitioners said; or it could have, you know, been based on what I understood from the lawyers. I don't remember.
BY MR. JENSEN:
Q. All right. Let's look at your declaration in the '228 proceeding. So this is the '420 patent, '228 proceeding, paragraph 27.
A. Okay.
Q. And what is the priority date that you used for

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the '420 patent?
A. Paragraph 27 in the '228 case for the '420 patent, because there are two different cases, paragraph 27 says that "I understand that for the claims of the '420 patent a priority date of September 6, 2016 should apply."
Q. Is that correct?
MR. BLUMENKOPF: Objection, form.
A. I don't think I have an opinion about that. I think I have an opinion somewhere about, you know, if the priority date might be different. And we can go look at that. My declarations say what they say.
So there might be a statement where somewhere in one or more of my declarations about a hypothetical -- well, a situation that may arise if the priority date were not that. I just don't remember word for word.
BY MR. JENSEN:
Q. Yeah. I didn't see that in your declarations. If you can point me to that, that would be great. But I would submit to you, Dr. Houh, that this is the wrong date; and it can be readily verified by looking at the patent itself. And maybe we can take a look at that.
You can pick whatever patent you would like. Which patent should we look at?

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A. Since we have the '420, maybe we can look at the '420.
Q. That would be Exhibit 1003. But if it's not marked, that's fine. We go to the '420 patent.
And what is the priority date of the '420 patent? And you can look on the cover sheet. It extends onto another page as well. What is the priority filing date for the '420 patent?
A. Well, it doesn't say priority date on the face; but it says that there's a filing date of September 19, 2016.
Q. And that's the day that this application was filed, correct?
A. The application that led to the '420 patent, that's the date the application was filed.
Q. Correct?
A. For the '420 patent application.
Q. And does the '420 patent claim priority to an earlier filing date?
A. Well, it says that it's a continuation of another application filed on September 16th, 2014; and it continues that there's a provisional application filed on September 26, 2013.
Q. Do you know which of those dates is considered the priority date?

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A. Well, absent any challenges that may occur, if it were a straight continuation of the September 16th one, September 16, 2014 one, then perhaps that could be the priority date in cases.

And then to the extent the provisional application supports -- provides support for parts of the invention, I understand in some cases it could be viewed as September 26, 2013. And to the extent there's other material set forth about earlier an invention date, I understand that could cause the date to be earlier.

So I'm not a lawyer but I -- so I hope I got that stuff right.

Q. Yeah. So the question I have is, you know, we looked at your various declarations where you stated that, you know, you used a priority date of September 6, 2016 in your reports. What I want to know is, is that, in fact, what you used or was that just a typo and it's incorrect and, in fact, you used a different earlier priority date?

A. Again, I can't recall like exactly where this understanding came from; but I don't think my opinions would change based on whether it would be a date in 2013 or 2016 or in between.

Q. So, for example -- well, let's just take a

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specific example. Are you familiar with the USB Power Delivery standard?

A. I mean, I don't recall specifically talking about that in my declarations.

Q. You don't?

A. I mean, I don't remember every word in my declarations; but if I have, we can take a look at it.

Well, I do. I do see it now right here in paragraph 28.

Q. Okay. Do you know what year the Power Delivery Specifications came out?

MR. BLUMENKOPF: Objection, form.

BY MR. JENSEN:

Q. And let me just direct your attention, Dr. Houh, to the '962 patent which discusses the Power Delivery Specification in column 10 starting around line 36.

A. Yes, I see that.

Q. And it references the Power Delivery Specification revision 3.0, version 1.0 published March 25, 2016 when corrected for the typo?

A. Yeah. I think that's pretty clearly a typo. I do recall seeing the typo before. I remember that typo.

Q. So accepting the '962 patent's statement that this particular power delivery spec published in March

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of 2016, would it make a difference what the priority date was, whether it was, you know, September 2016 or September of 2013?

MR. BLUMENKOPF: Objection, form.

A. So if you look at the '962, the cover there, this patent was filed on -- the application that led to this patent was filed on September 6, 2016. And it says it's a continuation in part of another application filed on September 16, 2014. And it goes on to have a provisional application filed on September 26, 2013.

But I understand -- that's what it says under Related U.S. Application Data. But I understand -- again, I'm not a lawyer -- that the continuation in part -- there's some cases where you would -- you could add specifications and figures in a continuation in part. And to the extent that certain claims are directed to the newly added material, you wouldn't get an earlier priority date -- the patentee wouldn't be entitled to an earlier priority date if the materials that support the claim were added later.

So, I mean, this is -- the cover of the '962 is different than -- I don't remember if we're looking at the '072 or the '420, but the dates are slightly different. This one's a continuation in part as opposed to a straight continuation.

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BY MR. JENSEN:

Q. Yeah. And my question is simply, would you agree with me that the knowledge of a POSITA would be different in 2016 versus 2013 because there were USB specifications that published in the interim?

MR. BLUMENKOPF: Objection, form. Counsel, it's unclear if you're asking about the '420 patent or the '962 patent.

MR. JENSEN: I'm not asking about any patent in particular.

BY MR. JENSEN:

Q. So would you agree with me, Dr. Houh, that the knowledge of a POSITA would be different in 2016 versus 2013?

MR. BLUMENKOPF: Same objection.

A. I mean, it may not be materially different for the purposes of my analysis for this case; but I will point out that in the '962 patent it's referring to a revision 3, version 1.0 published in 2016. It doesn't say when earlier versions or even draft versions were -- would have been known to POSITAs.

BY MR. JENSEN:

Q. Would you agree with me that a POSITA in September of 2016 would have the benefit of knowing about the Power Delivery Specification referenced in the

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1 '962 patent?
2 MR. BLUMENKOPF: Objection, form.
3 A. Well, there's a very specific revision that
4 indicates that -- even before that date in 2016 there
5 were earlier revisions, and oftentimes there are earlier
6 drafts that are -- that would have been available to
7 POSITAs.
8 So I don't think there's any -- I mean, if
9 you want to go through each of my opinions, I don't
10 think they would change based on slightly different
11 priority dates.
12 BY MR. JENSEN:
13 Q. Yeah. So my question is slightly different
14 than that, right? It's simply would a POSITA in 2016
15 have the benefit of knowing about the Power Delivery
16 Specification mentioned in '962 patent?
17 A. Well, the '962 patent does call upon it
18 explicitly. But that doesn't mean POSITAs in earlier
19 times didn't know about, you know, materially the same,
20 you know, materials that were in an earlier version that
21 were also in the later versions.
22 Q. So let me follow up on that.
23 Would you agree with me then that in 2013,
24 to the extent that there was material that had been
25 previously published by the USB standards organization,

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1 that a POSITA would be familiar with that information?
2 MR. BLUMENKOPF: Objection, form.
3 A. I'm sorry. Could you repeat the question,
4 please?
5 BY MR. JENSEN:
6 Q. Yeah. I understand you to be saying, Hey look,
7 this is revision 3.0. There could be a 2.0 or a 1.0
8 that was published in 2013. Is that the point you're
9 trying to get at?
10 MR. BLUMENKOPF: Objection, form.
11 A. I mean, that may be part of the -- that may be
12 true. This doesn't say. But a POSITA would have been
13 knowledgeable about the things that POSITAs -- POSITA is
14 a hypothetical person that supposedly knows about the
15 body of publicly available information before certain
16 dates. It's not a real person.
17 But to the extent there were earlier
18 versions that could have been found by a POSITA, they
19 would know about these earlier versions as well.
20 BY MR. JENSEN:
21 Q. Okay.
22 MR. JENSEN: Let's take a break.
23 THE VIDEOGRAPHER: The time is 10:54 a.m.
24 We're now going off the record.
25 (Recess taken)

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1 THE VIDEOGRAPHER: The time is 11:13 a.m.
2 We're now back on the record.
3 BY MR. JENSEN:
4 Q. Welcome back, Dr. Houh.
5 A. Thank you.
6 Q. During the break did you talk with your
7 counsel?
8 A. Just about how to get the files on this
9 computer.
10 Q. Oh, thank you for reminding me of that. Were
11 we able to get that issue resolved?
12 A. No, not yet. Still working on it.
13 Q. All right. Well, we'll continue; and hopefully
14 by the next break that will be tied up.
15 Dr. Houh, have you ever designed a USB
16 hub?
17 MR. BLUMENKOPF: Objection, form.
18 A. No, I have not. But I've designed a lot of
19 networking and switching equipment.
20 BY MR. JENSEN:
21 Q. Have you ever designed a USB host-to-host
22 bridge?
23 MR. BLUMENKOPF: Objection, form.
24 A. No.
25 BY MR. JENSEN:

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1 Q. Prior -- well, let me just ask this question.
2 Have you read the USB 2.0 standard?
3 MR. BLUMENKOPF: Objection, form.
4 A. I've reviewed portions of it. I've flipped
5 through it.
6 BY MR. JENSEN:
7 Q. Had you read the USB 2.0 standard prior to
8 working on this case?
9 MR. BLUMENKOPF: Objection, form.
10 A. I think probably I did, yes.
11 BY MR. JENSEN:
12 Q. Had you read the USB 2.0 standard in 2013?
13 MR. BLUMENKOPF: Objection, form.
14 A. I don't think so.
15 BY MR. JENSEN:
16 Q. Have you read the USB 3.0 standard?
17 MR. BLUMENKOPF: Objection, form.
18 A. I may have read parts of it. I don't know
19 offhand.
20 BY MR. JENSEN:
21 Q. Have you read the USB 1.0 standard?
22 MR. BLUMENKOPF: Objection, form.
23 A. I probably have seen that before.
24 BY MR. JENSEN:
25 Q. Have you read it?

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A. I've probably read portions of it before.
Q. Had you read it in 2013?
MR. BLUMENKOPF: Objection, form.
A. I don't think so.
BY MR. JENSEN:
Q. Had you read the USB 3.0 standard in 2013?
MR. BLUMENKOPF: Objection, form.
A. I mean, if I had, I -- at the time later, probably not in 2013.
BY MR. JENSEN:
Q. Have you read the USB OTG standard?
MR. BLUMENKOPF: Objection, form.
A. I may have read parts of it.
BY MR. JENSEN:
Q. Would you have read any parts of it in 2013?
MR. BLUMENKOPF: Objection, form.
A. Probably not.
BY MR. JENSEN:
Q. Do you know what the acronym OTG stands for?
A. It might be "on-the-go." I don't know if I remember that correctly or not.
Q. Let me direct your attention to paragraph 26 of your declaration.
A. Which declaration do you mean?
Q. Any of them. They're all the same. We can go

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with the '643; but it will be the same in all of them, I think.
A. Okay.
Q. And this is under the heading Level of Skill in the Art. Is that right?
A. Yes.
MR. BLUMENKOPF: I'm sorry. Just for clarity, Dr. Houh, are you looking at the '643 declaration?
THE WITNESS: I am looking at the '643 declaration, yes.
BY MR. JENSEN:
Q. And let me just ask this. Is your level of skill in the art different depending on which patent you're analyzing?
A. Just for the record, the '420 '495 case, that is not the same paragraph number. It's a different paragraph number. But for that paragraph describing what my opinion is, the person of ordinary skill in the art in the field is the same across all five of my IPR declarations.
Q. Could you read your definition aloud of the level of skill in the art.
A. "In my opinion, a person of ordinary skill in the art in the field of the challenged patents, as of

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the date of the invention (September 26, 2013) ('POSITA')" -- by the way, this is the declaration for the '643 supplemental declaration case -- "would have had a bachelor's degree in computer science, electrical engineering, or an equivalent and two years of professional experience working with computer network protocols such as USB. Lack of work experience can be remedied by additional education and vice versa."
Q. Did you apply that definition when rendering the opinions in your declarations?
A. Just for the issues that require analysis from the point of view of a POSITA, this is what I applied.
Q. Did you render any opinions in your declarations under a different definition of a POSITA?
A. I mean, for the issues that the analysis, if I understand, would be taken from that person of ordinary skill, that's the level of skill that I applied.
I understand the petition is taking a different view of the level of ordinary skill, but I applied -- which I think is wrong for -- that does not reflect -- I think petition's proposed level of ordinary skill does not reflect the true ordinary level of skill applicable to the challenged patents, but I applied what I've laid out as a POSITA.
Q. And you didn't render any opinions under

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someone else's definition of a POSITA in your reports, did you?
A. In this section I don't see that I said I did that.
Q. In forming your definition of a POSITA, did you consider the education and experience level of the inventors on the Aptiv patents?
A. I don't recall looking at that information.
Q. Do you know what the education level of the inventors on the Aptiv patents is?
A. I don't believe I do.
Q. Do you know the experience level of the inventors on the Aptiv patents?
A. So I'm not an attorney here; but I understand that the inventors of a patent are presumed to be at the level they are for, you know, making the invention. So no, I don't believe I looked at that specifically.
Q. Let me direct your attention to paragraph 47 of the petitioners' expert reports, and that's Exhibit 1013. I'm not sure if you have a hard copy of that or not, but I'm happy to just share it on the screen here.
MR. BLUMENKOPF: Which proceeding are you referring to, Counsel?
MR. JENSEN: This one happens to be the

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1 '643, but it doesn't matter. It's the same.
2 MR. BLUMENKOPF: I want to be clear on the
3 record which document you're referring to, but it
4 appears to be the '643.
5 MR. JENSEN: Yeah. I mean, I can refer
6 collectively to all of them. It even says at the
7 beginning that they're identical in this section.
8 MR. BLUMENKOPF: I understand that; but
9 given the number of proceedings and the number of
10 documents, I'd just like the record to be clear as to
11 which specific document we're talking about.
12 MR. JENSEN: Well, and I want to be clear.
13 If you're going to raise an issue, I can pull up every
14 one of them and we can look at it but that seems like a
15 tremendous waste of time and resources.
16 So we'll proceed in looking at the one
17 that we've got here, which is the '643; but they're
18 expressly the same in terms of the paragraph that we're
19 looking at.
20 BY MR. JENSEN:
21 Q. And let me ask this, Dr. Houh. Did you review
22 the expert declarations of the petitioner when forming
23 your opinions?
24 A. I mean, I'm pretty sure the declaration of
25 Mr. Welch was part of materials I considered. I'm not

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1 sure if it's doctor. I'm sorry. I think it's doctor.
2 I don't remember.
3 Q. It's Mr. Welch.
4 A. Okay. I think I've listed those as part of the
5 materials considered. And a lot of these are rebuttal
6 response positions to both Mr. Welch's and the
7 petition's points.
8 Q. And this is -- the paragraph 47 that we're
9 looking at falls under the heading in Mr. Welch's report
10 of Level of Skill in the Art, correct?
11 A. Yes. And I think I did cite or include
12 excerpts of this portion in my own section below where
13 we were just looking in the '643 declaration.
14 Q. And I want to give you just a moment to review
15 paragraph 47 of the Welch declaration where he sets
16 forth his definition of a POSITA. So I'll let you just
17 read that. Let me know when you're done reviewing that.
18 A. Okay. I've reviewed it.
19 Q. Dr. Houh, did you qualify as a POSITA under
20 Mr. Welch's definition?
21 MR. BLUMENKOPF: Objection, form.
22 A. Well, if you consider -- if you consider his
23 statements, certainly there's the middle part where I --
24 I did work in network communication architectures. I've
25 designed systems like that, worked on components of such

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1 of those, not specifically a host-to-host bridge but
2 certainly components of network and communication
3 architectures that I personally designed myself.
4 I've worked in computer hardware and
5 peripherals. I've done computer programming. I have
6 written drivers for Unix operating systems, and I've
7 done embedded systems work. And I have a four-year
8 degree in electrical engineering and computer science.
9 I do not specifically have four years of
10 experience designing USB systems, including USB hosts
11 and hubs and USB devices; but I have a relevant advanced
12 degree all the way up to a Ph.D. that Mr. Welch says
13 could substitute -- may substitute for some work
14 experience.
15 And then I have not specifically -- I
16 don't have specific professional experience in working
17 with USB, but I think my Ph.D. in networking -- this is
18 really a networking -- that's what I did for my Ph.D. --
19 may substitute for this work experience.
20 BY MR. JENSEN:
21 Q. So let me ask this. Are you able to answer the
22 question with a "yes" or a "no," Dr. Houh? Did you
23 qualify as a POSITA under Mr. Welch's definition?
24 A. I mean, I think if you consider Mr. Welch's
25 statements about relevant advanced degrees substituting

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1 for work experience, I would say I -- even with what he
2 says --
3 Q. So let's walk through --
4 A. Again, I disagree with what Mr. Welch says is
5 the level here of the person of ordinary skill for the
6 reasons I laid out in my declaration for the '643 right
7 after the paragraphs we're looking at earlier.
8 Q. So let's walk through this kind of just
9 piece-wise one piece at a time.
10 Starting toward the beginning -- first,
11 let me ask. So Mr. Welch says, "The challenged patents
12 pertain generally to the field of USB connectivity
13 (e.g., USB systems/architectures/communications), though
14 other technical fields may be relevant."
15 Do you see that sentence?
16 A. Yes.
17 Q. Do you agree that the challenged patents
18 pertain generally to what the first sentence says?
19 MR. BLUMENKOPF: Objection, form.
20 A. Well, I mean, I have a different statement in
21 my declaration. So they're not the same.
22 If you look at my '643 supplemental
23 declaration, in paragraph 31 I talk about what the
24 patented technology relates to; and it's slightly
25 different, although I do mention that it -- I do mention

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USB in what I lay out.
BY MR. JENSEN:
Q. Yeah. And because they do use slightly different words, that's why I'm asking the question, which is do you agree with the statement that "The challenged patents pertain generally to the field of USB connectivity, e.g., USB systems/architectures/ communications, though other technical fields may be relevant"?
MR. BLUMENKOPF: Objection, form.
A. I mean, I don't think that I have a specific opinion in my declarations with respect to this statement. I just don't remember every word, but I don't recall that I specifically addressed this as part of my analysis.
BY MR. JENSEN:
Q. Do you disagree with this statement?
MR. BLUMENKOPF: Objection, form.
A. I don't think I have an opinion right now about that.
BY MR. JENSEN:
Q. Okay. So let's kind of come back to the qualifications that Mr. Welch lays out. The first thing he says is that, "A POSITA at the time of the alleged invention would have been well-versed in USB standards

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(including the USB 2.0 and 3.0 specifications and the OTG supplement)."
My question for you, Dr. Houh, is were you well-versed in USB standards, including the USB 2.0 and 3.0 specifications and the OTG supplement, in 2013?
MR. BLUMENKOPF: Objection, form.
A. So I did not specifically have work experience with those standards, but I had designed prior to that point a high-speed serial optical link. So I -- and I was very familiar with networking protocols and read many specs and certainly had the ability to read whatever spec and understand the issues in them.
BY MR. JENSEN:
Q. Dr. Houh, in 2013 were you well-versed in the design and deployment of USB hosts, including embedded hosts, USB devices and USB hubs?
MR. BLUMENKOPF: Objection, form.
A. So I did not specifically work with USB; but as of 2013, I had designed networking switches which had many similarities to the functions within hub devices generally. I had designed a host interface for a communications system. I had written the software for the driver for that host interface, which was software on the host that enabled communications with the network.

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So while I don't have specific experience with the specific USB specifications laid out here, I had an education level that allowed me then to review these types of specifications and understand them because I had work experience designing and building these kinds of networking equipment pertaining to different standards.
BY MR. JENSEN:
Q. Sitting here today, would you say that you are well-versed in the USB 2.0, 3.0 and OTG standards?
MR. BLUMENKOPF: Objection, form.
A. I can pretty much read most networking protocols and understand them to the extent necessary.
BY MR. JENSEN:
Q. Would you agree with me that that ability is something a POSITA would have?
MR. BLUMENKOPF: Objection, form.
A. Well, I think the POSITA that I've laid out certainly would have the capability to pick up a specification such as a USB specification and review and understand that and then be able to implement and make devices based on the level of education and skill that I've laid out in what my opinion is. I think they could review and read these types of specifications and understand them.

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BY MR. JENSEN:
Q. And my question is a little bit different. It's not what a POSITA -- well, let me ask this. We'll let the previous question and answer stand.
Putting aside what a POSITA could do, right, or what you could have done in the past or even could do today, right, were you well-versed in the USB 2.0, 3.0 and OTG standards?
MR. BLUMENKOPF: Objection, form.
A. You're asking in 2013?
BY MR. JENSEN:
Q. In 2013 were you well-versed with the substance of the USB 2.0 and 3.0 specifications and the OTG supplement?
MR. BLUMENKOPF: Same objection.
A. So as I said earlier, I don't recall specifically having reviewed those in 2013. But I certainly did a lot of networking work and understood a lot of -- I've actually designed my own protocols before. And I have the capability of relating things in these specs to all the common concepts that I understood.
So they're just very specific about certain things, but they all relate to concepts that I was well-versed in. Those are the kinds of things found

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1 in, you know, various networking/communications-type
2 specifications.
3 BY MR. JENSEN:
4 Q. Were you well-versed in the USB-C connector
5 specification and the USB-PD power delivery
6 specification in 2013?
7 MR. BLUMENKOPF: Objection, form.
8 BY MR. JENSEN:
9 Q. Strike that. Let me ask that question again.
10 Were you well-versed in the USB-C
11 connector specification and the USB-PD power delivery
12 specification in 2016?
13 MR. BLUMENKOPF: Objection, form.
14 A. So I did not work professionally in the --
15 working with USB devices as of 2016. But prior to 2016,
16 actually in the late '90s, I did work on communications
17 systems where I studied actually the power-over-ethernet
18 specification because we were designing a telephone
19 system and I was the technical research person and we
20 wanted to do power over ethernet. And also I had to
21 study the technical specifications for ethernet with
22 respect to the signals and where power may be delivered
23 as part of the standard.
24 So I'm familiar with many of the concepts,
25 while I was not familiar specifically in 2016 with the

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1 power delivery or USB-C connector specifications. But,
2 again, I certainly -- with my education level and
3 experience certainly had the capability to relate
4 specific things that turn up in these types of
5 specifications to existing concepts that I had studied
6 previously.
7 BY MR. JENSEN:
8 Q. In 2013 did you have a working understanding of
9 network communication architectures such as client
10 server and components such as host-to-host bridges?
11 MR. BLUMENKOPF: Objection, form.
12 A. I mean, generally, yes. I mean, maybe not
13 specifically a host-to-host bridge; but that's simply an
14 example of a component of a network communication -- or
15 architectural network or communications.
16 So I would say I definitely had a working
17 understanding of what's listed in what you asked.
18 BY MR. JENSEN:
19 Q. In 2013 did you have a working understanding of
20 computer hardware and peripherals, computer programming
21 and the design and implementation of communications
22 software, firmware and drivers in standard operating
23 systems like Windows, MacOS and Linux?
24 MR. BLUMENKOPF: Objection, form.
25 A. Yes.

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1 BY MR. JENSEN:
2 Q. And I think you've already talked about your
3 educational experience. In 2013 did you have four years
4 of experience designing USB systems, including USB
5 hosts, USB hubs and USB devices?
6 MR. BLUMENKOPF: Objection, form.
7 A. As I said earlier, I didn't work professionally
8 and design those type of specific systems; but I
9 designed other types of network components and
10 networking systems. And I had a relevant advanced
11 degree that Mr. Welch says may substitute for some work
12 experience.
13 BY MR. JENSEN:
14 Q. Did you render any opinions in your declaration
15 regarding the qualifications of Eric Welch as a POSITA?
16 MR. BLUMENKOPF: Objection, form.
17 A. I mean, I don't recall doing so; but my
18 declarations are what they are.
19 BY MR. JENSEN:
20 Q. Did you render an opinion in your declarations
21 under the definition of a POSITA set forth by Mr. Welch?
22 MR. BLUMENKOPF: Objection, form.
23 A. As I said earlier, I don't think I recall
24 providing any alternative analyses under different
25 POSITAs; but I will let the declarations stand for

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1 themselves. I just don't remember every word, but I
2 don't recall that.
3 BY MR. JENSEN:
4 Q. You referenced something that I want to go back
5 to in your declaration. We can look at the '643
6 declaration at paragraph 28.
7 Let me know when you have that in front of
8 you.
9 A. We're looking at the '643?
10 Q. Sure.
11 A. I mean, as I mentioned earlier, the paragraph
12 numbering is slightly different in at least one of
13 the -- even in this section in at least one of the other
14 declarations. So I just want to make sure I understand,
15 you know, which paragraph 28.
16 Q. It's the one I'm sharing on the screen. You
17 can always reference the screen share if you have a
18 question.
19 A. Yeah. The problem is I don't see
20 identification on the screen of which -- okay.
21 Q. It's always in the lower right-hand corner.
22 A. It was obscured earlier, but now I see it.
23 MR. BLUMENKOPF: Just to be clear for the
24 written record, this is the '643 declaration, right?
25 THE WITNESS: Yes.

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1 BY MR. JENSEN:
2 Q. And this is the same in all your declarations,
3 correct, the substance of the paragraph?
4 A. Yeah. I mean, I believe the substance is
5 essentially the same; but the paragraph numbers are
6 slightly different in at least one of them.
7 Q. Yep. So the substance is the same, and anybody
8 who would like can run a redline and see that.
9 So in the first sentence of paragraph 28
10 you say, "I understand that the petitioner contends that
11 a heightened level of ordinary skill applies."
12 Do you see that?
13 A. Yes.
14 Q. And you use this word "heightened" that I
15 wanted to ask about. What do you mean by "a heightened
16 level of ordinary skill"?
17 A. Well, in comparison to what I've laid out as a
18 person of ordinary skill, the petitioner has a lot more
19 specific requirements to a POSITA; and I've outlined
20 that if you continue reading.
21 Q. Yeah. And that's what I want to kind of drill
22 down on, right? What I'm trying to understand is if
23 there's really any daylight or difference between the
24 two definitions or if the definition you provide is
25 simply a more generic statement and Mr. Welch's is a

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1 more granular statement but they're really saying sort
2 of the same thing. So that's what I'm going to try to
3 understand as we look at this paragraph 28.
4 The first thing that you talk about there
5 is the USB standards. Do you see that in the first few
6 lines of paragraph 28?
7 A. Yes, I see that.
8 Q. Okay. Is it your opinion that a POSITA would
9 not have been well-versed in the USB 2.0, 3.0 and OTG
10 standards?
11 MR. BLUMENKOPF: Objection, form.
12 A. I mean, that's not exactly what I'm saying.
13 What I'm saying is that my level of POSITA would have
14 been perfectly capable of reviewing these standards and
15 specifications and understanding them sufficient to
16 understand the patented inventions and to even perhaps
17 make use of them.
18 BY MR. JENSEN:
19 Q. How is that different than being well-versed
20 with the USB standards?
21 MR. BLUMENKOPF: Objection, form.
22 A. Well, I think the petitioner's contention is
23 that the POSITA is already well-versed and has that
24 knowledge.
25 My position is a little different, which

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1 is that the level of skill allows that person to look at
2 these standards and understand them but may not
3 necessarily have been already knowledgeable and
4 well-versed in them because the level of skill, you
5 know, provides the background and underpinnings for a
6 person to review a number of different standards and
7 apply them.
8 So I think that is different, presupposing
9 the knowledge of a very specific specification versus
10 pre -- well, what I'm saying is that the level of that
11 skill allows that POSITA to be able to look at many
12 different specifications related to networking and USB
13 and understand them; and I think those are two different
14 things.
15 BY MR. JENSEN:
16 Q. Is it your testimony, Dr. Houh, that an
17 individual could qualify as a POSITA if he or she had
18 never once looked at any of the USB standards or
19 specifications?
20 MR. BLUMENKOPF: Objection, form.
21 A. I mean, my point is that the person of -- level
22 of skill as I've laid out could pick up one of these
23 specifications and, based on their knowledge and level
24 of skill that I've outlined, understand what's going on,
25 certainly with respect to the way that the inventions

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1 are -- what the inventions are and what the
2 specifications are and what points are relevant and be
3 able to making use of the invention.
4 And that's what I've laid out is that
5 level of skill allows the POSITA to do it even if they
6 haven't seen it before because they don't have to have
7 seen it before. They simply have to understand how to
8 understand what they're reading. And I think that's
9 part of what my level of ordinary skill lays out
10 includes.
11 BY MR. JENSEN:
12 Q. And let me just sort of play that back to see
13 if I understand that correctly.
14 Are you saying that someone could qualify
15 as a POSITA as long as they had the capability to review
16 the USB standards and understand them, but they need not
17 have any previous understanding or knowledge of the
18 substance of the standards?
19 MR. BLUMENKOPF: Objection, form.
20 A. What I'm saying is that the level I've laid
21 out, which their education and professional experience
22 working with networking protocols, computer networking
23 protocols, that person of ordinary skill could be
24 looking at the patents and making use of the invention;
25 and they would understand, you know, what's being laid

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1 out in the spec.
2 What's different in the levels of ordinary
3 skill is that a petitioner's contention is higher
4 because it builds into the POSITA that they already are
5 well-versed in USB standards, including USB 2.0 and 3.0,
6 the OTG supplement, and the USB Power Delivery
7 Specification.
8 I'm saying that is a heightened level of
9 ordinary skill that I think is not reflective of the
10 true level of ordinary skill of the challenged patents
11 because I think my level of ordinary skill allows a
12 person, you know, because they already understand --
13 they have the requisite professional and work experience
14 to be able to understand the concepts in these
15 specifications relevant to the inventions of the
16 challenged patents.
17 BY MR. JENSEN:
18 Q. And is it correct then that under your
19 definition a POSITA need not have ever looked at the USB
20 2.0, 3.0 or OTG standards to qualify as a POSITA as long
21 as they had the ability to read and understand those
22 standards?
23 MR. BLUMENKOPF: Objection, form.
24 A. That's not quite what I'm saying. The level of
25 skill I've laid out allows them to be able to, you know,

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1 work in the field of these patents and making use of
2 what's laid out.
3 It doesn't require them to a priority have
4 reviewed all of these standards and be well-versed at it
5 because with the adequate educational and professional
6 experience, as I've laid out in my level of ordinary
7 skill, I think that's more reflective of the true level
8 of ordinary skill applicable to these patents.
9 BY MR. JENSEN:
10 Q. Would you agree with me that a POSITA would at
11 least be aware of the standards and know that they
12 exist?
13 MR. BLUMENKOPF: Objection, form.
14 A. You know, many people join the workplace; and
15 they haven't had prior knowledge of the things they're
16 working on. But after they've worked on something for
17 two years, you know -- these POSITAs as I've laid out,
18 they don't have to know about anything before working on
19 a new project necessarily because their education and
20 professional background allows them to do new things.
21 I think plenty of people are able to make
22 moves and still be productive and be able to, you know,
23 implement a, say, Bluetooth device even though they've
24 never read the Bluetooth spec given that they already
25 have a level of experience working in -- that's just an

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1 example.
2 I'm saying that the level of ordinary
3 skill that I've laid out is what I think is more
4 reflective of the true level of ordinary skill
5 applicable to these claims and that these additional
6 requirements are a heightened level of ordinary skill --
7 additional requirements level of set forth by a
8 petitioner are a heightened level of skill that need not
9 apply and that are not reflective of the true level of
10 ordinary skill required for -- applicable to these
11 patents.
12 BY MR. JENSEN:
13 Q. Under your definition of a POSITA, Dr. Houh,
14 does a POSITA need to have any experience in the design
15 and deployment of USB hosts, USB devices and USB hubs?
16 MR. BLUMENKOPF: Objection, form.
17 A. So, again, that's another additional
18 requirement that the petitioner's set forth for what's
19 required in a POSITA that I think is heightened and not
20 reflective of the true level of ordinary skill because I
21 don't think the -- I haven't laid out in my person of
22 ordinary skill that they have a priority work experience
23 in these very specific devices.
24 Given the level that I've laid out, I
25 think they can work in these areas; and it's more

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1 reflective of the true level of ordinary skill in the
2 art applicable to the challenged patents, my definition,
3 not adding all these heightened and additional
4 requirements to a POSITA that the petitioner does. I
5 think that's not reflective of the true level of
6 ordinary skill applicable to the patents.
7 BY MR. JENSEN:
8 Q. In your view would a POSITA have had a working
9 understanding of network communication architectures,
10 for example, master/slave architecture and components
11 like host-to-host bridges?
12 MR. BLUMENKOPF: Objection, form.
13 A. So my opinion of the true level of ordinary
14 skill doesn't enumerate specific concepts. But I have
15 that the POSITA has working professional experience with
16 computer network protocols and whatnot, and some of
17 these may be acquired readily through that.
18 But I don't specifically enumerate these
19 types of additional requirements, and I don't think
20 it's -- I think my -- what I've laid out without
21 specific enumeration of a laundry list of things, I
22 think my level of ordinary skill is more reflective of
23 the true level of skill applicable to the patents at
24 issue here.
25 BY MR. JENSEN:

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Q. Under your definition of a POSITA would a POSITA have a working understanding of computer hardware and peripherals, computer programming and the design and implementation of communications software, firmware and drivers?

MR. BLUMENKOPF: Objection, form.

A. Again, I don't specifically enumerate those things; but many of these skills would easily have been acquired through education and the professional experience that I've laid out. But I don't require these specific things, and I think these are what makes the petitioner's definition of a POSITA to be more heightened than what I've laid out.

And I don't think what petitioner has laid out is reflective of the true level of ordinary skill applicable to the patents. I think what I've laid out is reflective of the true level of ordinary skill with respect to the patents at issue here.

BY MR. JENSEN:

Q. In paragraph 26 of your report you say that a POSITA would have two years of professional experience working with computer network protocols such as USB, correct?

A. That's what I say.

Q. Is any amount of experience specifically with

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USB required under your definition of a POSITA?

MR. BLUMENKOPF: Objection to form.

A. Well, USB lays out a very specific way of doing things. That's what protocols are. But they're based on the same fundamental concepts common in any similar protocol.

And so while I do give an example of a network protocol such as USB that professional experience would be good in, I also say that the lack of work experience can be remedied by additional education, which gives people the capability to understand new things and relate them to additional concepts that they already know, which I still think the base level of ordinary skill provides.

BY MR. JENSEN:

Q. Is ethernet an example of one type of a network protocol?

MR. BLUMENKOPF: Objection, form.

A. I haven't specifically listed it, but I'm sure it could be.

BY MR. JENSEN:

Q. If someone in 2013 had a bachelor's degree in computer science and two years of professional experience working with ethernet, would such a person qualify as a POSITA under your definition?

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MR. BLUMENKOPF: Objection, form.

A. I mean, I haven't considered specific -- we could play this game and list all sorts of things. But, you know, the level of ordinary skill is what I've laid out here. I didn't consider specific instances. This is just a general layout of what the person of ordinary skill which I've laid out are, which I think are more reflective of the true level of ordinary skill applicable to these patents than the heightened level laid out and set forth by petitioner.

BY MR. JENSEN:

Q. And what I'm trying to understand, Dr. Houh, is whether any amount of USB experience is required under your definition to qualify as a POSITA. Because you give USB as an exemplary -- such as an exemplary network protocol. So let me just ask the clean question.

Could an individual qualify as a POSITA under your definition if they had no USB experience?

MR. BLUMENKOPF: Objection to form.

A. Well, I mean, you're presupposing that lack of any USB experience is total lack of all concepts in USB, which is simply not true. I mean, if you've done communications -- you know, USB is about serial communications; and that's part of a lot of the core curricula for networking courses.

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So it's not so black and white that you have to know about a very specific protocol to know anything about the protocol. You can know things about a protocol and have experience even though you haven't worked with a specific protocol.

So it's not -- you really can't say you know nothing about USB that's not -- USB protocol concepts are -- there's a high overlap with other communications concepts and other protocols. So if you know something about and work with network protocols, you know a lot about what most protocols are designed to do.

BY MR. JENSEN:

Q. So is it your testimony that if someone knows about the ethernet protocol, that they would know most of what's in the USB protocol as well?

MR. BLUMENKOPF: Objection, form.

A. There may be very specific different ways, like different like voltage levels, different networking speeds, different ways to access the physical media. But fundamentally a lot of the networking protocols share a lot of common concepts. That's my point.

BY MR. JENSEN:

Q. And just to maybe kind of wrap this up, is it correct that under your definition a POSITA could

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1 qualify -- let me strike that. Let me ask a cleaner
2 question.
3 Could someone qualify as a POSITA under
4 your definition in paragraph 26 if they had two years of
5 professional experience working with a network protocol
6 other than USB?
7 A. I mean, they would have worked with similar
8 concepts that are also present in USB. So it's hard --
9 Q. Well, what are those concepts? What are the
10 similar concepts that you think are consistent across
11 the network protocols?
12 MR. BLUMENKOPF: Objection, form.
13 A. Well, there are serial data protocols and
14 serial data communication methods and sometimes there's
15 parallel communication methods. But aside from those
16 two, those two are the two -- different networking
17 protocols will do it one way or the other typically.
18 So if you know -- if you've worked with
19 the serial communication protocols, you understand many
20 of the issues relevant to -- in USB as it is also a
21 serial communication protocol.
22 So what I'm saying is that simply if you
23 say that person hasn't had specific work experience in a
24 specific protocol, it doesn't mean they know nothing
25 about the protocol. What I'm saying is that the

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1 experience and education level gives them the tools
2 necessary to be able to work with many or, you know, any
3 protocols in some capacity without having to have
4 already had specific work experience or knowledge of the
5 details of the specification prior to working on some of
6 these because that level of education and work
7 experience in network protocols, for example, give that
8 POSITA the tools to be able to work in an environment
9 such as USB and implement products and devices using a
10 different standard that they may not have pre-known
11 about before starting to work on a particular project
12 because that level of education and professional
13 experience gives them the tools to understand -- apply
14 their knowledge to new areas.
15 And I think that's part of why the level
16 of skill I've outlined is more reflective of the true
17 level of skill that applies to these challenged patents
18 than the heightened level provided and set forth by
19 petitioner.
20 BY MR. JENSEN:
21 Q. So, for example, would a POSITA under your
22 definition be familiar with the concept of a master/
23 slave network architecture?
24 MR. BLUMENKOPF: Objection, form.
25 A. I mean, that level of education, that specific

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1 thing is very common -- you know, a very common concept
2 in computers and networking.
3 So I don't think you have to enumerate it,
4 but it's part of -- there are like a bunch of things.
5 You don't have to enumerate every single class a POSITA
6 has taken, right? I've not really seen that done really
7 much or at all that I can recall.
8 It's the level of skill that gives people
9 and POSITAs the skills and tools they need to work -- to
10 be applicable to the level of skill relevant to the
11 patents at issue here.
12 BY MR. JENSEN:
13 Q. Okay.
14 A. And I think what I've laid out is more
15 reflective of the true level of skill required for the
16 level of the challenged patents than all these extra
17 things thrown in, which -- in the petitioner's view
18 which I don't think are reflective of the true level of
19 skill. It's not necessary. They're heightened.
20 So I'm saying that these are extra things
21 I don't think are truly reflective of the true level of
22 skill required for a POSITA in the context of these
23 patents.
24 Q. Under your definition of a POSITA, would a
25 POSITA have an understanding of the concept of bridging?

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1 MR. BLUMENKOPF: Objection, form.
2 A. I mean, bridging is a very basic, common
3 networking concept that can be applied to a variety of
4 different specific protocol areas, yes.
5 BY MR. JENSEN:
6 Q. Under your definition would a POSITA have an
7 understanding of the concept of a hub?
8 MR. BLUMENKOPF: Objection, form.
9 A. So I haven't -- I mean, I haven't any specific
10 opinions about what these POSITAs specifically have
11 to -- I've laid out more of a general, broad level of
12 skill, which is that it's a certain education level in
13 certain specific fields alternatively and a few years of
14 professional experience in computer networking protocols
15 with an example being USB.
16 I don't have an opinion about -- you know,
17 that they have to know how to multiply or add or do
18 calculus or do anything. It's just a broad -- it's a
19 general level of skill I've laid out, which I think are
20 more reflective of the true level of skill applicable to
21 the patents than I think what the petitioner has laid
22 out, which require a number of things I don't think are
23 necessary.
24 There's too many requirements laid out in
25 the petitioner's proposal that are not truly reflective

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1 of the actual level of skill necessary in the area of
2 the challenged patents.
3 BY MR. JENSEN:
4 Q. In paragraph 19 you include a table that lists
5 the materials you considered when preparing your
6 declaration, correct?
7 A. I mean, at least in the declaration for the
8 '643 patent, I see that in paragraph 19.
9 Q. Yeah. And in all of your declarations you have
10 a similar table called Materials Considered where you
11 list a number of exhibits?
12 A. I think that's right.
13 Q. Okay. Is the table -- does the table in
14 paragraph 19 contain a complete list of the materials
15 you considered when forming your opinions?
16 MR. BLUMENKOPF: Objection, form.
17 A. I mean, it should be to the extent there are
18 not other documents I cited in the body of the
19 declaration that just somehow didn't make its way onto
20 the list; but I would have cited to those.
21 Like this table in my citation should be
22 what I relied on for the basis of my opinions, that
23 information, yeah. Sorry.
24 BY MR. JENSEN:
25 Q. Were all of the exhibits in paragraph 19

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1 provided to you by counsel, or did you locate any of
2 them in the first instance on your own?
3 MR. BLUMENKOPF: Objection, form.
4 A. I mean, sometimes I'm not actually provided
5 with all the things. For example, the patents, I might
6 have a list that I might actually download my own copy;
7 but I would have been informed of what the patent
8 numbers were, you know, as opposed to -- but with
9 respect to other documents, I don't think I -- like the
10 2000 series, for example, I think those would have been
11 provided to me. Yeah.
12 To the extent there -- I might have asked
13 for something in some area but not a specific document.
14 I don't recall about how every document came to be on
15 this list.
16 BY MR. JENSEN:
17 Q. Did you read all of the materials listed in
18 paragraph 19 in their entirety?
19 MR. BLUMENKOPF: Objection, form.
20 A. I think there were some documents I would have
21 looked at the specific portions as opposed to reading
22 the whole thing.
23 BY MR. JENSEN:
24 Q. And you list toward the end of the table three
25 exhibits numbered 2040, 2041 and 2042, which are trial

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1 transcripts. Do you see that?
2 A. Yes.
3 Q. Did you read the entire trial transcript?
4 MR. BLUMENKOPF: Objection, form.
5 A. I read portions of it, and I might have flipped
6 through other portions. But no, I didn't read cover to
7 cover the trial transcripts; but I certainly reviewed
8 and read portions.
9 BY MR. JENSEN:
10 Q. How did you decide what portions to read?
11 MR. BLUMENKOPF: Objection, form.
12 A. Well, in some cases I searched for words; and
13 then I reviewed context around -- I read the transcript
14 around those areas backing up to where I think the
15 beginning of a particular line of questioning would have
16 been. In other cases I may have been directed to
17 certain areas.
18 BY MR. JENSEN:
19 Q. What is the trial to which the trial
20 transcripts pertain?
21 MR. BLUMENKOPF: Objection, form.
22 A. I believe they relate to a trial and the two
23 parties where I think Microchip may have been the
24 plaintiff. That's what I recall right now.
25 BY MR. JENSEN:

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1 Q. Do you know what patents were asserted in that
2 trial?
3 MR. BLUMENKOPF: Objection, form.
4 A. I'm not sure I know that from memory or -- I
5 may have seen it. I just don't know.
6 BY MR. JENSEN:
7 Q. Whose idea was it to review the trial
8 transcripts?
9 MR. BLUMENKOPF: Objection, form.
10 A. I mean, it was probably -- probably it was
11 supportive of some of my opinions, typically relating to
12 the secondary considerations. And so I -- those
13 transcripts I probably didn't ask for myself.
14 BY MR. JENSEN:
15 Q. Are you familiar with the concept of a USB
16 host-to-host bridge?
17 MR. BLUMENKOPF: Objection, form.
18 A. I mean, I think I've heard or read the term
19 before.
20 BY MR. JENSEN:
21 Q. Does a USB host-to-host bridge comply with the
22 USB standard?
23 MR. BLUMENKOPF: Objection, form.
24 A. I don't know that that was part of my analysis;
25 but if you want to point me to somewhere in any of my

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1 declarations, I'd be happy to take a look. But I don't
2 recall that as -- that that was a part of my analysis
3 for my declarations.
4 BY MR. JENSEN:
5 Q. Let's switch gears a little bit and talk about
6 the Aptiv patents. Did you read the four Aptiv patents
7 at issue in these IPRs?
8 A. Yes.
9 Q. Did you understand the Aptiv patents?
10 MR. BLUMENKOPF: Objection, form.
11 A. I mean, yeah. I mean, I read them; but, you
12 know, I don't know if you're going to ask me about
13 specific things. But yeah, when I read them and review
14 them, I try to form an understanding of what they're
15 about as part of what I do.
16 By the way, you know, if we could take a
17 break within 10 or 20 minutes for lunch, I'm actually
18 getting a little hungry as long as we have food.
19 BY MR. JENSEN:
20 Q. Yeah. We'll definitely break for lunch.
21 So just to make sure I've got a clean
22 answer to this, do you understand the Aptiv patents?
23 A. Yeah. I form an understanding of the patents
24 that I review for cases.
25 Q. Is there anything that you didn't understand in

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1 the Aptiv patents?
2 MR. BLUMENKOPF: Objection, form.
3 A. I mean, I don't recall that, no. I tried to
4 form an understanding of what the patents are about and
5 specifically with respect to what the claims claim.
6 BY MR. JENSEN:
7 Q. Let's take a look at the -- we can go to the
8 '643 patent. Let me know if you've -- I'm sharing
9 figure 1 of the '643 patent, but you're welcome to look
10 at the hard copy as well.
11 Is figure 1 of the '643 patent an
12 embodiment of the alleged invention, or is it showing
13 the prior art?
14 MR. BLUMENKOPF: Objection, form.
15 A. So figure 1 is being discussed in the
16 Background section of the '643 patent specification.
17 If you look around column 2, actually
18 maybe the bottom of column 1, it's talking about vehicle
19 systems and what's kind of there already. And then
20 there's a short description of figure 1 on the next
21 page -- or column 5 rather that says, "Figure 1
22 illustrates a system where a multiple port self-powered
23 USB Hub functions to connect a single USB Host to a
24 plurality of USB ports."
25 So I think that is really discussing kind

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1 of one of the things that was already around prior to
2 the invention, just giving some context for the
3 invention.
4 BY MR. JENSEN:
5 Q. And is the same true for figure 2?
6 A. Yeah. I mean, figure 2 differs in that there's
7 also an SD card connector; and that's what it points out
8 in column 5. But it's also being discussed in the
9 Background section. So it would be understood that
10 that's describing what's already out there. This is a
11 variation where now there's an SD card.
12 I remember seeing that in private
13 vehicles. You could plug in a memory stick so you could
14 play music or something off of it, for example. But I
15 am just telling you what the patent is saying. It's in
16 the Background section.
17 Q. And would your answer be similar for figure 3?
18 A. Yeah. Figure 3 is also described in the
19 Background section. It's directed to this tiered --
20 multiple USB hubs can be tiered, and it's describing
21 that. So I think it is describing what people have
22 known to do already. It's not describing it as an
23 embodiment of the invention.
24 And there's a similar short description in
25 column 5 at line 21, starting there. But this is being

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1 discussed in the background. So it's what people were
2 doing at the time and what was known.
3 Q. And when we get to figure 4, things change a
4 little bit. Would you agree with me that figure 4 is an
5 embodiment of the alleged invention in the Aptiv
6 patents?
7 A. Well, yes. Figure 4 is accompanied by a more
8 detailed explanation of the specification that, you
9 know, goes -- it's kind of -- they start off talking
10 about it in the detailed illustration of the embodiment
11 section in column 5 starting around line 50. But the
12 description goes on. So the figure is described as a
13 system which is in accordance with an embodiment of the
14 present invention.
15 So it's just one example of an embodiment,
16 and it is described in more detail in the specification
17 itself.
18 Q. And, in fact, figure 4 is the embodiment that
19 you used to describe the patent in your declarations,
20 correct?
21 A. Can you point me to where you're looking at
22 here.
23 Q. So, for example, in section VII of your
24 declaration titled "The Claimed Inventions" you have an
25 annotated version of figure 4.

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A. Well, I'm looking at the '643 declaration. I do see that, both on the screen and in my declaration. I do highlight figure 4; but there's more discussion in there, too, figure 4 of the '643 patent.
Q. Yeah. So let's take a look at figure 4. Near the top just underneath the label figure 4 do you see the text "USB Hub Module"?
A. I do see that text in figure 4 of the '643 patent.
Q. What is a USB hub module?
A. Well, I'm looking at the '962 patent claim 1; and if you look at it, there's a claimed USB hub module, which it comprises a number of different elements.
So with respect to that claim, the claimed USB hub module would have to have all the elements listed in claim 1 to be the claimed USB hub module.
Q. In figure 4 of the Aptiv patent what is the USB hub module?
MR. BLUMENKOPF: Objection, form.
A. Well, in figure 4 there's an example of -- this is one example of an embodiment discussed. So there is a label that says "USB Hub Module" on figure 4, and then it's discussed in more detail in the specification.
But in order to be the claimed USB hub module of the '962 -- and I note that the '420 patent

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claim 1 also recites the USB hub module. To be those claimed USB hub modules would require those elements be cited in each of the respective claims to be present.
BY MR. JENSEN:
Q. Yeah. I'm just asking about figure 4. Can you answer my question? With respect to figure 4, in figure 4 what is the USB hub module?
MR. BLUMENKOPF: Objection, form.
A. Well, it's a label at the top of a box in figure 4 where figure 4 is described in more detail in the specification. And that's with respect to just figure 4 and not as used in the claim -- as a claimed USB hub module.
BY MR. JENSEN:
Q. Yeah. And my question is specific to figure 4, what in figure 4 comprises the USB hub module?
MR. BLUMENKOPF: Objection, form.
A. Well, with respect to this example embodiment that's shown in figure 4 and described in the spec, the spec does talk about -- for example, column 6, line 5, it talks about how the USB hub module of the -- sorry, the '643 patent. "The USB hub module is configured such that signals received from at least one USB port are received by the switching device, and the switching device routes the signals to the USB bridge or the USB

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hub."
There were a few other statements about the USB hub module that we saw. But there is a further description in the specification with respect to the figure 4 in the label of the USB hub module.
But in order to be a claimed USB hub module would require something to have all the elements as laid out in the respective claims that recite that a USB hub module comprises and listing elements, for example, in the '420 patent claim 1, in the '962 patent claim 12.
BY MR. JENSEN:
Q. Let me ask the question this way. In figure 4 is everything inside of the box that I've highlighted part of the USB hub module?
MR. BLUMENKOPF: Objection, form. And, Counsel, it looks like our lunch is here. So if you reach a good stopping point, we'd appreciate a break.
A. Well, also within five minutes I would appreciate that because I think I mentioned --
BY MR. JENSEN:
Q. I'd appreciate it if you could answer my question, and we can take a break.
Is everything inside the box part of the hub module in figure 4?

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A. Yeah. I mean, I'll answer your question. I wanted to supplement that with I would really like to take a break in five minutes at the most.
Q. Let me just ask the question again. In figure 4 of the Aptiv patent is everything inside of the box part of the USB hub module?
MR. BLUMENKOPF: Objection to form. Counsel, it's not clear in the written record what you're referring to by "highlighting inside the box," if you can describe it for the record.
MR. JENSEN: I'll do a screenshot, and we can make it an exhibit. It's the outer box.
BY MR. JENSEN:
Q. I'll ask a clean question. In figure 4 of the Aptiv patent is everything located inside of the external box part of the USB hub module?
MR. BLUMENKOPF: Objection, form.
A. So if you look at the description of figure 4, you know -- for example, while figure 4 includes down 1, I think FI the box, that stands for downstream 1. The first downstream FI or physical interface is what FI is short for. I don't see a specific description of it.
I don't know if I saw the digital logic part of that specifically described, but there's also a statement here that there could be other conventional --

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1 this is column 6, line 19 of the '643, "other
2 conventional structure not specifically shown in
3 figure 4 which would be readily assumed to be present by
4 one having ordinary skill in the art."
5 And I want to point out that this is --
6 figure 4 is saying that it illustrates a system, which
7 is in accordance with an embodiment of the present
8 invention. Sorry. That's column 5, lines 49 and 50.
9 And I think this part of the -- this spec is the same
10 in, for example, the '420 and '962, which actually
11 claims in claim 1 a USB hub module that is -- that lists
12 a bunch of elements that describe what the claimed USB
13 hub module would have to include and how they would be
14 arranged.
15 MR. JENSEN: Move to strike as
16 nonresponsive.
17 BY MR. JENSEN:
18 Q. Let me ask the question this way, Dr. Houh.
19 What in figure 4 forms part of the USB hub module?
20 MR. BLUMENKOPF: Objection, form.
21 A. Well, figure 4 has a label at the top that says
22 "USB Hub Module." And there is a box around which --
23 within which there are various labeled components. And
24 some of those components are described in more detail in
25 the specifications. Some I didn't see described some of

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1 the labels and boxes within the outer box of figure 4 of
2 the '643.
3 But the specification does talk about this
4 as figure 4 illustrating a system which is in accordance
5 with an embodiment of the present invention. And there
6 are some embodiments claimed, specific embodiments
7 claimed in the '420 and '962 patents that claim a USB
8 hub module that comprises a number of elements.
9 So with respect to any claimed USB hub
10 modules in the challenged patents, they would have to
11 include all the elements as arranged in -- as elements
12 of the respective claims.
13 BY MR. JENSEN:
14 Q. Let me ask the question this way. Is there
15 anything shown in figure 4 that is not part of the USB
16 hub module?
17 MR. BLUMENKOPF: Objection, form.
18 A. Well, I mean, I think at the left there's a USB
19 cable at the head unit. I think that's outside the big
20 box.
21 BY MR. JENSEN:
22 Q. Is there anything else in figure 4 that is not
23 part of the USB hub module?
24 MR. BLUMENKOPF: Objection, form.
25 A. I mean, in this example illustration I think

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1 the only physical thing I -- explicitly physical thing I
2 see outside the big box that's highlighted in blue here
3 is the USB cable.
4 I mean, it's implying that there's
5 something out to the right with the consumer-facing
6 ports; but there's nothing -- that's really describing
7 these -- the ports that are -- it's just describing the
8 ports.
9 BY MR. JENSEN:
10 Q. Apart from the cable to the head unit and any
11 potential cables going to a consumer device, is there
12 anything else in figure 4 that is not part of the USB
13 hub module?
14 MR. BLUMENKOPF: Objection, form.
15 A. Well, in this example figure of an example
16 embodiment the figure itself doesn't have any other
17 additional things. But to be a claimed hub module you
18 have to look at the elements of the claims -- for
19 example, claim 1 --
20 BY MR. JENSEN:
21 Q. Yeah. And let me just stop you. I'm not
22 asking about the claims. You keep trying to go there.
23 I'm just asking about figure 4. I understand you -- let
24 me ask you --
25 A. Can I finish, please? I know -- just because

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1 hub module is a claim term --
2 Q. I'm trying to get you to your lunch break,
3 Dr. Houh.
4 A. I want to get to lunch, too.
5 Q. Let me just ask a clean question.
6 A. I understand that part of the ground rules in
7 every deposition is that you'll let me finish my answer.
8 I'll let you finish your question. I think it's common
9 courtesy to let me finish my question [sic].
10 Q. I think it's common courtesy, Dr. Houh, to
11 answer the question you've been asked.
12 A. I'm trying to answer, but you're using a --
13 Q. Let me ask the question.
14 A. -- I want to be sure my answer reflects that.
15 Could I please continue my answer?
16 Q. In figure 4 is there anything else --
17 A. Could I please finish my previous answer?
18 Q. Not if you're going to talk about the claims
19 because my question has nothing to do with the claims.
20 I'm asking about a --
21 A. You're asking about a term that is used in
22 the claims, so I want to be sure --
23 Q. I'm asking about figure 4. You're being very
24 express. I'm being very explicit in my question.
25 In figure 4 outside the context of the

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1 claims is there anything inside of the box labeled "USB
2 Hub Module" that is not part of the USB hub module in
3 figure 4?
4 MR. BLUMENKOPF: Objection, form.
5 A. I mean, the problem with that is that the USB
6 hub module is used in the claims. So it's difficult to
7 divorce how you would use it in the claims from
8 outside the -- I get that it's used here.
9 But my point is that it is a claim term in
10 at least some of the challenged claims, and I have to
11 provide the context around that because it is a claim
12 term. It's a hypothetical situation where USB hub
13 module is not in any of the claims; and you're asking
14 about USB hub module in figure 4, which is still a claim
15 term.
16 BY MR. JENSEN:
17 Q. In figure 4 is there anything inside of the box
18 labeled "USB Hub Module" that is not part of the USB hub
19 module?
20 MR. BLUMENKOPF: Objection, form.
21 A. If you're just talking about figure 4 and not
22 about claims that claim certain elements be comprised --
23 that comprise the USB hub module and the arrangements,
24 even with respect to other things that might not appear
25 on the figure 4, the big box with the label of "USB Hub

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1 Module" in figure 4 is there are elements inside that
2 box. And there are some elements outside the box, as we
3 discussed, like USB cable is not inside the box.
4 So with respect to figure 4, USB cable is
5 one of the things that's not in the box. And the things
6 that are in the box are illustrated in this example of
7 an embodiment in figure 4. Those things are in the box
8 of figure 4. But with respect to the claim term, the
9 things that would represent the claimed USB hub module
10 are laid out in respective claims that recite USB hub
11 module and what it comprises.
12 BY MR. JENSEN:
13 Q. Would you agree with me then that in figure 4,
14 everything inside of the box is part of the USB hub
15 module?
16 MR. BLUMENKOPF: Objection, form.
17 A. So I'll try to answer this question, but after
18 I answer I would like to take a lunch break.
19 BY MR. JENSEN:
20 Q. Okay.
21 A. So could you repeat this question, please.
22 Q. You can say "yes" or "no." You keep talking
23 around the question.
24 Is everything in the box part of the hub
25 module or not; or you can say "I don't know," right?

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1 I'll accept any three of those answers.
2 MR. BLUMENKOPF: Objection, form.
3 BY MR. JENSEN:
4 Q. So let me just ask the question one more time,
5 Mr. Houh. Would you agree with me that in figure 4 the
6 components that are inside of the box labeled "USB Hub
7 Module" are intended to illustrate the components of a
8 USB hub module in figure 4?
9 MR. BLUMENKOPF: Objection, form.
10 A. Well, figure 4 is described as a system which
11 is in accordance with an embodiment of the present
12 invention. And some of those embodiments are
13 specifically claimed in some of the challenged patents,
14 for example, '420 claim 1 and '962 claim 1 and the
15 dependent claims that are dependent from that and
16 potentially other independent claims but at least those
17 two.
18 As an embodiment of the claimed invention,
19 you look to the claimed USB hub module and what they
20 comprise, but figure 4 is just an example illustration.
21 And yes, there are things inside the box in this example
22 illustration; but there are specifically claimed
23 embodiments of the USB hub module and what it comprises.
24 In order to meet those claimed USB hub
25 modules, something would have to have at least the

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1 elements that are claimed in those respective claims and
2 the dependent claims. So with that, that's the end of
3 my answer; but I would like to take lunch now.
4 MR. JENSEN: I move to strike that as
5 nonresponsive, and we'll reserve the right to leave this
6 deposition open at the end of tomorrow on that basis.
7 But we can go off the record.
8 THE VIDEOGRAPHER: The time is 12:49 p.m.
9 We're now going off the record.
10 (Luncheon recess)
11 THE VIDEOGRAPHER: The time is 1:29 p.m.
12 We're now back on the record.
13 BY MR. JENSEN:
14 Q. Welcome back, Dr. Houh.
15 A. Thank you.
16 Q. Let me ask you to turn to your '643 declaration
17 to paragraph 38, and I'll share that on the screen as
18 well. Are you there?
19 A. Yes.
20 Q. Paragraph 38 is in a section titled State of
21 the Art, Universal Serial Bus, correct?
22 A. Yes.
23 Q. And can you just read the highlighted sentence
24 in paragraph 38, and just read it aloud. Sorry.
25 A. "A hub is a device that routes multiple

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1 downstream ports into a single upstream port."
2 And that's paragraph 38 from my '643
3 supplemental declaration.
4 Q. Is that definition of hub that you gave
5 consistent with how the term is used in the USB
6 standards?
7 MR. BLUMENKOPF: Objection, form.
8 A. Well, I don't recall from memory what that
9 would say; but I think it's at least part of the
10 functionality of a hub.
11 BY MR. JENSEN:
12 Q. Were you intending to provide a definition of a
13 hub that is different from the USB standard?
14 MR. BLUMENKOPF: Objection, form.
15 A. I mean, I don't think that this is inconsistent
16 with anything that I recall from the standard.
17 BY MR. JENSEN:
18 Q. Okay.
19 A. This is simply just a statement of one of the
20 functions. It might not be recited exactly word for
21 word from any standards document.
22 Q. Using the statement that you gave in
23 paragraph 38, I want to ask you if figure 4 of the Aptiv
24 patent includes a hub?
25 MR. BLUMENKOPF: Objection, form.

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1 BY MR. JENSEN:
2 Q. I'll just ask the clean question.
3 Does figure 4 illustrate a hub as you have
4 used that term in paragraph 38 of your declaration?
5 MR. BLUMENKOPF: Objection, form.
6 A. So if you look at the '643 patent in column 5,
7 line 65, it talks about figure 4. This is in the
8 description of figure 4. And it says, "At least one
9 downstream USB port of the USB hub is connected to a
10 switching device such as USB analog multiplexing
11 switches, for example. This switching device is
12 configured to be connected to at least one USB port in
13 the vehicle connecting to a consumer device."
14 And then it goes on, but it also describes
15 the -- in the figure there's a cable to the head unit.
16 So I think this is certainly consistent with my
17 description in that there are multiple downstream ports.
18 So those are the consumer-facing. I think somewhere I
19 describe what the meaning of upstream versus downstream
20 is in my declaration, but there are certainly a couple
21 of downstream consumer-facing ports illustrated here.
22 Figure 4 might not use those exact same
23 words, but my description that we were just looking at
24 is consistent with what's shown here in figure 4.
25 BY MR. JENSEN:

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1 Q. What is the USB hub in figure 4?
2 MR. BLUMENKOPF: Objection, form.
3 A. So if you look at column 5, also line 53,
4 describing figure 4, it says, "The system is in the form
5 of a self-powered USB hub module having a USB bridge and
6 a switching device implemented as discrete devices. The
7 USB hub is preferably provided in the form of an
8 integrated circuit and is configured (via an upstream
9 USB port) connected to a vehicle's embedded USB host
10 (such as a USB host in a head unit) via vehicle internal
11 wiring such as in one embodiment, via a single USB data
12 cable between the head unit and USB hub."
13 So what it's describing here is that there
14 are -- of figure 4 is that there's a cable that connects
15 between the head end and the USB hub in this example.
16 So I think in this example, as described here, the --
17 one example is -- what that would include is what this
18 cable is connected to, which indicates in figure 4 it's
19 connected to the big box. And that's one example
20 provided in the specification.
21 BY MR. JENSEN:
22 Q. And when you say "the big box," are you
23 referring to the largest box with the label "USB Hub
24 Module" above it?
25 MR. BLUMENKOPF: Objection, form.

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1 A. I am referring to that box that I think you
2 highlighted earlier, and I think you indicated that you
3 made a screenshot and would provide it as an exhibit.
4 I'm not sure if that was done.
5 BY MR. JENSEN:
6 Q. Let me just do that right now.
7 MR. JENSEN: I am dropping into the Chat
8 window right now what has been labeled as Houh
9 Exhibit 0001, which is a highlighted version of
10 figure 4.
11 (Exhibit 0001 was marked for
12 identification.)
13 BY MR. JENSEN:
14 Q. And can you confirm, Dr. Houh, that you
15 received that; and it's the highlighted image that you
16 were referring to?
17 A. Yeah. I think I do see it. It appears to be.
18 But just for the record, I don't know -- this is from
19 the '643, figure 4, patent figure 4. And I understand
20 someone is going to archive this, but I'm just going to
21 save that on my desktop somewhere.
22 Q. So the question I have for you, Dr. Houh, is in
23 figure 4 what is the difference between a USB hub module
24 and a USB hub?
25 MR. BLUMENKOPF: Objection, form.

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A. Well, in the description of figure 4 it specifically says at line 56, it says, "The USB hub is preferably provided in the form of an integrated circuit," and it goes on.

But figure 4 doesn't specifically say what form this might take, but in the example it says the form of a USB hub is that it's in an integrated circuit.

BY MR. JENSEN:

Q. In your view is a USB hub module and a USB hub the same thing?

MR. BLUMENKOPF: Objection, form.

A. I mean, in one of the examples listed here in the specification it talks about how the cable is interconnected between the head unit and the USB hub. And I think one could see that there is a separately labeled US -- sorry.

The figure doesn't say what form that USB hub module takes, but it does talk about USB hub integrated circuit here in figure 4. And there is a description of the IC, which is interconnected to the head unit.

But, again, the hub module, as claimed in the '420 and '962 at least, requires very specific things; and I think we can go look at those claims to see if they require -- if the USB hub is part of that.

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I know that there are other elements that are USB elements that those claims require, but we can look at those. The USB hub I see is what's shown here in figure 4 that the head unit is attached to.

BY MR. JENSEN:

Q. Is the USB hub IC in figure 4 a USB hub as you've used that term in paragraph 38 of your declaration?

MR. BLUMENKOPF: Objection, form.

A. Well, as the -- in figure 4 it does show a box labeled "USB Hub IC" with down 1 FI, down 2 FI and 3 FI; and those are downstream physical interfaces. FI is typically short for physical interface.

So I think there are multiple of them, and there's only one port in connection with to the head end. So this USB hub IC is consistent with how I use that in my report, as we saw earlier.

BY MR. JENSEN:

Q. And the USB hub IC in figure 4 is located inside of what is labeled the "USB Hub Module," correct?

MR. BLUMENKOPF: Objection, form.

A. So in this example embodiment shown in figure 4 it does talk about -- it does show that there's a USB hub IC within the box labeled "USB Hub Module."

But specifically with respect to claims,

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for example, in the '962 patent claim 1 what is claimed as a "USB hub module comprises" is that one of the elements in -- I'd say it's the third element, but I don't remember how I labeled them in my declaration.

What I'm looking at on line 24 of the '962 patent -- and this is one of the elements that the USB hub module comprises. It comprises a USB hub integrated -- sorry, interconnected to the upstream USB port, and it goes on.

So at least one of the claims -- in one of the claims the claimed USB hub module comprises a USB hub.

BY MR. JENSEN:

Q. And that's consistent with what's shown in figure 4, correct?

MR. BLUMENKOPF: Objection, form.

A. So the USB hub IC, being a USB hub in integrated circuit form, is shown in this example figure 4, example embodiment, is within the larger box USB Hub Module.

MR. JENSEN: Let me introduce another exhibit into the Chat, and this will be Exhibit 1082.

(Exhibit 1082 was marked for identification.)

BY MR. JENSEN:

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Q. Let me know when you've got that.

A. It's 1082 to which matter?

Q. It's a new Exhibit 1082.

A. Okay.

Q. Do you have a copy of that?

A. Would they be in those boxes? I see what's on your screen. I don't have a copy in front of me.

Q. I dropped it into the Chat window.

A. I see it. I have it open now.

Q. I'll represent to you this is simply a listing of the independent claims from the four patents with the identifiers added since you were trying to reference a particular claim element in the '962, and these are intended to correspond with what the parties have used in the proceedings.

So if we look at the '962 patent claim 1, I think you were referring to what's labeled as claim element 1[c][i], a USB hub interconnected to the upstream USB port?

A. Yes. That was what I was referencing, that element in the '962 that is in this chart for the '962 claim 1, 1[c][i].

Q. Dr. Houh, did you analyze whether figure 4 of the Aptiv patents reads on any of the challenged claims?

MR. BLUMENKOPF: Objection, form.

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A. I was mostly responding to the actual combinations set forth by petitioner. So I don't think that was part of my analysis.
BY MR. JENSEN:
Q. Do you have an opinion on whether figure 4 reads on any of the challenged claims?
A. I don't think I have an opinion in my declarations about that. I mean, claim 4 was not the prior art challenge combination or whatever. So I don't think it was part of my analysis.
I mean, if you think I did, we can look at it. I'll let the declarations stand for themselves. But I don't think I include that as part of my analysis.
Q. Let's go back to figure 4, and let me ask a high-level question here.
Do you have an understanding, Dr. Houh, of how figure 4 operates?
MR. BLUMENKOPF: Objection, form.
A. Well, I reviewed the specification for this example figure 4.
BY MR. JENSEN:
Q. Yeah. So how does the USB hub module in figure 4 work?
MR. BLUMENKOPF: Objection, form.
A. So if you look at the pin specification for

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this specific example given in figure 4, if you look at column 6, line 23, it talks about how in use the head unit controls the switching device via the USB bridge hardware or any other convenient means of control.
If you look at figure 4, in this example shown in figure 4, it shows that there is the switch control arrow from the bridge to the USB routing multiplexing switches. That's the one. And that's part of -- that's within in the hub module.
But the specification goes really beyond just this particular example in that it says that there could be any other convenient means of control. But for here it does talk about how the head unit is controlling the switching device via the USB bridge hardware.
So I think figure 4 is just an illustration. So it's not going to show all the details. But the description here says that the head unit is controlling the switching device but via the USB bridge. And I think that's why in figure 4 it's showing switch control from the bridge to the USB routing multiplexing switches.
The specification goes a little further in that even in this example it's saying that the head unit is still the one controlling the switching device. So that's at least part of how it's operating as taught by

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the specification.
BY MR. JENSEN:
Q. And the idea is that the USB hub module would be able to route a connected USB product through the bridge IC if it's in host mode and around the bridge IC if the connected USB product is in device mode?
MR. BLUMENKOPF: Objection, form.
A. Well, I think we can just look at the specification because I think it -- I might not take issue with what you said there. But the specification is saying, if you look at column 6, line 25, "The HU" -- and that stands for head unit -- "software application may choose to enable, for example, a phone on any one of the consumer USB ports by requesting, commanding or otherwise knowing the phone is required to be in the USB host mode and commanding the routing of the specific USB port the phone is attached to to the USB bridge."
And that is how the host mode is routed -- devices are routed. Devices are routed to the USB bridge. And then it says, "Once routed to the USB bridge, the phone will detect the USB device is connected and the phone will begin the standard USB enumeration sequence."
It goes on. That details more of the operation. Let me see if I can find the device mode

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description. I think it's in here.
BY MR. JENSEN:
Q. Well, let me direct you to your declaration, if I could, to paragraph 48. I think you're getting sort of more in the weeds, and I'm just trying to understand big picture thing here.
So if we look at paragraph 48 of your declaration, you include an annotated version of figure 4.
MR. BLUMENKOPF: This is the '643 declaration, right?
MR. JENSEN: Sure. But you can look at any of them because they're all the same.
A. Well, I know that's not true. There are variations in the declarations.
BY MR. JENSEN:
Q. Well, they're all the same with respect to this image that we're talking about.
A. Well, okay. I don't know if you're making a representation or you want me to look.
Q. I'm just pointing that out. So my question is about the annotated version of figure 4 that you have in your declarations.
MR. BLUMENKOPF: Just to be clear, Counsel, it's not true that this is the same across all

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five declarations. For example, if you look at the supplemental declaration for the '495 proceeding, it's a different paragraph 48. So I do think we need to clarify which declaration --

MR. JENSEN: Yeah. I'm just saying figure 4 is the same and the annotations are the same, right? I don't think there's an issue here.

BY MR. JENSEN:

Q. Pick whatever declaration you would like, Dr. Houh, to look at and find the annotated version of figure 4 that you used to describe the patent.

A. While the figure looks the same in all three, the paragraph numbering is different in the '420 '495 case; and so it's actually a different paragraph number. But the figure here looks the same in all five.

BY MR. JENSEN:

Q. In the figure you show an orange path that you've labeled "device mode path" and a blue path that you've labeled "host mode path," correct?

MR. BLUMENKOPF: Objection, form.

A. Yes.

BY MR. JENSEN:

Q. Okay. And what did you intend to convey by highlighting and annotating those two different paths?

MR. BLUMENKOPF: Objection, form.

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A. Well, I'm indicating that it's -- the involved use of the bridge structure allows two separate hosts to send data back and forth so that both the head unit acting as a host and a user's connected device when it's connected to, for example, the connector 1 and it's in host mode, then it's the bridge that allows the host to communicate. So the communications path is through the bridge in that case.

I don't see it in this paragraph; but it's also when the device is acting as just a device and it turns into device mode, then the communication path is not going through the bridge IC. And that allows the head unit to control the device as a device.

BY MR. JENSEN:

Q. Is that your understanding that there is a host connected on the upstream port side of figure 4?

MR. BLUMENKOPF: Objection, form.

A. Yes. I mean, I think if you look at the specification, it makes that clear that it's -- you know, we were just looking at it then. It did talk about the port the phone was attached to. That's column 6 in the '643 patent, line 29.

So yes, I mean, figure 4 doesn't illustrate an actual phone connected to the port. But in operation when there is and it's in host mode, the

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communications between the head unit and the host device, let's say phone, are going through the bridge.

BY MR. JENSEN:

Q. And the idea is that depending on the mode of the connected downstream product, it can be routed through the bridge or around the bridge?

MR. BLUMENKOPF: Objection, form.

A. Well, I mean, if the device -- sorry. If the phone is in device mode or if it's just another type of device, then the communication path does not go through the bridge IC. That's part of what's being illustrated here in figure 4.

BY MR. JENSEN:

Q. And that's the orange line path?

A. Yes. The orange line path represents device mode path.

Q. And if the downstream product is in host mode, the USB hub module will route it through the bridge to the upstream port to create a host-to-host connection. Is that correct?

MR. BLUMENKOPF: Objection, form.

A. I think if you look at the specification of the '643 -- you know, we were looking at this earlier around lines 26 through 30 -- it talks about "commanding or otherwise knowing the phone is required to be in USB

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host mode in commanding the routing of the specific USB port the phone is attached to to a USB bridge. And once routed to the USB bridge, the phone will detect the USB device is connected to the phone. The phone will detect a USB device is connected, and the phone will begin standard USB enumeration sequence."

BY MR. JENSEN:

Q. Yeah. And so if you've got a downstream USB product in host mode, the system is designed so that it will establish a host-to-host connection with the upstream host by routing the signals through what's labeled the bridge IC?

MR. BLUMENKOPF: Objection, form.

A. Yeah. And a little more detail is that the phone host is detecting there's a USB device connected to it now, and it starts enumerating -- it begins a standard USB enumeration sequence.

There's just a little more detail in this specification that's clearly like not shown in the figure because the figure itself doesn't show all the details of the operation.

BY MR. JENSEN:

Q. But the idea is that you can establish either a device mode path or a host mode path depending on the mode of the downstream phone?

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MR. BLUMENKOPF: Objection, form.
A. That's part of what's being illustrated here in the figure, yeah.
BY MR. JENSEN:
Q. And the figure includes a box that's labeled "USB routing multiplexing switches." Do you see that?
A. Yes.
Q. What function does that component perform?
MR. BLUMENKOPF: Objection, form.
A. Well, one example from the specification, it says -- if you look at the bottom of column 5, line 65 in the '643 patent, it says that "At least one downstream USB port of the USB hub is connected to a switching device (such as USB analog multiplexing switches, for example.)"
And it says that, "The switching device is configured to be connected to at least one USB port in the vehicle for connection to a consumer device."
So part of the functionality of the switching device, which one example is a USB analog multiplexing switch, is that it can be configured to be connected to at least one USB port in the vehicle so that a consumer device can be connected to it.
BY MR. JENSEN:
Q. Yeah. But what does it do in figure 4?

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MR. BLUMENKOPF: Objection, form.
A. Well, one thing the spec is describing is that it can be configured to connect a port. And as I show, there are multiple paths that the device can be configured to support.
BY MR. JENSEN:
Q. How is the USB routing multiplexing switch configured to connect, as you described it?
MR. BLUMENKOPF: Objection, form.
A. Well, one thing, we were looking at column 6, line 23. It says that "The head unit controls the switching device via the USB bridge hardware or any other convenient means of control. "
So one example given as shown in the spec is that the -- there's a switch control label on a line that goes from the bridge IC to the switch, and that's how the switch is controlled. But ultimately what the spec says is that the head unit is controlling the switching device but via the USB bridge hardware. I might add or any other convenient means of control.
So there are lots of ways that the switch -- that the patent is disclosing about how the switch can be controlled.
BY MR. JENSEN:
Q. Can you give me an example of one of those

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ways.
A. Yeah. So one example is that the host units controlling the switching device via the USB bridge so that there would be a control signal that goes through the bridge -- in this example, figure 4, through the bridge IC, which you can see there's a switch control label and a line to the USB routing multiplexing switches. So that's one of the examples from the specification.
Q. Yeah. And my question is different, right, because the specification -- I think you're looking at column 6, lines 23 to 25?
A. Yes. I was looking there in the '643 patent.
Q. Yeah. And I'll just read that. It says, "In use, the head unit controls the switching device via the USB bridge hardware or any other convenient means of control."
So my question is can you give me an example of any other convenient means of control.
A. It could be that the head unit is not going through the bridge, but there could be a line directly from the appropriate place going to the head unit that does not go through the bridge.
Q. Can you think of any other examples?
A. I mean, it could go -- it could simply go

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through the hub IC at some point. There could be a path for control.
I mean, I think a person of ordinary skill -- I mean, that's just what it's saying, other means of control. So I think -- that's what it's saying, and I've given at least one or two.
Q. Does the patent disclose any means of controlling the USB routing multiplexing switch that do not involve receiving a host device command from the head unit?
MR. BLUMENKOPF: Objection, form.
A. Well, I think it says, for example, in column 6 -- it starts at line 25; but what I'm looking at is a little farther down but a part of that sentence which is, "The HU software application may choose to enable, for example, a phone on any one of the consumer USB ports by requesting, commanding or otherwise knowing the phone is required to be in USB host mode and commanding the routing of a specific USB port the phone is attached to to the USB bridge. Once routed to the USB bridge, the phone will detect a USB device is connected and the phone will begin the standard USB enumeration sequence."
So it doesn't specifically say that it's done by a USB host mode command. I think it's a

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little -- it says "commanding the routing of the specific USB port the phone is attached to to the USB bridge."

So I think what a person of ordinary skill would understand from that is a USB host mode command is not the only way to command the routing of a specific USB port the phone is attached to.

BY MR. JENSEN:

Q. What are all the ways that a POSITA would know to do that?

A. Well, I can give you an example. One might be there is a separate command that's not a host mode command that's simply a different command that can be sent to that control.

Q. What would send that command?

MR. BLUMENKOPF: Objection, form.

A. Well, in this particular example the head unit is controlling the switching. And in some cases the command is sent via other portions of the USB hub module, but it doesn't have to be through those same portions or via those same elements.

So the command doesn't necessarily have to be a USB host mode command. It doesn't have to -- the specification talks about it sending -- commanding generally. It doesn't give the form of the command to

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necessarily be a USB host mode command.

BY MR. JENSEN:

Q. And because of that my question is what are all the commands that a POSITA would know of that could be used to send a host or device selection?

MR. BLUMENKOPF: Objection, form.

A. Well, I certainly can give examples. You would need to give me a lot of time to come up with the world of all of them.

For example, in one of the switches I helped design we would have direct control lines pointing from the control -- switching control unit directly to the switch fabric itself.

BY MR. JENSEN:

Q. What do you mean by a direct control line?

A. I mean traces on a circuit board that go from the command -- I believe it might have been a -- I don't remember the form, but it was from part of the circuit going to the switching part of the circuit as copper traces on a circuit board substrate.

Q. Any other examples you can think of?

A. Yeah. Sometimes those circuit board traces are laid out in a very specific way, so they act as a wave guide as opposed to more of a wire. Sometimes people use optical interconnections for some signals like that.

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Q. Any other examples you can think of?

A. Sometimes commands are -- or data bits are sent through latches that are on a global clock so that they can be held and stored for a cycle of -- a switching cycle, for example.

I'm certainly not going to be able to tell you all of them in the time we have. If you want, I can try to think of more examples.

Q. Well, let me ask this. Are all of the examples that you just gave things that are within the knowledge of a POSITA?

MR. BLUMENKOPF: Objection, form.

A. I mean, I really haven't discussed the world of how to command in my declaration, you know. I'm just trying to be helpful here. This kind of analysis about all possible forms of doing something was certainly not something I included in my analysis. That wasn't really what was at issue.

BY MR. JENSEN:

Q. Would you agree with me, though, that there are many ways that a system could determine whether a connected downstream USB product was in host or device mode?

MR. BLUMENKOPF: Objection, form.

A. That sounds like a very different topic than we

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were just talking about. I thought we were talking about controlling the USB routing multiplexing switches.

I mean, I haven't really talked about -- your question is -- it wasn't really part of my analysis because I didn't understand the petition to raise an issue like that.

I mean, the petition was very specific about a detection unit within the bridge of Chang II and relied on that. There's really only one way that I understood -- at least that was the primary way petitioner relied on for that kind of detection.

BY MR. JENSEN:

Q. We'll come back to that topic.

MR. JENSEN: Could the reporter read back my original question.

(The record was read as requested.)

MR. BLUMENKOPF: Same objection.

A. I mean, that wasn't part of my analysis with respect to the petition because my understanding is the petition only raised really one way and relied on the detection circuit in Chang II as the way the device -- that relied on that detection unit in Chang II inside the bridge of Chang II to perform the device detection.

So this hypothetical wasn't part of my analysis because the petition was focused on the

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1 detection unit in Chang II, and that's all that I
2 believe it set forth is for all the independent claims.
3 BY MR. JENSEN:
4 Q. And because of that you didn't analyze the
5 question that I had just posed?
6 MR. BLUMENKOPF: Objection, form.
7 A. Well, I was responding to what was raised in
8 the petition and that was the only detection unit
9 configured to detect whether the downstream device was
10 in host or device mode and that was within the bridge of
11 Chang II. That's the configuration that was raised, and
12 other hypothetical configurations that were not raised
13 were not part of my analysis.
14 BY MR. JENSEN:
15 Q. I'm not asking about Chang II. I haven't
16 mentioned Chang II. I'm just asking now in the context
17 of the Aptiv patents themselves, is it your opinion that
18 a POSITA would know many ways to perform host device
19 detection?
20 MR. BLUMENKOPF: Objection, form.
21 A. I have not discussed that point. That's not an
22 issue I provide an opinion about in my report.
23 Mainly the detection unit that was
24 discussed in the petition was the detection unit in
25 Chang II, and that's what I was responding to. These

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1 other hypotheticals weren't part of my analysis.
2 BY MR. JENSEN:
3 Q. Did you review the Castleberry reference as
4 part of your analysis? And that's Exhibit 1025.
5 A. I don't see Exhibit 1025 listed in my list of
6 my materials considered in any of my supplemental
7 declarations.
8 Q. And I think you testified earlier that you did
9 review both the petition -- or all of the five IPR
10 petitions and expert declarations of Mr. Welch when
11 preparing your report. Is that correct?
12 MR. BLUMENKOPF: Objection, form.
13 A. I mean, I certainly have Mr. Welch's respective
14 declarations in each case listed among the materials
15 considered in each of my respective cases.
16 BY MR. JENSEN:
17 Q. Is there a reason that you didn't review the
18 Castleberry reference cited by Mr. Welch in the
19 petitions when forming your opinions?
20 MR. BLUMENKOPF: Objection, form.
21 A. I simply said that I -- Exhibit 1025 does not
22 appear in my list of the materials considered. That's
23 not part of my materials considered.
24 BY MR. JENSEN:
25 Q. Okay. Let's look at something that I think you

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1 did consider, which is the Chang reference in
2 Exhibit 1014. Do you recognize Exhibit 1014 as the
3 Chang reference?
4 A. Well, from these first pages you're showing me,
5 sure. It looks about right.
6 Q. And what is shown in Chang figure 1?
7 MR. BLUMENKOPF: Objection, form.
8 THE WITNESS: Can I get a copy of that
9 from -- it must be in those boxes somewhere.
10 MR. BLUMENKOPF: Yes. We have a printed
11 copy of this.
12 A. I think there must be a copy -- can I open up
13 an electronic copy that's part of the exhibits that were
14 provided?
15 BY MR. JENSEN:
16 Q. Yeah, that's fine. And I'm sharing it on the
17 screen as well. You're welcome to use an electronic
18 local copy if you'd like.
19 A. I'm sorry. I have it open now; but could you
20 repeat the pending question, please?
21 Q. Yeah. What is shown in Chang figure 1?
22 MR. BLUMENKOPF: Same objection.
23 A. So the description of figure 1 in the Chang
24 specification in paragraph 12 says that "Figure 1 is a
25 schematic view of a personal computer linked to various

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1 devices via a conventional USB hub," and the figure
2 itself calls figure 1 the prior art.
3 BY MR. JENSEN:
4 Q. So figure 1 is a conventional USB hub, correct?
5 MR. BLUMENKOPF: Objection, form.
6 A. That's one thing this is described as in the
7 specification of Chang.
8 BY MR. JENSEN:
9 Q. And you don't have any reason to doubt the
10 accuracy of that statement, do you?
11 MR. BLUMENKOPF: Objection, form.
12 A. No. It's a high-level diagram, though. I
13 mean, I personally wouldn't have called this a
14 schematic; but that's what Chang calls it.
15 BY MR. JENSEN:
16 Q. And it's got an upstream host connected on
17 port 12, correct?
18 MR. BLUMENKOPF: Objection, form.
19 A. So if you look at the further description of
20 figure 1 in paragraph 17 of Chang, it talks about,
21 "Referring to figure 1, a USB hub 10 has an uplink port
22 12 for being linked to a personal computer (PC) 20." So
23 I think that's what it's describing.
24 BY MR. JENSEN:
25 Q. So port 12 is a host port, right?

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1 MR. BLUMENKOPF: Objection, form.
2 A. I mean, the spec doesn't say that; but I think
3 we recognize that it's the host, that the PC is the host
4 device on this hub.
5 BY MR. JENSEN:
6 Q. And there's four downlink ports all labeled 14,
7 correct?
8 MR. BLUMENKOPF: Objection, form.
9 A. Yeah. I mean, paragraph 17 says "several
10 downlink ports 14 for being linked devices."
11 BY MR. JENSEN:
12 Q. And figure 1 shows four devices, one each
13 connected to a downstream port 14?
14 MR. BLUMENKOPF: Objection, form.
15 A. So Chang uses the phrase "downlink," but I
16 wouldn't dispute your characterization.
17 BY MR. JENSEN:
18 Q. And the four devices that are connected on the
19 downlink ports are labeled flash disk, MP3 player,
20 digital camera and PDA, correct?
21 MR. BLUMENKOPF: Objection, form.
22 A. In figure 1 of Chang that's how they're
23 labeled.
24 BY MR. JENSEN:
25 Q. What would happen if the downstream PDA device

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1 was unplugged?
2 MR. BLUMENKOPF: Objection, form.
3 A. Well, there would cease to be any
4 communications between the PC and the device that was
5 unplugged.
6 BY MR. JENSEN:
7 Q. Would the other devices lose their connections
8 to the upstream host?
9 MR. BLUMENKOPF: Objection, form.
10 A. Well, I mean, it depends on -- this shows
11 nothing of the internal of the hub. So I do understand
12 that the -- that there are instances in a challenged
13 combination where, depending on what's done and what's
14 plugged in on various ports in the combination, other
15 downstream ports would lose their connection, at least
16 in the combinations set forth in the petition.
17 But Chang doesn't talk about what happens
18 in that case here in paragraph 17, and I haven't
19 provided -- it wasn't part of my analysis with respect
20 to Chang in my declarations, I don't believe, because I
21 was responding to the petition's specific combinations
22 in cases where connectivity would be lost to downstream
23 devices in the proposed combinations, in the situations
24 I describe in my supplemental declarations.
25 BY MR. JENSEN:

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1 Q. Do you have an understanding as a POSITA and an
2 expert what would happen to the connections of the flash
3 disk, MP3 player and digital camera in Chang figure 1 if
4 the PDA were unplugged?
5 MR. BLUMENKOPF: Objection, form.
6 A. I mean, generally speaking, in a -- like, for
7 example, on my PC when I unplug a device from one port,
8 it generally -- sometimes it does because I've had
9 things crash and drivers act badly before. It generally
10 doesn't disconnect other devices.
11 But in the combination I analyze in the
12 petition the combination is a combination of Chang,
13 Chang II and the person of ordinary skill's knowledge.
14 That does break the basic principles of operation of USB
15 and of Chang II. It basically eliminates the main
16 features, you know, for example, provided in Chang II.
17 And I outline those reasons why no one
18 would make the combination -- no POSITA would make the
19 combination that is set forth in the petitions for the
20 reasons I lay out in the respective declarations because
21 they -- you know, that combination is not a standard USB
22 hub.
23 It's Chang I modified with Chang II to
24 break many of these capabilities that would be present
25 and break some of the features such as hot swapability.

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1 And I outline those in my declaration.
2 BY MR. JENSEN:
3 Q. Yeah. So my question is just about Chang right
4 now. I'm not asking about a combination or a
5 modification. I'm not asking any of that stuff. I'm
6 just asking only about what's labeled prior art, a
7 conventional USB hub in Chang I.
8 I would like to know, do you have an
9 understanding as a POSITA and an expert in this field
10 whether unplugging the PDA in figure 1 of Chang would
11 disrupt the connections of the other three downstream
12 devices?
13 A. So I don't think that the operation of Chang
14 individually was part of my analysis in that way you
15 propose because it was a combination of Chang, Chang II
16 and the knowledge of a personal of ordinary skill. That
17 was the combination that I analyzed with respect to some
18 of these points about why there's a lack of motivation
19 to combine. And I've outlined those in the respective
20 supplemental declarations.
21 Chang itself I don't see in paragraph 17
22 or 18 discussing that particular situation.
23 Q. Is it fair to say then that you don't have an
24 opinion one way or the other whether unplugging the PDA
25 in Chang figure 1 would disrupt the connections of the

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other three downstream devices?
MR. BLUMENKOPF: Objection, form.
A. I don't think that was part of my analysis with respect to what was set forth in the petition, which wasn't the challenge based on Chang alone. So I didn't -- I don't think I include in my analysis the hypothetical other things that were not in the petition with respect to how that would work.
I analyzed how the proposed combination would work, and I provided opinions mostly in the sections -- or partly in the sections about motivation to combine or lack thereof in my respective supplemental declarations.
BY MR. JENSEN:
Q. Does the USB standard specify how a hub should operate with respect to connecting or disconnecting downstream devices in a hub?
MR. BLUMENKOPF: Objection, form.
A. Sorry. Could you repeat the question, please.
BY MR. JENSEN:
Q. Does the USB standard specify what should happen in a USB hub if you unplug one of the downstream devices?
MR. BLUMENKOPF: Same objection.
A. I mean, I don't think I -- I don't think that

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was part of my analysis with respect to a standard USB because a standard USB was not the basis of any -- standard USB alone was not the basis of a challenge, I don't believe.
Most of the challenges were based on the combination of Chang, Chang II and a person of ordinary skill's knowledge. Maybe there are other grounds based on Chang II in some other documents, along with I think also person of ordinary skill.
So my analysis was with respect to the actual challenges set forth in the petitions, and I respond to them in the respective declarations.
BY MR. JENSEN:
Q. Let's look at Chang figure 3. Do you recognize Chang figure 3?
A. Yes.
Q. What's shown in Chang figure 3?
MR. BLUMENKOPF: Objection, form.
A. In paragraph 14 Chang describes figure 3 as "a schematic view of a hub according to the present invention" and lists further details about figure 3 starting at paragraph 19 in Chang and maybe even going as far as -- at least as far as paragraph 22. And there may be further discussion relevant to figure 3, but there is a section that looks like it's directed towards

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figure 3 in the specification.
BY MR. JENSEN:
Q. Would you agree with me that Chang figure 3 shows four downstream ports?
MR. BLUMENKOPF: Objection, form.
A. Well, again, Chang doesn't use the term "downstream ports." It uses two terms referring to those rectangles at the bottom. One is downlink port 44, and the other is host port 50.
BY MR. JENSEN:
Q. And those are all, as you use the term in your declaration, downstream ports as opposed to upstream ports, correct?
MR. BLUMENKOPF: Objection, form.
A. I don't think I'd agree with that.
BY MR. JENSEN:
Q. Why not?
A. Can you point me to or allow me to search my declaration so I can find where I talk about downstream ports?
Q. Yeah. You can look at whatever you'd like.
A. So --
Q. And I might be able to help you out if you look at paragraph 99 of your report.
A. You're referring to the '643 supplemental

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declaration?
Q. Sure.
A. I'm not seeing what you're seeing in 99, but I was looking at paragraph 37 of my '643 supplemental declaration. And what I say here is that "The direction of data flow in a USB network is described relative to the USB host. Upstream means the direction of data flow towards the host. Downstream means the direction of data flow away from the host."
Q. Yeah. So using that in -- sorry. Go ahead.
A. Well, it continues. I don't know if this is as relevant. In our example, the PC would be described as upstream of the mouse and printer; and, conversely, one could refer to the mouse and printer as downstream devices.
But if you look at Chang, what it's describing are the ports. And it doesn't use the term "downstream" as I pointed out earlier. It uses "downlink" and "host port." And the host port is one that the host -- a host would plug into.
You were asking if all four of those are downstream ports. And I disagree with that characterization because with respect to port 50, that's designed for a host to plug into; and that's unlike the ports 44 labeled in Chang.

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Q. Is it your opinion that any port that can connect to a host is not a downstream port?
MR. BLUMENKOPF: Objection, form.
A. Well, I'm saying that downstream refers to the direction, as I've said here, of data flow away from the host. And so it's -- the downlink ports 44 I would characterize as downstream ports because those are designed to take data from the host plugged into 42 down to the devices such as the MP3 player, the PDA, the -- I don't remember what the devices were, the memory device, whatever.
And that's why I disagreed with the characterization because 50 is a different kind of port as Chang discusses.
BY MR. JENSEN:
Q. Are you saying that the port 50 is an upstream port in Chang figure 3?
MR. BLUMENKOPF: Objection, form.
A. I don't think I've said that specifically with respect to Chang as part of my analysis. I think this issue isn't really about what to call it but the functionality of the petitioner's proposed combination, which is not a combination that a POSITA would make for many reasons, and also doesn't satisfy -- for the reasons I lay out, it does not render obvious the

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challenged claims, as I lay out in respective declarations.
BY MR. JENSEN:
Q. Yeah. And that's not my question, right? I'm not asking that.
So the question I have is do you know one way or the other as an expert and a POSITA in this field, Dr. Houh, looking at figure 3, what ports are upstream ports and what ports are downstream ports?
MR. BLUMENKOPF: Objection, form.
A. I mean, these are simply labels. If you just look at the functionality as I've laid out and why the functionality of the petitioner's proposed combinations are broken, I've laid all those reasons out.
I don't know that a particular label attaching anything would add any clarity to what I've already laid out, but I don't think I -- I talk about this specific. We're not going around to say, Is that a bird; is that a cat; is that a dog?
That's not the analysis that I was looking at in that part of the analysis because the petition didn't -- to the extent the petitioner and Mr. Welch didn't use terms that I disagreed with, I analyzed the actual combinations that were being set forth in the petition.

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BY MR. JENSEN:
Q. Will you agree with me that port 42 in Chang figure 3 is an uplink port?
MR. BLUMENKOPF: Objection, form.
A. Well, paragraph 19 uses the term "uplink port" for 42.
BY MR. JENSEN:
Q. Is there a distinction in your mind between an uplink port and an upstream port?
MR. BLUMENKOPF: Objection, form.
A. Well, I'm referring to the direction of data flow as opposed to the type that a port is labeled. I mean, each of -- like a device doesn't only send data upstream. That's not the point of labeling downstream/upstream. The point of it is to be able to have a reference in which to talk about which direction the data is flowing.
So the point here is that upstream is the direction of data flow towards the host. But a device connected into the, you know, port 44, it can receive data from the host; and it can send data to the host.
Downstream and upstream are referring to what I'm -- what I've laid out in 37, it's referring to the direction of data flow using the host as a reference as opposed to the type or label of a particular port.

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You're using these terms that I'm talking about, a direction of data flow, and you're applying them to the port. I'm telling you Chang does not discuss the ports using that label you're asking about. Chang uses different labels distinguishing -- it uses "uplink port," "downlink port" or "host port."
Upstream and downstream refer to a direction of data flow in relation to a host, and that's what I'm saying in paragraph 37.
BY MR. JENSEN:
Q. Do you use that definition in paragraph 37 that you applied when analyzing the claims that require upstream and downstream USB ports?
MR. BLUMENKOPF: Objection, form.
A. So I assume it's okay to search documents that I have?
BY MR. JENSEN:
Q. Yeah. I mean, I can direct you to '962 patent claim 1, for example. And that's also shown at Exhibit 1082. Element 1[a] recites an upstream USB port.
A. Yeah. I mean, if 1082 is correct, which I have no reason to believe it's not, I do see the term "downstream" used; but I only see it in the '962 patent.
Q. Yeah. So the '962 patent claim element 1[a]

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1 recites "an upstream USB port," correct?
2 A. Yes.
3 Q. Element 1[b] recites "a plurality of downstream
4 USB ports," correct?
5 A. I see that.
6 Q. When analyzing the '962 patent claim 1, did you
7 use the definition of upstream and downstream ports from
8 paragraph 37 of your declaration?
9 MR. BLUMENKOPF: Objection, form.
10 A. I wouldn't say I'm describing it. I applied
11 the plain and ordinary meaning as would have been
12 understood by a POSITA.
13 BY MR. JENSEN:
14 Q. Okay, perfect. What is the plain and ordinary
15 meaning to a POSITA of upstream USB port?
16 MR. BLUMENKOPF: Objection, form.
17 A. I think that would include something that
18 there's a host, like on a regular hub that a host was
19 designed to be plugged into.
20 BY MR. JENSEN:
21 Q. And what is the plain and ordinary meaning of a
22 downstream USB port to a POSITA?
23 MR. BLUMENKOPF: Objection, form.
24 A. I think one example would be on a standard hub
25 something that a device would be ordinarily plugged

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1 into; and it would include that, for example.
2 BY MR. JENSEN:
3 Q. And if we look at Chang figure 3 using the
4 descriptions that you just provided, Dr. Houh, can you
5 identify what, if any, ports are upstream USB ports.
6 MR. BLUMENKOPF: Objection, form.
7 A. I think what the petition is calling the
8 upstream port in its mappings and in the petition I
9 think is referring to port 42 as the upstream port --
10 and I think that's what the petition is saying -- in the
11 combination of the various references that it's setting
12 forth.
13 BY MR. JENSEN:
14 Q. Yeah. And I'm not asking about what the
15 petition says. I'm asking about what your opinion is,
16 Dr. Houh.
17 In your opinion, is port 42 in Chang
18 figure 3 an upstream port as you have explained and
19 described what that term means?
20 A. I mean, my analysis was about the combination
21 and not about Chang alone. So I don't have a -- I
22 didn't provide analysis about this question because my
23 analysis is with respect to what the petition is setting
24 forth.
25 In the petition, the petition is saying

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1 that port 42 is mapping it, I believe, to the upstream
2 port.
3 Q. Do you agree?
4 A. I don't think I have an opinion about Chang
5 alone, what the petition's claim there. My opinions are
6 with respect to -- mainly directed to the combinations
7 set forth in the petition as to why they don't meet or
8 render obvious the claim elements and, furthermore, why
9 the combinations would not have been -- there would have
10 been no motivation to combine them to start with by a
11 POSITA.
12 Q. Did the combination change anything about
13 port 42?
14 MR. BLUMENKOPF: Objection, form.
15 A. I think the combinations as proposed really
16 modified Chang from the bridge down, at least down with
17 respect to the actual figure itself. But I don't
18 believe the combination changed anything from the hub
19 control -- well, at least in the figures that I recall
20 in the petitions, I don't believe those parts were
21 modified.
22 I mean, the figures in the petition
23 weren't the prior art -- I want to make that clear --
24 but they were combinations of different portions from
25 different prior art and from the knowledge of a person

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1 of ordinary skill.
2 BY MR. JENSEN:
3 Q. Yeah. And from the perspective of an expert
4 and a POSITA, can you tell me in Chang figure 3 whether
5 port 42 is or is not an upstream port?
6 MR. BLUMENKOPF: Objection, form.
7 A. Well, I certainly understand that the
8 petitioner has been calling it and mapping it, I
9 believe, where required to be upstream port.
10 BY MR. JENSEN:
11 Q. Yeah. And what is your position? Is the
12 petition correct in that regard?
13 MR. BLUMENKOPF: Objection, form.
14 A. I don't think that specific question was part
15 of my analysis. My analysis was generally directed to
16 the broader combination as opposed to this specific
17 question.
18 BY MR. JENSEN:
19 Q. So you don't have an opinion one way or the
20 other whether port 42 is an upstream port?
21 MR. BLUMENKOPF: Objection, form.
22 A. I'm really merely responding to issues raised
23 in the petition with respect to the combination
24 elements, not with respect to Chang alone. I don't
25 believe I have an opinion about this particular question

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because it wasn't part of my analysis.
BY MR. JENSEN:
Q. All right. Let's take a break.
THE VIDEOGRAPHER: The time is 3:03 p.m. We're now going off the record.
(Recess taken)
THE VIDEOGRAPHER: The time is 3:20 p.m. We're now back on the record.
BY MR. JENSEN:
Q. Dr. Houh, let me direct you to your '643 declaration at paragraph 67.
A. Okay.
Q. And in that section you discuss what's called the hub 40 mux implementation, correct?
A. Partly here, yes.
Q. And in the hub 40 mux implementation the petitioner maps what's labeled in Chang as hub 40 to the claimed USB hub, correct?
MR. BLUMENKOPF: Objection, form.
A. So I just want to point out that this is a made-up figure, the figure that I've got. It's not prior art from any of the separate Chang or Chang II. This comes from the petition.
And in it there is a label that the petitioner has applied to 42 that -- they call that a

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first USB port.
BY MR. JENSEN:
Q. I'm not asking about 42. I'm asking about hub 40.
A. Hub 40.
Q. Yeah. In the hub 40 mux implementation the petitioner is mapping the claimed hub to the box hub 40, correct?
MR. BLUMENKOPF: Objection, form.
A. Yeah. If you look at the next page, I believe that that's still part of the hub 40 mux implementation. There that figure from the petition is mapping the Chang hub 40 in this matchup and created figure to the USB hub.
BY MR. JENSEN:
Q. And this is a better figure to look at. You're talking about the figure you pasted into paragraph 69 of your report?
A. I'm talking about this figure, yes, which comes from the petition at page 68 of the '643 petition.
Q. And in that figure the petitioner has mapped the box 40 to the claimed USB hub, correct?
MR. BLUMENKOPF: Objection, form.
A. I would agree with that characterization.
BY MR. JENSEN:

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Q. Do you have an opinion one way or the other whether the box 40 in the petitioner's figure is a USB hub?
MR. BLUMENKOPF: Objection, form.
A. I mean, my analysis in this section isn't directed to that specific question. But I am of the opinion that -- well, I'm just laying out what according to the petition the petitioner is mapping. It wasn't part of my analysis in this section in any way what you asked.
BY MR. JENSEN:
Q. Is it part of your analysis in any section that the box 40 is not a USB hub?
MR. BLUMENKOPF: Objection, form.
A. Well, I mean, I'll let my declaration stand for itself here; but I don't recall that was part of my analysis in my supplemental declarations.
BY MR. JENSEN:
Q. Okay. Let me point you to a few paragraphs earlier, to paragraph 62 in your '643 declaration.
A. Okay.
Q. And that paragraph is under the heading "The Hub 46 Mux Implementation," correct?
A. Yes.
Q. And if we go to paragraph 64, you have pasted

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in an image from the petition, correct?
A. Yes.
Q. And in that image petitioner is mapping what's labeled as the "hub control unit 46" to the claimed USB hub, correct?
MR. BLUMENKOPF: Objection, form.
A. That's my understanding what the petition's mapping is.
BY MR. JENSEN:
Q. Do you render an opinion anywhere in your report that the hub control unit 46 is not a USB hub?
MR. BLUMENKOPF: Objection, form.
A. I mean, I don't know all my declarations from memory; but I'll let them stand for themselves if they do or don't. But I don't recall that being part of my analysis as I'm sitting here.
BY MR. JENSEN:
Q. Okay.
A. Your specific question, that is.
Q. Let's turn to the Chang II reference, which is Exhibit 1015.
A. Okay.
Q. And you've read the Chang II reference, correct?
A. Yes.

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Q. And you understood it?
MR. BLUMENKOPF: Objection, form.
A. Yeah. I understood what I reviewed, and I also understood the petitioner's claims about the combinations that involve Chang II.
BY MR. JENSEN:
Q. What is shown in Chang II figure 1?
MR. BLUMENKOPF: Objection, form.
A. So if you look at paragraph 15 of Chang II, what Chang II says about it is that "Figure 1 shows an embodiment of a schematic diagram for a data transmission bridge device and control chip thereof for transmitting data according to the present invention."
So this is an example embodiment. And I think the specification talks more about figure 1 starting around paragraph 22 and going on for at least several paragraphs.
BY MR. JENSEN:
Q. What is Chang figure 2?
MR. BLUMENKOPF: Objection, form.
A. So Chang II describes figure 2 as it shows -- this is from paragraph 16. "Figure 2 shows an embodiment of a circuit diagram for a data transmission bridge device and control chip thereof for transmitting data according to the present invention."

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So this is just an example embodiment. And I think also if you look at the same paragraph 22, for at least several paragraphs thereafter it's also describing figure 2 in the Chang II specification.
BY MR. JENSEN:
Q. What's shown in Chang figure 3?
MR. BLUMENKOPF: Objection, form. Just to be clear on the record, Counsel, I assume you meant to say Chang II?
BY MR. JENSEN:
Q. Yes. What is shown in Chang II figure 3?
A. If you look in the specification of Chang II at paragraph 17, it says that "Figure 3 shows a first embodiment of a structural representation for a data transmission bridge device and control chip thereof for transmitting data according to the present invention."
And if you look at paragraph 29 of Chang II, it discusses figure 3, at least there and in the following several paragraphs.
Q. What is shown in Chang II figure 4?
MR. BLUMENKOPF: Objection, form.
A. So if you look at paragraph 18 of Chang II, it says that "Figure 4 shows a second embodiment of a structural representation for a data transmission bridge device for transmitting data according to the present

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invention."
I think, you know, figure 3 in the previous paragraph is talking about a first embodiment of a structural representation. This is simply another example of an embodiment of a structural representation. And then if you look at paragraph 31 and 32, those paragraphs also discuss figure 4.
BY MR. JENSEN:
Q. What's showing in Chang II figure 5?
MR. BLUMENKOPF: Objection, form.
A. If you look at Chang II at paragraph 19, it says that "Figure 5 shows an embodiment of a schematic diagram for a control chip for a data transmission bridge device for transmitting data according to the present invention."
And then paragraphs -- at least paragraphs 34 and a few paragraphs thereafter are also discussing figure 5.
BY MR. JENSEN:
Q. Well, what is a schematic diagram, Dr. Houh?
A. Well, this type of diagram is one that Chang II happens to be calling a schematic diagram, as is figure 1. I guess that's -- yeah, figure 1.
So at least in the context of Chang II, this type of diagram -- this diagram is described as a

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schematic diagram.
Q. Yeah. So what is a schematic diagram?
A. Well, it's showing here things that are labeled like blocks and some relationships between elements. So that's what you can see in figure 5 at least.
Q. Are the blocks in the schematic diagram of figure 5 in Chang II intended to depict structural components or functional components?
MR. BLUMENKOPF: Objection, form.
A. So if you look at paragraph 34 describing this figure 5 example that it calls a schematic diagram, it talks about how it's an embodiment of a schematic diagram for a control chip of a data transmission bridge device.
So I think it's understood that the control chip is a physical thing. And then it talks about things like having a bypass circuit unit 133. That's kind of towards the middle. And I think that a circuit has structure, and it's a physical thing that has structure. And there's a CPU, and I think a CPU is a thing.
So at least in part this is describing some structure in this example and in paragraph 34.
BY MR. JENSEN:
Q. And the device in Chang II has two connection

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interfaces, correct?
MR. BLUMENKOPF: Objection, form.
A. Figure 5 is using slightly different words to describe what it's showing. It's showing that it's an embodiment of a schematic diagram for a control chip.
And then it goes on to say in paragraph 35, it says how "the first USB controller 131 connects to the first connection interface 11 of the data transmission bridge device 1."
And then with respect to the other connection -- or later in the paragraph it says how the first connection interface 11, there's a -- there's a connection at some point that's completed. You know, there's a situation that would cause that described in paragraph 35; but eventually potentially there's a connection between the first connection interface 11 and the first host device 2.
Then the next paragraph 36 talks more about the second connection interface 12 and how -- "When a second connection interface 12 is connected with a second host device 3, an inquire signal is produced for the second host device 3. Then the second USB controller 132 complete the connection between the second connection interface 12 and the second host device 3."

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BY MR. JENSEN:
Q. Yeah. So my question is really simple. In figure 5 how many connection interfaces are identified?
A. Well, the figure shows two boxes that have -- labeled "first connection interface" and "second connection interface," and the spec does talk about those two and what devices they connect to respectively.
Q. And so there's two connection interfaces shown in figure 5, right?
A. This example embodiment figure 5 does have -- the figure does have two connection interfaces.
Q. And the embodiment shown in figure 1 also illustrates two connection interfaces, correct?
MR. BLUMENKOPF: Objection, form.
A. Did you say figure 1? I thought I heard some different number, but you're showing figure 1 right now?
BY MR. JENSEN:
Q. Yeah. Figure 1 shows two connection interfaces as well, right?
A. It has the same labels, 11 and 12, on the first connection interface and second connection interface respectively as the previous figure we were looking at.
Q. And the first connection interface 11 connects to what's labeled in figure 1 as a "first host device 2," correct?

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MR. BLUMENKOPF: Objection, form.
A. Yeah. In figure 1, which is described as an embodiment of a schematic diagram for a data transmission bridge device and control chip thereof -- it goes on, but I won't read it. But in this example embodiment in what's shown in figure 1 does show a first host device 2 connected to a first connection interface 1.
BY MR. JENSEN:
Q. And figure 1 shows that the second connection interface 12 can connect to either a second host device 3 or a slave device 4, correct?
MR. BLUMENKOPF: Objection, form.
A. If you look at paragraphs 26 and 27 of Chang II, it discusses the situation where there can be a host device connected but then a user can connect a slave device to the same second connection interface.
BY MR. JENSEN:
Q. But only one of those can be connected at a time, right?
A. I think that only -- it's one of those or it could be the device -- I think somewhere in Chang II I recall that it could be just switching modes for a single device or something like that somewhere.
Q. Do you have an understanding as to what USB

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ports are defined in the USB standard?
MR. BLUMENKOPF: Objection, form.
A. It doesn't sound like something I addressed specifically in my supplemental declarations, I mean, unless you're thinking of something I can take a look at.
BY MR. JENSEN:
Q. I'm just asking with your understanding of a POSITA. I don't have a particular paragraph in mind here. Let me just ask a clean question.
Are you aware that the USB standard defines a number of connectors?
MR. BLUMENKOPF: Objection, form.
A. That may be the case. I understand that there's some standardized connector types that are different, but I don't recall from memory what the spec says about those.
BY MR. JENSEN:
Q. And let me use just the terminology from the USB standard itself. Are you aware that the USB standard defines both receptacles and plugs?
MR. BLUMENKOPF: Objection, form.
A. That wouldn't surprise me. I don't know these specs from memory.
BY MR. JENSEN:

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Q. Do you know what a standard A receptacle is in the USB context?
MR. BLUMENKOPF: Objection, form.
A. I believe so.
BY MR. JENSEN:
Q. What is it?
A. I think an A receptacle is roughly maybe a half inch wide by maybe around a quarter inch high with an internal -- I don't know what you call it. I think of it as a little circuit board device with contacts on it. I don't know what dimensions exactly are in the spec, but I think that's what a type A receptacle looks like.
Q. Do you recognize what's shown in Chang II figure 3 with the labels 11 and 12 to be standard A USB connectors or plugs?
MR. BLUMENKOPF: Objection, form.
A. Well, I think the receptacle for type A is illustrated in 121; and the plug would be 12. I mean, I hope I got that right, you know. That's what I would recall offhand, but I think that hopefully matches the spec.
BY MR. JENSEN:
Q. And if we look at Chang II, figure 4, do you see that there are two cables shown there labeled 122 and 122 prime?

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A. Yes.
Q. Do you recognize the left end of those cables in the figure as a standard A USB plug or connector?
MR. BLUMENKOPF: Objection, form.
A. They look like it to me.
BY MR. JENSEN:
Q. And those would plug into the receptacle that's labeled 12 in Chang II figure 4?
MR. BLUMENKOPF: Objection, form.
A. Sure. That's what it looks like to me, just looking at the figure alone.
BY MR. JENSEN:
Q. Is there anything about the receptacle 12 itself that changes depending on whether a host or a device is plugged into it?
MR. BLUMENKOPF: Objection, form.
A. Physically?
BY MR. JENSEN:
Q. Yes.
A. I'm not aware, thinking about this, of a physical transformation of either the plug or receptacle as they're mated. I mean, maybe there's some spring-type brushes or something on one side that do get a little deformed when they're mated together just to ensure proper contact. But there are types of

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connectors that have such a mechanism.
Q. Is a USB standard A female receptacle able to accept a USB device that's inserted into it?
MR. BLUMENKOPF: Objection, form.
BY MR. JENSEN:
Q. Let me ask a better question.
Under the USB standard can a type A receptacle accept a connection that is coming from a USB device? And by that I mean in device mode.
MR. BLUMENKOPF: Objection, form.
A. I believe there are many such things such as a -- like a memory stick, USB memory stick, that simply has a USB type A connector on the end that can be plugged into a USB receptacle. And so --
BY MR. JENSEN:
Q. I'm sorry. Go ahead.
A. So I think I'm aware of at least some examples of those.
Q. Can the same USB type A female receptacle accept a connection coming from a USB host?
MR. BLUMENKOPF: Objection, form.
A. I mean, do you mean whether it can physically accept such a cable if you plugged it in or that it would have to behave in a certain way?
BY MR. JENSEN:

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Q. Let's start with physically.
A. Well, I mean, figure 4 here in Chang II does show a cable 122 prime with two A-type connectors at each end. So I think physically you could take the same host device 2 which has the same A receptacles and simply take that cable and plug it into each host. That would physically work, I think, as illustrated here in figure 4. What I'm saying is that's physically possible.
Q. And whether or not that would work from an electrical perspective would depend on other things in the system. Is that right?
MR. BLUMENKOPF: Objection, form.
A. I don't know that I've -- no. I don't know that I know what specifically would occur in this particular case, but it looks physically possible given this illustration in figure 4.
BY MR. JENSEN:
Q. Would it be electrically possible as well?
MR. BLUMENKOPF: Objection, form.
A. Well, I'm not sure what you mean by "electrically possible."
BY MR. JENSEN:
Q. Well, Chang II is talking about a device that allows a user to plug in a host USB product or a device

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1 USB product into the second connection interface 12,
2 correct?
3 MR. BLUMENKOPF: Objection, form.
4 A. Sorry. You're talking about Chang II?
5 BY MR. JENSEN:
6 Q. Yes.
7 A. You're able to plug in what to what, please
8 again?
9 Q. You're able to plug in either a host or a
10 device into the second connection interface 12.
11 A. Yeah. So the specific type of cable like shown
12 in figure 3 with this control chip embedded in it, I
13 think Chang II is talking about how either end, the
14 first shown in -- as shown in figure 1.
15 The second connection interface could go
16 either to a slave or host given that the control chip 13
17 and all requisite components are part of -- if it were
18 part of this cable, such as illustrated in figure 3, I
19 think that's what Chang II is designed to be able to
20 support, plugging in host-to-host or host-to-slave --
21 or, sorry, host-to-device.
22 Q. And that's the second connection interface 12
23 you're talking about, right?
24 A. So I think one of -- so if you look at
25 paragraph 21 in Chang II, it talks about how "The

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1 present invention designed a data transmission bridge
2 device for transmitting data between two devices
3 (host-to-host or host-to-slave) through simple hardware
4 structure. The main feature is the provision of two
5 different transmission paths so that by automatically
6 detecting the type of device connected (host or slave)
7 the present invention can switch to the proper
8 transmission path, thus not only can host-to-slave
9 operation between the host device and the slave device
10 be supported, but direct bridging between two host
11 device for data transfer is also possible."
12 So I think that's what this invention is
13 directed to, and this is one of the main features is
14 that you can -- it's designed to support both and be
15 able to, you know, change the configuration and have it
16 still continue to work.
17 It goes on to say, "Furthermore, the
18 present invention adheres to USB specification by design
19 so that 'plug and play' works properly. Thus, the goal
20 of allowing users to conveniently bridge between a host
21 device and any other device (host or slave) for data
22 transfer is achieved." And that hot swapability is --
23 sorry, plug and play is you can unplug and plug in a
24 different device, and it just works."
25 So all this is what's being described as

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1 the main feature of the way Chang II operates.
2 Q. The challenged patents in this case talk about
3 smartphones, correct?
4 MR. BLUMENKOPF: Objection, form.
5 BY MR. JENSEN:
6 Q. If you want to check the patent, just tell me
7 what patent you're looking at, Dr. Houh, and I can point
8 you to the column and line.
9 A. Well, I have the '962 here in paper in front of
10 me. So maybe we could start with that one.
11 Q. Okay. So why don't you look at column 2
12 starting at line 42.
13 A. Yes, I see that.
14 Q. And the first sentence there says, "Recently
15 mobile phones such as smartphones have gained in
16 popularity."
17 Is that the paragraph you're looking at?
18 MR. BLUMENKOPF: Objection, form.
19 A. In the '962 patent I see that in column 2
20 starting at line 42.
21 BY MR. JENSEN:
22 Q. And toward the bottom of that paragraph around
23 line 60 it describes how smartphones can be configured
24 to operate as either a USB host or a USB device,
25 correct?

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1 MR. BLUMENKOPF: Objection, form.
2 A. I mean, I see starting at line 60 and down to
3 line 63 that it says that, "Therefore, leading mobile
4 device manufacturers and system designers have begun
5 designing their mobile device products (i.e.,
6 smartphones, tablets, et cetera) to support both USB
7 host and USB device roles."
8 BY MR. JENSEN:
9 Q. Do you understand that to mean that a
10 smartphone can operate in a host mode or a device mode?
11 MR. BLUMENKOPF: Objection, form.
12 A. I think what it's saying is that the people are
13 starting to design products like phones that support
14 both host mode and -- or host roles and USB device
15 roles.
16 BY MR. JENSEN:
17 Q. Do you have an understanding as to whether it's
18 saying that it can simultaneously support both host and
19 device roles or that those roles are mutually exclusive?
20 MR. BLUMENKOPF: Objection, form.
21 A. I don't think the description here in the
22 bottom of column 2 and the top of column 3 is directed
23 to what you're asking. I think it doesn't say
24 specifically.
25 BY MR. JENSEN:

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1 Q. Do you have an understanding as a POSITA
2 whether a smartphone can at a given point in time act as
3 both a host and a device?
4 MR. BLUMENKOPF: Objection, form.
5 A. I don't think that was part of my analysis that
6 I've laid out in my supplemental declarations.
7 BY MR. JENSEN:
8 Q. Do you know whether plugging a smartphone such
9 as is described in the Aptiv patents into the device
10 shown in Chang II figure 5 would work?
11 MR. BLUMENKOPF: Objection, form.
12 A. I mean, I don't think that was part of my
13 analysis for my supplemental declarations, this
14 particular issue.
15 BY MR. JENSEN:
16 Q. Okay.
17 A. I mean, I do analyze how Chang II's bridge, in
18 conjunction with Chang and the devices that are added to
19 even that combination by a person of ordinary skill, I
20 analyze how that whole combination works.
21 Q. How does Chang -- sorry. Go ahead.
22 A. That's what I did analyze.
23 Q. Yeah. How does Chang II determine whether a
24 host or a device is connected on the second connection
25 interface?

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1 MR. BLUMENKOPF: Objection, form.
2 A. If you look at paragraph 38 of Chang II, it
3 discusses this detection unit 134 and it says it's also
4 connected to the second connection interface 12 and
5 detection unit 134 will automatically operate to switch
6 between a virtual host state and a virtual slave state,
7 wherein the states are used to determine the type of
8 device currently connected with a second connection
9 interface 12 and a detection signal (bridging detection
10 signal or slave detection signal) is produced
11 accordingly. On the other hand, the CPU 135 is for
12 receiving the detection signal," and then it goes on.
13 But I think part of how Chang describes
14 this is that these states are used to determine the
15 device, but the detection signal is produced
16 accordingly. And I think there's more detail in further
17 paragraphs as well.
18 BY MR. JENSEN:
19 Q. Assuming you had a smartphone connected on the
20 second connection interface 12 in device mode and the
21 smartphone switched to host mode, how would the
22 detection unit in Chang figure 5 determine that there
23 had been a role change?
24 MR. BLUMENKOPF: Objection, form.
25 A. I mean, I may have some discussion about this

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1 in maybe one of my declarations if you'll allow me to
2 kind of open them and search through them. So I'll go
3 ahead and do that.
4 BY MR. JENSEN:
5 Q. Rather than take the time to look through all
6 your reports to track that down, let me ask maybe a more
7 basic or fundamental question.
8 Would the detection unit in Chang II
9 figure 5 be able to detect a role change by a smartphone
10 connected to the second connection interface 12 at all?
11 MR. BLUMENKOPF: Objection, form.
12 A. Yeah. So if you look at my '643 declaration,
13 in paragraph 135 I say, "As I noted in my previous
14 declaration, the USB specification requires certain
15 configurations of pull-up and pull-down resistors on the
16 USB data lines to indicate whether a device is operating
17 as a USB host or a USB device. I agree with Mr. Welch
18 that pull-up and pull-down resistors creates signals."
19 So I think that the presence of these
20 resistors in the proper configuration would be what's
21 used to determine what the device -- what mode the
22 device is in.
23 BY MR. JENSEN:
24 Q. And that would include determining whether it's
25 in device mode or host mode?

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1 MR. BLUMENKOPF: Objection, form.
2 A. So yeah. The specification requires certain
3 configurations of pull-up and pull-down resistors on the
4 USB data lines to indicate whether a device is operating
5 in USB host -- or as a USB host or a USB device, so ...
6 BY MR. JENSEN:
7 Q. And would the detection unit in Chang II
8 figure 5 be able to detect a switch from host mode to
9 device mode by a smartphone?
10 MR. BLUMENKOPF: Objection, form.
11 A. I mean, I don't think that -- I don't recall
12 seeing it in Chang II anywhere where it's talking about
13 a phone.
14 BY MR. JENSEN:
15 Q. Well, let's put aside whether it's a phone or
16 some other kind of product that can switch roles between
17 host and device and vice versa. Let me ask the question
18 more broadly.
19 Would the detection unit in Chang II
20 figure 5 be able to detect a role switch from host to
21 device of a connected USB product?
22 MR. BLUMENKOPF: Objection, form.
23 A. I don't think I address this -- this is an
24 issue I analyzed in my supplemental declarations.
25 What I did analyze was what was set forth

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1 in the petition, which is when this combination -- in
2 the combinations set forth by petition of Chang,
3 Chang II and the knowledge of a person of ordinary
4 skill, and maybe even perhaps the other challenges as
5 well that involve Chang II, that once the -- and I'll
6 just refer to my declaration as to where I address this
7 point.
8 But once in the combination the overall
9 device bypasses the bridging unit of Chang II, no
10 further detections can be performed because the
11 detection unit is in the bridge of Chang II in the
12 combinations. And so the device effectively is broken
13 and doesn't behave in the proper way. It doesn't behave
14 according to the main feature of what Chang II was
15 designed to do, so essentially removing features that
16 are already existing in Chang II.
17 Admittedly, now there are additional
18 ports; but then it doesn't work and a person wouldn't
19 make that combination.
20 BY MR. JENSEN:
21 Q. And I'm just asking about Chang II here. I'm
22 not asking about a combination. We're just looking at
23 the Chang II reference.
24 My question to you is is the device shown
25 in Chang II figure 5 broken as you just described?

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1 A. Well, I think Chang II works as it's described
2 in Chang II. What I'm saying is broken is the
3 combination of Chang II, Chang and the person -- a
4 POSITA's knowledge as outlined in the obviousness
5 combinations in the petitions.
6 Q. So you're not rendering an opinion that
7 Chang II itself is somehow broken, correct?
8 MR. BLUMENKOPF: Objection, form.
9 A. I don't think that's what I said, that Chang II
10 alone was broken. Chang II has a main feature which is
11 now changed and the principle of operation has changed
12 really when the petitioner took the bridge of Chang II
13 and put it in this combination with Chang I and the
14 knowledge of a person of ordinary skill. I think that
15 combination is broken.
16 BY MR. JENSEN:
17 Q. So sticking with Chang II now -- we'll talk
18 about that, I think, tomorrow given the time. I just
19 want to focus exclusively on the Chang II reference and
20 what the Chang II reference itself teaches to a POSITA.
21 The question I have is does the Chang II
22 reference teach to a POSITA reading it that the
23 detection unit 134 in figure 5 could detect a role
24 change for a connected USB product on the second
25 connection interface 12?

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1 MR. BLUMENKOPF: Objection, form.
2 A. There's a little more detail about the
3 operation of Chang II if you look at paragraph 43 with
4 respect to figure 6 of Chang II that is -- it's kind of
5 in the middle of the description of figure 6.
6 But in paragraph 43, it talks about,
7 "Next, switch to a virtual slave state in order to
8 produce an inquire signal to the external device," which
9 is step S603 in figure 6," and then determine if there
10 is a response from the external device (S605). If at
11 step S605 the answer is yes regarding receiving of the
12 external device response, then it is determined that the
13 external device is a second host device 3 (S607) and at
14 this time switch to a bridged transmission path."
15 It goes on. And I think there's an
16 equivalent description in paragraph 44 of step S17. But
17 if you look at paragraph 44, it talks about, "However,
18 if at S605 the answer is no regarding the receiving of
19 the external device response and it is determined that
20 the external device is not a host type device.
21 Therefore, an automatic switch to virtual host state
22 will occur (S615), and then further determine if there
23 is an inquire signal from the external device (S617)."
24 At this time if the answer is yes regarding receiving of
25 the external device inquire signal, then it is

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1 determined that the external device is a slave device."
2 So it says all that. So it doesn't say
3 anything about specifically to a phone. But if a phone
4 replied in the manner then in my -- it could detect in
5 an example where the phone replied in this similar
6 manner, according to figure 6. But it's not directed
7 specifically saying anything about a smartphone here.
8 BY MR. JENSEN:
9 Q. I want to put aside the smartphone term because
10 I don't really care about that so much. Regardless of
11 what type of USB product is plugged in, is it the case
12 that the Chang II detection unit 134 can determine
13 whether the connected product is in device mode or host
14 mode?
15 MR. BLUMENKOPF: Objection, form.
16 A. I think in Chang II figure 6 in the description
17 tells you how it makes that determination, as long as
18 the detection circuitry is receiving signals from what's
19 connected.
20 The issue with the combination that I've
21 analyzed is that in the proposed combination by the
22 petitioner, once it's determined the first time that a
23 device type has been connected to the appropriate port
24 that is initially going into the bridge, then subsequent
25 to that, the -- that device is set up to bypass the

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1 bridge, and there can be no subsequent detections of any
2 change in what's plugged into that port after that time
3 of the switch.
4 And I lay that out in my various
5 declarations. That's what's wrong with the combination
6 because the bridge of Chang II has been bypassed in the
7 combination, and that's how I analyze the combination.
8 But then in Chang II there is a bypass circuit, but the
9 detection unit is still present in the bridge chip that
10 the second connection interface device -- or whatever is
11 connected to it is still connected in Chang II.
12 BY MR. JENSEN:
13 Q. And because -- I'm sorry. Go ahead.
14 A. In Chang II alone. And that's one of what
15 Chang II calls its main features.
16 Q. And because Chang II's detection unit 134 can
17 always detect what is connected on the second connection
18 interface, it's able to detect if there was a switch
19 between a host and device mode for a connected product,
20 right?
21 MR. BLUMENKOPF: Objection, form.
22 A. Well, there is a detection unit that's in the
23 bridge in Chang II. And the problem with the
24 combination is that --
25 BY MR. JENSEN:

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1 Q. Yeah. And I'm not talking about the
2 combination. We'll talk about that tomorrow, I promise.
3 I want to ask just about Chang II here.
4 I guess the first thing I'd like to know
5 is does Chang II by itself have the same alleged problem
6 that you identify for the combination?
7 MR. BLUMENKOPF: Objection to form.
8 A. If you look at paragraph 38, there's a
9 statement there that the detection unit 134 is also
10 connected to the second connection interface 12. So as
11 long as the device is present at the second connection
12 interface, the detection unit is connected to what's at
13 the second connection interface.
14 So Chang II doesn't have the problem
15 because the bypass is internal. It goes around -- the
16 bypass unit 133 of Chang II simply is bypassing the
17 second USB controller and the buffer unit to connect the
18 device in device mode using the bypass circuit unit to
19 the first USB controller; but the detection unit is
20 still connected to the second connection interface, as
21 Chang II describes.
22 BY MR. JENSEN:
23 Q. And that allows the detection unit to always be
24 able to determine whether a host or a device is
25 connected on the second connection interface, correct?

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1 MR. BLUMENKOPF: Objection, form.
2 A. So the detection unit being connected to the
3 second connection interface does allow it to detect
4 what's connected at the second connection interface.
5 BY MR. JENSEN:
6 Q. And that would include detecting whether the
7 USB product on the second connection interface switched
8 modes from host to device or vice versa?
9 MR. BLUMENKOPF: Objection, form.
10 A. In Chang II alone, if you look at figure 6, it
11 tells you -- talks about how -- the flow chart indicates
12 how -- like if you look at steps S613 and S625, it talks
13 about how it's checking whether the user has exchanged
14 for another external device, both those steps.
15 And if no, it's looping through and
16 continuing to check through the loop back to S611 and
17 S623 respectively for the two different branches. So
18 there is this continuous checking that Chang II is
19 disclosing that Chang II alone, you know, as its own
20 stand-alone reference discloses.
21 Then if it detects there's a change, it
22 goes all the way back up to the top or to step S603
23 which says "switch to a virtual state." This kind of
24 starts the process of detecting which state it's in.
25 So Chang II alone, that's how it works. I

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1 know we'll talk about it tomorrow; but if you bypass the
2 input so that there's no input to the bridge, the
3 Chang II bridge, the detection circuit, the detection
4 unit inside the Chang II bridge won't receive anything.
5 BY MR. JENSEN:
6 Q. Could the Chang II system detect whether there
7 was a role switch between host and device mode or vice
8 versa without being physically disconnected?
9 MR. BLUMENKOPF: Objection, form.
10 A. Well, figure 6 does have this loop, as I
11 discussed; and it is checking whether the user has
12 exchanged for other external device. Let me see what it
13 says about those.
14 I mean, Chang II is simply saying, "At the
15 same time that bridged transmission is occurring, a
16 further step of checking whether the user has exchanged
17 for other external device would occur instantly (S613).
18 If it is determined that there are no exchange for other
19 external device, the bridged transmission of data
20 between the first host device 2 and the second host
21 device 3 will continue; however, if the user has
22 exchanged for other external device, then return to
23 step S603."
24 And I think it describes S625, is it,
25 yeah, in a similar manner. In fact, I think it even

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1 references to the previous step described as S613.
2 That's in paragraph 44.
3 So that's what Chang is saying. It's not
4 specifically addressing the question you asked, but it's
5 simply detecting if the user has exchanged for other
6 external device.
7 BY MR. JENSEN:
8 Q. Are you familiar with the single end in 0, SE0,
9 command in the USB standard?
10 MR. BLUMENKOPF: Objection, form.
11 A. I don't think I've talked about that as part of
12 my analysis unless you -- if you can point me somewhere.
13 BY MR. JENSEN:
14 Q. Let's suppose you have an existing connection
15 between a host on the first connection interface 11 and
16 a device on the second interface connection 12 of Chang
17 figure 5. In that circumstance which of those two
18 devices, or both of them, would be able to break the
19 connection?
20 MR. BLUMENKOPF: Objection, form.
21 A. I'm sorry.
22 BY MR. JENSEN:
23 Q. And by "break" I don't mean physically break.
24 I mean just close the connection.
25 MR. BLUMENKOPF: Same objection.

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1 A. I don't think I addressed that specifically as
2 part of my analysis. I don't think petitioner raised
3 any issue that was directed this specifically to this
4 kind of signal.
5 BY MR. JENSEN:
6 Q. Do you know as a POSITA whether the host can
7 terminate the connection it has with a device?
8 MR. BLUMENKOPF: Objection, form.
9 A. So, for example, in Windows I know that I can
10 disconnect a USB device from the USB interface using
11 software. And then it may tell me that the device is
12 still busy or that it's safe to unplug the device.
13 BY MR. JENSEN:
14 Q. And in that case that you just mentioned when
15 you have, using software, disconnected the USB device,
16 could the USB device still physically be plugged into
17 the computer?
18 MR. BLUMENKOPF: Objection, form.
19 A. It may still be plugged in, yes, in my personal
20 experience.
21 BY MR. JENSEN:
22 Q. So even though it's physically connected, there
23 may not be a USB connection that's operational between
24 the host and the device?
25 MR. BLUMENKOPF: Objection, form.

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1 A. Well, the operating system still knows
2 something's there. But like for a drive it can still --
3 it may still show that there's something -- it knows
4 that there's something connected; but it may not be
5 operable as a full drive as before I initiated the
6 disconnection from the USB panel in Windows, for
7 example.
8 BY MR. JENSEN:
9 Q. Do you know if it's possible to close a
10 connection between a USB host and device without
11 physically disconnecting them from one another?
12 MR. BLUMENKOPF: Objection, form.
13 A. I don't think that's an issue that I had to
14 look at specifically in my analysis.
15 BY MR. JENSEN:
16 Q. Okay. Let's look at Chang II figure 5, bypass
17 circuit unit 133. Do you see that?
18 A. Yes.
19 Q. Do you have an understanding as a POSITA as to
20 what would be inside of the bypass circuit unit 133?
21 MR. BLUMENKOPF: Objection, form.
22 A. Well, I think a person of ordinary skill would
23 understand that. It's a circuit. So a circuit is a
24 physical thing with a structure, and there would be a
25 class of circuits that would perform the bypass as

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1 required here.
2 BY MR. JENSEN:
3 Q. Does that class of circuits include a switch?
4 MR. BLUMENKOPF: Objection, form.
5 A. I mean, Chang II is already discussing how
6 there can be a switching between the bypass circuit and
7 the -- I forget what they call the other path. I mean,
8 yeah, so the switch between the bypass path or the path
9 through the section controller.
10 So Chang II is already referencing that
11 there's a switch. So adding another switch inside the
12 bypass circuit unit would seem a little wasteful because
13 you don't necessarily need to have two switches if you
14 can already switch between the path going through the
15 second USB controller and the path going through the
16 bypass circuit unit. That would be redundant and
17 wasteful.
18 BY MR. JENSEN:
19 Q. Where is the first switch that you mentioned in
20 Chang figure 5?
21 A. So there's not a box labeled switch in figure 5
22 inside the control chip. But it's clear if you review
23 the specification and actually look right in -- I think
24 it's in the abstract, for one. It says -- near the
25 lower middle of the abstract in Chang II it says, "The

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1 control chip detects which device is connecting to the
2 second connecting interface and switch to select one of
3 the two transmission paths for transmitting data between
4 the first connecting interface and the second connecting
5 interface."
6 So I think if you look at figure 5, the
7 two paths are directly through the middle like from the
8 second controller to the USB controller to the buffer
9 unit to the first USB controller to the first connection
10 interface and then the lower path, the bypass path,
11 which goes from the second connection interface to the
12 bypass circuit unit to the first USB controller to the
13 first connection interface.
14 So it's talking about switching between
15 those paths. So it's clear that there's a switch that
16 switches between those paths. And I think there's other
17 mentions of that, that switching the paths.
18 For example, in the summary of invention,
19 the very first paragraph, paragraph 11 of Chang II, it
20 talks about -- starting about the fourth line at the
21 end, "Wherein the device would automatically detect the
22 connecting device type and accordingly switch between
23 different transmission paths, which would not only allow
24 for support of data transfer between a host device and a
25 slave device, but also can directly support data

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1 transferred between two host devices."
2 So that's where it talks about switching
3 between the different transmission paths. So it's clear
4 that there's a switch already. So it would seem
5 wasteful and redundant to include -- that the bypass
6 circuit also include a switch.
7 Q. Would you agree with me that Chang II figure 5
8 does not disclose a multiplexer?
9 MR. BLUMENKOPF: Objection, form.
10 A. I don't think or recall that Chang II used the
11 term "multiplexer" in the specification.
12 BY MR. JENSEN:
13 Q. Would a POSITA understand that Chang II could
14 use a multiplexer to perform the switching function you
15 described?
16 MR. BLUMENKOPF: Objection, form.
17 A. I didn't consider that in my analysis for
18 Chang II alone. I understand that petition has set
19 forth that a POSITA would know how to use a multiplexer
20 in this combination of Chang, Chang II and the knowledge
21 of a person of ordinary skill at least. But I didn't
22 include that as my analysis for Chang II alone.
23 BY MR. JENSEN:
24 Q. Did you render any opinions as to whether the
25 preambles of the challenged claims are limiting?

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1 A. I don't think that I did that I can recall, but
2 I'll let the declarations stand for themselves. But I
3 don't think that I issued an opinion about that one way
4 or the other.
5 Q. Did you construe any claim terms as part of
6 your analysis?
7 MR. BLUMENKOPF: Objection, form.
8 A. I mean, again, I'll let my supplemental
9 declarations stand for themselves. I don't think that I
10 expressly construed -- provide express construction for
11 terms. I analyzed plain and ordinary meaning.
12 Now, I understand that in or more -- I
13 think at least one petitioner proposed a construction, I
14 believe, if I remember correctly, that the PTAB declined
15 to provide an express construction for it.
16 So I think my analysis was done under what
17 the PTAB instructed, which I think was everything was
18 plain and ordinary meaning. I'll let the declarations
19 stand for themselves. That's just from memory.
20 BY MR. JENSEN:
21 Q. Are the first and second connection interfaces
22 in Chang II figure 5 limited to any particular type of
23 USB standard connector?
24 MR. BLUMENKOPF: Objection, form.
25 A. I don't think I provide any -- that analysis as

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1 part of my opinions in my supplemental declarations. I
2 mean, if you think that's not correct, if you point me
3 somewhere, I'll be happy to take a look at it.
4 BY MR. JENSEN:
5 Q. Let me ask this question. Are the first and
6 second connection interfaces in Chang II figure 5 --
7 well, strike that.
8 Does Chang II figure 5 require any
9 particular type of USB receptacle defined in the USB
10 standard for the first and second connection interfaces
11 11 and 12?
12 MR. BLUMENKOPF: Objection, form.
13 A. I don't think that was part of my analysis.
14 BY MR. JENSEN:
15 Q. Let me direct your attention to '643 patent
16 claim 1. And I've got that on the screen, but you can
17 also look at the patent as well if you'd like.
18 A. I see it.
19 Q. So claim element 1[c] recites "providing a
20 signal detection circuit for receiving USB signals from
21 the consumer USB device via the second USB port,"
22 correct?
23 MR. BLUMENKOPF: Objection.
24 A. Were you reading 1[c]? I wasn't looking there
25 when you started reading it, but at the end I think you

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1 were reading --
2 BY MR. JENSEN:
3 Q. Yeah. Claim element 1[c] provides in part
4 "providing a signal detection circuit," correct?
5 A. Yes.
6 Q. What is a signal detection circuit?
7 A. It's a circuit. So that's a physical thing.
8 And that would refer to a class of signals that can do
9 signal detection.
10 Q. Do any of the claims of the '072, '420 or '962
11 patents require a signal detection circuit?
12 MR. BLUMENKOPF: Objection, form.
13 A. Are you asking about the challenged claims or
14 any of the claims?
15 BY MR. JENSEN:
16 Q. Well, I think all of the claims are challenged.
17 So it would be the same set of claims.
18 A. I mean, just searching through the 1082 exhibit
19 that you provided, I see signal detection circuit only
20 used in '643 claim 1 and in claim 5 and the dependent
21 claims that it would depend therefrom based on the fact
22 that they're in the independent case.
23 And I noticed that your chart doesn't
24 provide a listing of the dependent claims, I see.
25 Q. Yeah. This is just the independent claims.

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1 A. Yeah. So I searched 1082. I can go look
2 through the other ones for the dependent claims as well,
3 but I don't remember that offhand.
4 Q. Does claim 1 of the '643 patent provide any
5 restriction on the location of the signal detection
6 circuit?
7 A. I'm sorry. Did you say claim 5?
8 Q. Claim 1 or 5. I'll just ask a clean question.
9 Do either claims 1 or 5 in the '643 patent
10 require a particular location for the signal detection
11 circuit?
12 MR. BLUMENKOPF: Objection to form.
13 A. Well, I see that claims 1 and 5 of the '643
14 patent are directed to methods; but I think by nature of
15 the way things are arranged -- so, for example,
16 providing a signal detection circuit for receiving USB
17 signals from the consumer USB device via the second USB
18 port, you have to be able to receive it, a USB signal
19 from the device.
20 So I think that would say that there is
21 some specific arrangement of where the circuit is in
22 relation to the consumer device via the second port. So
23 I think some part of the claim limitations are directed
24 to the fact that, you know, you have to be able to
25 receive a signal. If you just have a detection circuit

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1 isolated from the consumer USB device, I don't see how
2 you could practice the method of receiving a signal from
3 the consumer device, for example.
4 So I think there may be some limitations
5 implied of a physical arrangement or location based on
6 some of these claim steps that are listed.
7 BY MR. JENSEN:
8 Q. Do any of the other independent claims in the
9 '072, '420 or '962 patents require detecting whether a
10 connected device is in host or device mode?
11 MR. BLUMENKOPF: Objection, form.
12 Counsel, your question is directed to the patents
13 themselves, not to just Exhibit 1082, right?
14 MR. JENSEN: Well, they're the same. It's
15 just the claims from the patent.
16 MR. BLUMENKOPF: We haven't had an
17 opportunity to verify any of the information in
18 Exhibit 1082.
19 Dr. Houh, please feel free to consult the
20 actual patents themselves.
21 BY MR. JENSEN:
22 Q. Yeah. You're free to reference the patents
23 themselves if you like.
24 Let me break this up into smaller segments
25 for you, Dr. Houh. Rather than asking you about all the

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1 claims in one question, let me direct your attention to
2 the '072 patent claim 1. Does the '072 patent claim 1
3 require detecting whether a connected USB product is in
4 host or device mode?
5 MR. BLUMENKOPF: Objection, form.
6 A. Well, there is a limitation in claim 1, which
7 is a method claim. I think it's labeled 1[b] here, but
8 I'll read it from the patent.
9 "Receiving a first USB signal from the USB
10 device via the USB port while the USB device is
11 operating in the USB host mode."
12 So that's the requirement of the method.
13 So it doesn't say the word detecting, but the method
14 requires receiving a first USB signal from the USB
15 device via the USB port while the device -- while the
16 USB device is operating in the USB host mode.
17 So if that's not done, the times when the
18 device is operating in USB host mode, then that would
19 not meet the limitation.
20 BY MR. JENSEN:
21 Q. Are you construing claim 1 of the '072 patent
22 to require detecting or making a determination that a
23 connected USB product is in host or device mode?
24 MR. BLUMENKOPF: Objection, form.
25 A. That's not exactly what I said. I'm

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1 interpreting all of these in their plain and ordinary
2 meaning, which is that "This claim element requires
3 receiving a first USB signal" -- let's just skip over
4 the "from" and "via" -- "while the USB device is
5 operating in the USB host mode."
6 So if you're not receiving a USB signal
7 from a device while it's operating in USB host mode,
8 subject to the -- via the USB port, then this method is
9 not being practiced.
10 BY MR. JENSEN:
11 Q. Does the system need to know that it has
12 received a signal from a device that is operating in
13 host mode, or is it enough that it simply receives the
14 host mode signal?
15 MR. BLUMENKOPF: Objection, form.
16 A. Well, I mean, the claim requires what it says
17 it requires, which is it requires that receiving a first
18 USB signal from the USB device via the USB port while
19 the USB device is operating in the USB host mode. And
20 if a device doesn't do that, it wouldn't meet this
21 element for a proposed -- and for the reasons I say,
22 because the combination is broken. In my analysis the
23 broken combination that is set forth by petitioner, this
24 is one of the things it doesn't do because when you plug
25 in a host on a bypass port, it's not going to receive a

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1 signal.
2 So that doesn't meet the claim element,
3 for example. I mean, the exact reasons why are in my
4 declaration. I'm paraphrasing a little bit.
5 BY MR. JENSEN:
6 Q. Yeah. I'm just asking about the claim here.
7 I'm not asking about the prior art or the combination or
8 anything. I'm just asking what your understanding is of
9 what the claim requires.
10 Is it your understanding that the claim
11 requires the system to make a determination that a
12 connected USB product is in host or device mode?
13 MR. BLUMENKOPF: Objection, form.
14 A. I mean, those exact words aren't in this
15 element. But the element simply requires what it says
16 it requires, which is receiving a first USB signal from
17 the USB device via the USB port while the USB device is
18 operating in the USB host mode.
19 BY MR. JENSEN:
20 Q. And that doesn't say the system has to detect
21 or determine that the signal that it is receiving is a
22 host mode signal, correct?
23 MR. BLUMENKOPF: Objection, form.
24 A. Well, it could be part of it; but what is
25 required is that while -- and I'll flip this. Maybe

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1 it's easier to understand. I'm not trying to change the
2 meaning, by the way, by doing this.
3 But while the USB device is operating in
4 the USB host mode, receiving a first USB signal from the
5 USB device via the USB port. So if you don't do that,
6 if you don't receive a signal while the device is
7 operating in the host mode at all, you couldn't have
8 received it from a device or via the USB port. So if
9 you don't receive any signal while the USB device is
10 operating in the host mode, you can't meet this element.
11 If you do receive a first USB signal, it
12 will additionally have to be from the USB device via the
13 USB port. So I think that's what this element requires.
14 BY MR. JENSEN:
15 Q. Suppose the system receives a first USB signal
16 from a USB device that is operating in host mode but it
17 doesn't know that that is a host. Would that situation
18 meet the claim?
19 MR. BLUMENKOPF: Objection, form.
20 A. Well, I don't know if that specific case was
21 what I analyzed because I don't think the petitioner
22 brought some hypothetical case like that up. So I don't
23 know if this specific case is part of what I've analyzed
24 in part of my analysis.
25 MR. JENSEN: Let's go off the record.

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1 THE VIDEOGRAPHER: The time is 5:02 p.m.
2 We're now going off the record.
3 (Recess taken)
4 THE VIDEOGRAPHER: The time is 5:03 p.m.
5 We're now back on the record.
6 MR. JENSEN: Given that we are getting
7 close to the seven-hour mark and in view of some
8 commitments, Dr. Houh, that you and others may have,
9 we've agreed to recess this deposition for today and
10 reconvene tomorrow morning at 9:00 a.m. Eastern. Thank
11 you.
12 THE VIDEOGRAPHER: The time is 5:04 p.m.
13 We're now going off the record.
14 (Proceedings concluded at 5:04 p.m.)
15
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CHANGES AND SIGNATURE

WITNESS NAME: HENRY H. HOUH

DATE OF DEPOSITION: December 19, 2024

PAGE	LINE	CHANGE	REASON

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I, HENRY H. HOUH, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted above.

_____
HENRY H. HOUH

THE STATE OF _____)
COUNTY OF _____)

Before me, _____, on this day personally appeared HENRY H. HOUH, known to me or proved to me on the oath of _____ or through _____ (description of identity card or other document) to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same for the purpose and consideration therein expressed.

Given under my hand and seal of office on this _____ day of _____, _____.

_____
NOTARY PUBLIC IN AND FOR
THE STATE OF _____

My Commission Expires: _____

_____No Changes Made _____ Amendment Sheet(s) Attached

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
_____
BEFORE THE PATENT TRIAL AND APPEAL BOARD
_____
MICROCHIP TECHNOLOGY INC.,
Petitioner,

V.

APTIV TECHNOLOGIES AG AND APTIV TECHNOLOGIES LIMITED,
Patent Owner.
_____

Case No. IPR2024-00228
U.S. Patent No. 9,619,420
_____

REPORTER'S CERTIFICATE
ORAL DEPOSITION OF HENRY H. HOUH
December 19, 2024

I, Melinda Barre, Certified Shorthand Reporter in and for the State of Texas, hereby certify to the following:

That the witness, HENRY H. HOUH, was duly sworn by the officer and that the transcript of the oral deposition is a true record of the testimony given by the witness;

That the original deposition was delivered to

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Travis Jensen.

That a copy of this certificate was served on all parties and/or the witness shown herein on _____.

I further certify that pursuant to FRCP Rule 30(f)(1), that the signature of the deponent:

____ was requested by the deponent or a party before the completion of the deposition and that the signature is to be before any notary public and returned within 30 days from date of receipt of the transcript. If returned, the attached Changes and Signature Page contains any changes and the reasons therefor:

____was not requested by the deponent or a party before the completion of the deposition.

I further certify that I am neither counsel for, related to, nor employed by any of the parties or attorneys in the action in which this proceeding was taken, and further that I am not financially or otherwise interested in the outcome of the action.

Certified to by me on this, the _____ day of _____, 2025.

Melinda Barre
_____
Melinda Barre
Texas CSR 2192
Expiration: 12/31/25

1 COUNTY OF HARRIS)
2 STATE OF TEXAS)
3 I hereby certify that the witness was notified on
4 _____ that the witness has 30 days or (____
5 days per agreement of counsel) after being notified by
6 the officer that the transcript is available for review
7 by the witness and if there are changes in the form or
8 substance to be made, then the witness shall sign a
9 statement reciting such changes and the reasons given by
10 the witness for making them;
11 That the witness' signature was/was not returned as
12 of _____.
13 Subscribed and sworn to on this, the _____ day of
14 _____, 2025.
15
16
17
18
19 _____
20 Melinda Barre
Texas CSR 2192
21 Expiration: 12/31/25
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