

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

3 -----
4 MICROCHIP TECHNOLOGY INC.) Inter Partes Review
5) No. IPR2024-00228
6 Petitioner,) No. IPR2024-00495
7 vs.) No. IPR2024-00229
8 APTIV TECHNOLOGIES AG,) No. IPR2024-00230
9) No. PGR2024-00011
10 Patent Owner,)
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15 VIDEOTAPED DEPOSITION OF ERIC WELCH
16 Menlo Park, California
17 Thursday, February 27, 2025
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23 Stenographically Reported By: Lynne Ledanois
24 Certified Court Reporter, License No. 6811
25 Job No. 7176178

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15 Videotaped deposition of ERIC WELCH, taken
16 at Orrickton, Herrington & Sutcliffe, Menlo Park,
17 California, commencing at 9:13 a.m., on Thursday,
18 February 27, 2025 before LYNNE M. LEDANOIS,
19 Certified Shorthand Reporter No. 6811, Certified
20 Court Reporter.

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I N D E X O F E X A M I N A T I O N

Examination by:	Page
Mr. Brausa	7
Mr. Jensen	132

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Thursday, February 27, 2025

9:13 a.m.

THE VIDEOGRAPHER: Good morning. We are
going on the record at 9:13 a.m. on February 27th, 09:13
2025.

Please note that the microphones are
sensitive, and may pick up whispering and private
conversations. Please mute your phones at this
time. 09:13

Audio and video recording will continue to
take place unless all parties agree to go off the
record.

This is Media Unit 1 of the video-recorded
deposition of Eric Welch, taken by counsel for 09:13
patent owner in the matter of Microchip Technology
Inc. versus Aptiv Technologies AG, filed in the
United States Patent and Trademark Office before the
patent trial and appeal board. Case Numbers:
IPR 2024-00230, and IPR 2024-00495, and 09:14
IPR 2024-00011, and IPR 2024-0029 [verbatim], and
IPR 2024-00 -- excuse me, IPR 2024-00228.

The location of the deposition is
1000 Marsh Road, Menlo Park, California, 94025.

My name is Shawna Hynes representing 09:15

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1 Veritext Legal Solutions, and I'm the videographer. 09:15
2 I am not related to any party in this
3 action, nor am I financially interested in the
4 outcome.
5 If there are any objections to proceeding, 09:15
6 please state them at the time of your appearance.
7 Counsel and all present will now state
8 their appearances and affiliations for the record
9 beginning with the noticing attorney.
10 MR. BRAUSA: Good morning. Adam Brausa 09:15
11 from Morrison Foerster firm on behalf of patent
12 owner Aptiv Technologies.
13 I'm joined by my colleague Andrew Jones,
14 also from the Morrison Foerster firm.
15 MR. JENSEN: This is Travis Jensen from 09:15
16 Orrick Herrington and Sutcliffe on behalf of
17 petitioner Microchip Technology Inc.
18 And I just note on one of the case
19 captions, the 2024-00011 proceeding, that is a PGR
20 proceeding. I think you mentioned it was an IPR. 09:16
21 Not a big deal, but...
22 THE VIDEOGRAPHER: Thanks for the
23 correction. I appreciate it. Thank you.
24 And will the court reporter please
25 introduce yourself and administer the oath to the 09:16

Page 6

1 witness. 09:16

2 THE REPORTER: Good morning. My name is

3 Lynne Ledanois. I am a licensed and certified

4 stenographic court reporter, License Number 6811.

5 The transcript from this deposition will be admitted 09:16

6 in judicial proceedings.

7 (Whereupon, the deponent is duly sworn by

8 the court reporter.)

9 ERIC WELCH,

10 having first been duly sworn, 09:16

11 was examined and testified as follows:

12 EXAMINATION

13 BY MR. BRAUSA:

14 Q Good morning, Mr. Welch. Welcome back.

15 A Good morning. 09:16

16 Q We spoke, I guess now, a few weeks ago.

17 And the process is the same. I'll ask some

18 questions, you're obligated to answer truthfully and

19 accurately to the best of your ability. Do you

20 understand that? 09:17

21 A I do understand that.

22 Q And if anything I ask is unclear or

23 uncertain, I'd ask that you ask for clarification so

24 that I make sure I'm asking questions you

25 understand. Fair? 09:17

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1	A	That's fair.	09:17
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2 Q As we heard the videographer announce,
3 we're here in five different proceedings, four IPRs
4 and one PGR. And across those five proceedings, you
5 have a reply declaration that, based on the 09:17
6 representations in the declaration and our
7 examination, is identical for all five proceedings;
8 fair?

9	A	That's correct.
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10 Q Okay. And so I will confine my questions 09:17
11 to one version of that declaration. But if at any
12 point the questions in your mind seem specific to a
13 patent, or I'm asking about a specific patent, I'll
14 do my best to do that and clarify that I'm talking
15 about a specific patent or a specific proceeding. 09:18

16	A	I understand.
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17 Q Okay. And otherwise, my questions will be
18 intended to encompass all the proceedings we're here
19 dealing with today. Fair?

20	A	Mm-hmm.	09:18
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21 Q Okay. Before we get going, I see you have
22 a copy of what I suspect is your reply declaration.

23 A It is my reply declaration.

24 Q Can I take a quick look at that.

25	A	Hope yourself.	09:18
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1 Q Thank you. 09:18
2 For the record, there are some tabs that
3 appear to just correspond to the section, headings.
4 I can thumb through this during a break, but are
5 there any other marginalia before -- besides the 09:18
6 tabs that you added?
7 A No. It was my intent that this be
8 completely clean.
9 Q Just so the record is clear, the
10 declaration, in substance, appears to be a copy of 09:18
11 Exhibit 1102.
12 I'll go ahead and introduce a copy of that
13 for the record, but you're welcome to refer to --
14 refer to the one you have in front of you as well.
15 So this declaration was executed on 09:19
16 January 17th of 2025 in Berkeley, California; is
17 that correct?
18 A That's correct.
19 Q What did you do to prepare this reply
20 declaration? 09:19
21 A Well, I considered all of the matters in the
22 case that I was aware of leading up to this point. In
23 particular, my original declarations which you might
24 possibly have copies of there.
25 And the deposition that I gave, and 09:19

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1 then -- I don't remember the exact titles -- but the 09:19
2 response, documents, perhaps a petition, and a
3 declaration that you filed -- sorry, that was filed
4 on behalf of Aptiv.

5 I considered all that stuff. 09:20

6 Q Okay. About how much time did you spend
7 preparing your reply declaration specifically in
8 reviewing those materials you described?

9 A Maybe 40, 50 hours.

10 Q Okay. Do you recall whether you read at 09:20
11 any point in your preparation for today or in your
12 declaration, a copy of the petitioner's reply brief
13 in these proceedings?

14 A I certainly saw the -- Dr. Houh's reply
15 declaration. I believe I read the reply brief as 09:20
16 well.

17 Q Okay. And when I say "petitioner," I mean
18 Microchip. So this would have been something
19 prepared by counsel on behalf of Microchip?

20 A I believe so, yes. 09:20

21 Q Okay. To the best of your knowledge, you
22 read a copy of the petitioner's reply brief at some
23 point in time?

24 A Yes.

25 Q Do you know whether there's any overlap in 09:21

Page 10

1 language between your declaration and petitioner's 09:21
2 reply believe?

3 A It's possible. I couldn't say offhand
4 exactly how much or to what extent or in what
5 sections. It's not impossible, though. 09:21

6 Q Okay. Are you familiar with the concept
7 called bodily incorporation?

8 A I've been informed about what that is, yes.

9 Q What is your understanding of what that
10 is? 09:21

11 A Well, that -- to consider prior art that is
12 comprised of more than one reference, that the
13 accepted means -- I want to be careful to say that I'm
14 not a lawyer here, so I'm going to just use laymen's
15 language. 09:21

16 That the appropriate and accepted means to
17 consider potential combination, the fact of the
18 combination the motivation to combine all those
19 kinds of things is that you want to consider the
20 teachings strictly or primarily. 09:22

21 And you don't want to lift an entire
22 section or subsystem or thing, you know, whatever
23 the appropriate term might be, because that might be
24 considered bodily incorporation.

25 Q Okay. Why is that bad? 09:22

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1 MR. JENSEN: Object to form. 09:22

2 THE WITNESS: We're at the edge of my

3 knowledge.

4 BY MR. BRAUSA:

5 Q Okay. 09:22

6 A I've been given to understand that as a

7 legal principle, along with various other legal

8 principles that I've been given.

9 I'm not a lawyer so -- I'm not an expert,

10 I'm not sure I can answer that question. 09:22

11 Q So if I understand your testimony, you're

12 not sure whether there is a rule against bodily

13 incorporation or not; fair?

14 A I believe there is such rule. Just -- you

15 asked why was there such a rule. I don't know the 09:22

16 answer to that.

17 Q Okay. But your understanding is there is

18 a rule --

19 A Yes.

20 Q -- you just don't know why that rule 09:22

21 exists, to the extent it does exist, with respect to

22 bodily incorporation?

23 A Yes, that's right.

24 Q And in any of your opinions, did you

25 bodily incorporate a portion of a reference into 09:23

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1 another as part of your obviousness combination? 09:23

2 A I certainly --

3 MR. JENSEN: Objection to form.

4 THE WITNESS: -- intended not to do that.

5 I'm not aware I did that, yes. 09:23

6 BY MR. BRAUSA:

7 Q Okay. You would agree with me that the

8 basis of your opinions is that in your view, it

9 would be obvious for POSITA to combine Chang 1 and

10 Chang 2 in some degree; fair? 09:23

11 A I think I would say it as the obviousness

12 opinion has to do with a number of things, including

13 Chang 1 and Chang 2. But particularly also knowledge

14 of the POSITA.

15 Q Okay. 09:23

16 A That's a key part of this.

17 Q Why do you say particularly knowledge of

18 the POSITA?

19 A Well, let's see, I don't want to make this

20 too long an answer. 09:23

21 In my opinion, the POSITA's knowledge of

22 USB is a crucial part of the motivation to combine

23 Chang 1 and Chang 2, for example. And I've worked

24 on other cases where the motivation to combine was

25 there and the knowledge of the POSITA might not have 09:24

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been as critical as it is here. 09:24

Again, that's not a legal opinion, I'm not trying to invoke some sort of legal standard or anything. I just believe in this case, it's important that the prior art be considered for what it is, no bodily incorporation, and in the context of the understanding of the POSITA.

Q Okay. And I think I heard you correctly,
but it's your view that in this case that the
knowledge of the POSITA, what you think the POSITA 09:24
would just know, is critical to your obviousness
opinions?

MR. JENSEN: Object to form.

THE WITNESS: Yes.

BY MR. BRAUSA: 09:24

Q Okay. And is there a specific body of
acknowledge that you think the POSITA would have
that's critical to your obviousness opinions?

MR. JENSEN: Object to form, beyond the scope. 09:25

THE WITNESS: I believe that the POSITA's knowledge of USB is important here.

BY MR. BRAUSA:

Q Why is that?

A Well, all of the patents, to the best of my 09:25

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1 understanding, and all the prior art and everything 09:25
2 about this matter is based on the idea that everything
3 here references USB, the USB standards that it is the
4 goal of the inventors to create things which
5 interoperate with existing USB systems and follow 09:25
6 those standards.

7 And so to understand what these alleged
8 inventions are intended to be, you have to first
9 understand what USB actually is and was prior to
10 these inventions being -- sorry, these patents being 09:26
11 filed.

12 So that's -- that's why I considered the
13 POSITA's view and knowledge of USB to be important.

14 Q Okay. So in your view, would any aspect
15 of the USB 2.0 standard, for example, be obvious for 09:26
16 a POSITA to implement with Chang 1 or Chang 2?

17 MR. JENSEN: Object to form.

18 THE WITNESS: I think I understand your
19 question. But I don't believe it's the goal of
20 Chang 1 or Chang 2 to describe a way to implement 09:26
21 something in the USB standard.

22 I believe that it is intended to implement
23 something which complies with the standard.

24 In other words, there are parts of these
25 technological items and devices which are intended 09:26

1 to interoperate with existing USB systems. So the 09:26
2 POSITA's knowledge is about understanding how that
3 needs to work.

4 And my understanding is that it is the
5 stated goals in the alleged inventions and in the 09:27
6 prior art and so on, that the things described are
7 compatible with USB.

8 BY MR. BRAUSA:

9 Q Okay. And so one of the reasons you
10 looked to USB was based on the stated goals in the 09:27
11 challenged patent?

12 MR. JENSEN: Object to form.

13 THE WITNESS: Yes, it is. I looked to USB
14 because of the position it takes in the sort of
15 system's view of all of this stuff. That's a kind 09:27
16 of initial take on this.

17 And then as you get into the detail of the
18 patents and the prior art, it's easy -- it's
19 impossible to ignore the fact that USB is mentioned
20 constantly. 09:28

21 And not just a statement that USB is
22 somehow relevant here, but there are specific items
23 which are described as being USB-compliant items:
24 Cables, hosts devices, hubs, et cetera.

25 And in my view, a POSITA reading and 09:28

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1 understanding this stuff, proceeds from that 09:28
2 knowledge of USB to make sense of the things being
3 described.

4 BY MR. BRAUSA:

5 Q Okay. And so if it's described -- if 09:28
6 there is a component or something that's referenced
7 in the USB standard, USB 2.0, for example, would
8 that necessarily, in your view, be obvious to
9 combine with Chang 1, for example?

10 MR. JENSEN: Object to form, beyond the 09:29
11 scope.

12 THE WITNESS: Probably. But that's not --
13 that's not actually my opinion about what these
14 patents and prior art describe.

15 What they describe are enhancements and 09:29
16 improvements on USB in the sense of adding devices
17 or combinations or configurations that are intended
18 to be special in some way.

19 And the sort of mental process of the
20 POSITA in reading this material is to proceed from 09:29
21 their knowledge of USB and to read a given section
22 or look at a particular drawing and start by
23 understanding, okay, there are various things in
24 this drawing and they may have different kinds of
25 names. 09:30

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1 The word "hub" appears frequently, as you 09:30
2 know. Sometimes it appears to refer to the hub
3 that's described in the USB standard, and other
4 cases it's -- it appears to be describing something
5 which is an enhanced hub, a construct of some sort. 09:30

6 And so your question was: Would it be
7 obvious to a POSITA to combine things from the USB
8 spec in order to create the prior art, and that's
9 certainly true.

10 But I think it's more to the point that 09:30
11 both the patents and the prior art stand alone in a
12 sense except that they stand alone in the context of
13 USB.

14 So USB is there, it's preexisting, it has
15 to work. Any given idea in here can be evaluated by 09:30
16 the POSITA from the viewpoint of, Okay, if I
17 combined these things in this way, and then plug
18 them into a USB host, is it all going to work?

19 That's an extremely important question.
20 One of the points we make in the motivation to 09:31
21 combine is the testability of the proposed
22 combinations.

23 That comes about because of USB. It's not
24 an abstract thing, it's not a detailed analysis of
25 the specific thing in the absence of anything else. 09:31

1 | It's from a knowledge of how USB works. 09:31

2 BY MR. BRAUSA:

3 Q What did you do to prepare for your
4 deposition today?

5 A Well, I reread this and I -- well, and I 09:31
6 read the other things that you mentioned. There were
7 a series of petitions and responses that went back and
8 forth, and I skimmed or read all of those.

9 I understand that Aptiv has filed a motion
10 to strike. So I looked at that. And in fact, this 09:32
11 is written in response to that.

12 So I reread all of those things and in
13 this declaration, I refer to some testimony from the
14 original declaration. So I reviewed those things as
15 part of preparing it. And again, as part of 09:32
16 preparing for this deposition.

17 Q Okay. There is a portion in your reply
18 declaration, Exhibit 1102, in the '228 proceedings,
19 where you refer to an embodiment with a detection
20 circuit in the bridge. And you say that that would 09:32
21 work, quote, "just fine."

22 Do you recall that?

23	A	Tell me what paragraph that's in.
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24 Q Sure. Paragraph 44, Page 28.

25	A	Okay. Yes. I see that sentence.	09:33
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1 Q Okay. Do you see the portion I'm 09:33
2 referring to where you say, [as read]: A POSITA
3 would understand that such an embodiment would still
4 work just fine.

5	A	I see that language, yes.	09:33
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6	Q	Does that characterization "just fine"
7		yours?

8 A I don't understand your question.

9	Q	Okay. Do you use the phrase "just fine"	
10		to refer to how a hub or USB device operates?	09:33

11 A The context here, as you know, is that I'm
12 responding to this idea that there is a dead end that
13 obtains as a result of one of the proposed
14 combinations that came from my original declaration.

15 It's my position that there is no dead end 09:34
16 problem. And in this section and related sections,
17 I explain why that is.

18 And what I mean here by the words "just
19 fine" is that the embodiment works without there
20 being a dead end problem. 09:34

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21         And we can talk about that in more detail
22     if you want, but that's what -- that's what this
23     language means in this context.
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24 Q Okay. Do you know whether in petitioner's

25 reply they use the same characterization of "just 09:35

1 fine" to describe -- 09:35

2 A I don't know.

3 Q Okay. So you don't -- you don't think
4 that language you used came from the petitioner's
5 reply? 09:35

6 A I'm certain that it didn't. I wrote this
7 and this is my opinion. It is possible that as
8 creating the petition, some of this was quoted or
9 adapted or something. And I don't know that offhand.

10 Q Okay. While I'm on that subject, how was 09:35
11 this -- what was the process that you went through
12 to create this reply declaration?

13 And I don't want to get into the substance
14 of any communications you had with counsel, I'm just
15 looking for the overview of how you went about 09:35
16 creating this declaration.

17 A Well, I was, frankly, surprised with this
18 idea of there being a dead end problem. And so I went
19 back and I literally scoured everything that had come
20 before, things I wrote, things in the patents and 09:35
21 elsewhere.

22 And I was -- to be frank, I was asking
23 myself the question, How could this -- how can
24 anybody think this?

25 It seemed so -- so much a non sequitur in 09:36

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some way. 09:36

So what I tried to do was to understand, just as a mental exercise, how did this -- how did this come about as a result of everything that came before.

So then I gradually started to see that, and we can talk about the details however much you want.

But so then my next question was, Okay.

If you don't understand how USB works, it might be possible to imagine that this would happen because you haven't taken account of a fundamental part of USB which has to do with hot plug, and it has to do with the nature of reset in the -- in the USB world.

So let's see. In order to try to complete that mental picture, if you're designing something that's intended to interoperate with USB, you start by: I have a thing I want to plug into a USB system.

And then as I'm evaluating the design, the mental process is, Well, what's going to happen here. This is a certain kind of device or it's a composite device or it's a compound device. Or all these different kinds of things that were laid out in the original specifications.

1 And especially if you're going to plug 09:37
2 these things into an embedded host, you want to look
3 at, you know, is this actually going to work? Are
4 the appropriate drivers available? Is the
5 appropriate power budget available for how this is 09:37
6 going to work? Do I have the wrong configuration of
7 powered and unpowered hubs in the stream?

8 There are very specialized rulings about
9 that.

10 As a designer, you ask yourself these 09:38
11 sorts of questions equally. And at the same time,
12 you proceed to -- okay, if this works when I plug it
13 in because of blah, blah, blah, what happens when I
14 unplug it?

15 And the key thing there is that USB is 09:38
16 plug and play. It's not just that you can plug
17 something in and it works, it's that you unplug it
18 and that work, too. You haven't upset anything.

19 You can plug in something different and
20 that works. Or you can plug the same thing in again 09:38
21 and that works. And there are all kinds of
22 variations on a theme there.

23 Just a quick example, I did a device for a
24 medical company about 15 years ago, and when the
25 device was plugged in and instantiated on the bus, 09:38

1 and it waited to see what kinds of drivers and 09:38
2 applications would talk to it, and if an expected
3 event did not occur, it would decide, okay, here I
4 am plugged in, the USB subsystem sees me but my
5 expected application software doesn't. I have to do 09:39
6 something about this.

7 Okay. It gets off the bus by
8 disconnecting electrically, reconfigures its USB
9 interface and gets back on and exposes a storage
10 device. 09:39

11 This storage device contains the software
12 that is needed to talk to this thing.

13 The point here is that when you do
14 something, it's expected to comply with the USB
15 standards. And when you unplug the thing, you 09:39
16 expect the appropriate things to happen.

17 In the case of that device, it was
18 critical that when it unplugged electrically, not
19 physically, that the USB host would recognize that,
20 it would go back to looking for a device to be 09:39
21 plugged in, because the same device wanted to plug
22 itself back in.

23 And by the way, that first two dual mode
24 devices we have talked about in this matter, in that
25 case, it was a device both times, it was just a 09:40

1 different device. 09:40

2 The point is that USB plug and unplug are
3 inextricably combined, and the end user appearance
4 and expectation and the designer's job from the word
5 "go" is so that unplug works as well as plug. 09:40

6 And so the challenge was: Okay, there is
7 no dead end because of the way in which, A, USB
8 works, that's what this section is about, it's about
9 reset.

10 A POSITA would understand that any sort of 09:40
11 design for USB has to support the unplugged case.

12 There are other things going on here, too.
13 I believe that my construct about using this third
14 option for where to locate the detection circuit was
15 misunderstood in the response. 09:41

16 And that the original intention was that
17 the circuit have access to the external ports'
18 wiring directly in order that it could do its job,
19 regardless of the state of the multiplexor.

20 But in this section, I point out that even 09:41
21 if that incorrect understanding was the case,
22 there's still no dead end problem because of the way
23 reset works. And that's what this section is about.

24 Q Okay. A bit to unpack with that answer.
25 I wanted to start, at the outset you said, 09:41

Page 25

1 Particularly when you're focused on an embedded host 09:41
2 you would consider these.

3 Why were you focused on an embedded host
4 in your analysis?

5 A I have to be careful here because elsewhere 09:41
6 in the matters at hand, the parties have agreed that
7 "embedded host" means it's in an automobile, and
8 that's fine, there's nothing wrong with making that
9 agreement.

10 But I pointed out elsewhere here in the 09:42
11 technology background that the USB --

12 (Reporter seeks clarification.)

13 THE WITNESS: Sorry.

14 The USB IF, the USB Implementors Forum,
15 the body that originally promulgated the standards 09:42
16 and maintains and publishes them to this day.
17 They -- at the same time as OTG, they published a
18 spec titled "The Embedded Host Specification."

19 The key thing about that that makes it
20 different from an ordinary host, here, this 09:42
21 computer, that's what USB considers an ordinary sort
22 of 2.0 host or 3.0 host as may be.

23 An embedded host in the context of the USB
24 IF's definition of that term has one major
25 difference; and that is that that host might, and 09:42

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1 probably does, have a particular set of devices that 09:42
2 it supports. It doesn't support everything.

3 In general, when you plug a USB device
4 into your computer, you expect that it's going to
5 work because the operating system vendors provide a 09:43
6 driver for everything. That's generally true these
7 days. Embedded hosts are not expected to do that.
8 They have only specific ones.

9 So for an example, just to fully answer
10 your question, I mentioned using a compound device 09:43
11 as one possibility.

12 Compound device is something that looks
13 like any other device, except internally it also has
14 a hub. Okay, a given embedded host implementation
15 might not have a hub driver, that seems silly but 09:43
16 it's actually pretty common.

17 And what that means is you couldn't
18 support this particular device. And that was part
19 of that large explanation I made before about what's
20 the design process. 09:43

21 You want to make sure when you plug it in,
22 it works. Okay, if it's an embedded host, they
23 don't have a hub driver, blah, blah, blah, those
24 issues have to be resolved.

25 I was trying to make the point that when 09:44

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you consider plug in and all of its different things, you have to consider unplug as well.

BY MR. BRAUSA:

Q Okay. In Paragraph 5 of your reply
declaration, Paragraph -- I'm sorry, Exhibit 1102, 09:44
you say that you supplement your prior tutorial;
right?

A Yes.

Q So Paragraph 6 through 17, which I think encompass the supplemental technology background, that's all new information on that wasn't in your prior report; right?

MR. JENSEN: Object to form.

THE WITNESS: It's not new information.

What it is is it's delving into the problem of 09:45

what's the appropriate level of detail.

The other thing that a POSITA understands when they look at this stuff is that the patents and prior art talk about system designs at a fairly high level of abstraction. The POSITA understands that there is a huge amount of additional matter, additional material, additional technology and rules and prescriptions and all manner of things at a lower level of abstraction.

It is not necessarily covered here. 09:45

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1 My technology background here takes the 09:45
2 top off that cover and says, Okay, to deal with this
3 apparent misunderstanding about how things work, I
4 have to include this information, it's not new, it
5 was always there. 09:45

6 It's part of the USB standard, it was from
7 day one. It is part of what a POSITA armed with USB
8 information, it's part of what they would know a
9 priori.

10 BY MR. BRAUSA: 09:46

11 Q Understanding all that, my question was a
12 little different, which is: This is new information
13 relative to what was in your original declaration;
14 right? I don't see any cites back to your original
15 declaration here. 09:46

16 MR. JENSEN: Object to form.

17 THE WITNESS: In the organization of the
18 documents, it is true that I considered and decided
19 not to include this particular detail. Not because
20 it wasn't there, but because it didn't seem relevant 09:46
21 in my original analysis. It seems relevant here for
22 the reasons I said.

23 BY MR. BRAUSA:

24 Q Okay.

25 A So I include it here. 09:46

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1 Q You talked about levels of abstraction for 09:46
2 POSITA. Do you have an understanding of what level
3 of abstraction a patent challenger in an IPR
4 proceedings has to set forth its obviousness case?

5 MR. JENSEN: Object to form. 09:47

6 THE WITNESS: My understanding of
7 obviousness -- again, I'm not a lawyer, but as it's
8 been explained to me, you need to find prior art or
9 combinations of prior art or combinations of prior
10 art and knowledge of the POSITA which answer or 09:47
11 correspond or cover each limitation of a given
12 patent claim. That's my understanding.

13 BY MR. BRAUSA:

14 Q Okay. And in terms of in these IPR
15 proceedings and the one PGR proceeding, has it ever 09:47
16 been explained to you what level of abstraction or
17 what level of detail is required to show obviousness
18 and explain the arguments that you're making?

19 MR. JENSEN: Object to form.

20 THE WITNESS: Implicitly, yes. I don't 09:47
21 know that quite those words were used, or that a
22 very abstract standard of that sort was explained to
23 me.

24 But it's -- I've rendered the opinion that
25 the claims in question are obvious for the reasons 09:48

Page 30

1 cited. 09:48

2 And in general, that means that we use a
3 similar or slightly greater, perhaps, level of
4 abstraction. It's a little bit like a VIN diagram.

5 My understanding is that if you have prior 09:48
6 art which explains, anticipates -- sorry, that's
7 probably not the right word, but corresponds to each
8 of the limitations, that that's the standard for
9 obviousness.

10 Now, if the prior art has more 09:48
11 information, for example, a greater level of detail,
12 because it's more detail level of abstraction, I
13 don't think that makes it any worse.

14 I don't know that it makes it any better,
15 but -- you know, if there were case law on that 09:48
16 point or whatever, I don't know anything about that.

17 That's -- what I've said is what I
18 understand about the obviousness as it's been
19 explained to me.

20 BY MR. BRAUSA: 09:49

21 Q Okay. In Paragraph 7, you cite a textbook
22 that has an example of a state-driven vending
23 machine with a reset signal.

24 A Mm-hmm.

25 Q How is that relevant to whether claims 09:49

Page 31

1 relating to USB hub modules are obvious? 09:49

2 A Well, I'm trying to develop this idea about

3 reset going from electronics in general. That's what

4 Section 2-A is about. It's about the idea of reset

5 initialization and default states. 09:49

6 I wanted to make the point that this is a

7 general feature of electronics and has been for 100

8 years or more.

9 Q Okay. And so you're starting off this

10 background with a pretty high level of abstraction; 09:49

11 fair?

12 A Right. Relative to what it could be,

13 certainly.

14 Q Okay. And even at this high level of

15 abstraction, that topic, even at that general level 09:50

16 of abstraction was not discussed in your initial

17 report; right?

18 MR. JENSEN: Object to form.

19 THE WITNESS: It's implicit because USB

20 has it. USB has its details about reset, which we 09:50

21 talked about a little bit later.

22 It's implicit in another way, too.

23 My opinion about the appropriate level of

24 knowledge for a POSITA is sort of general electrical

25 engineering background. And that would include 09:50

Page 32

1 knowledge about reset and related matters. 09:50
2 BY MR. BRAUSA:
3 Q Okay. But without going through page by
4 page your original declaration, can you identify
5 anywhere you've said that a POSITA's knowledge would 09:50
6 include reset.
7 A I don't remember saying that, no.
8 Q Okay. If we go next to Section B, I think
9 Paragraphs 8 through 10 --
10 A Mm-hmm. 09:51
11 Q -- of your reply declaration talk about
12 this reset initialization default state in USB
13 systems more specifically, moving to a more detail
14 level from that high level of abstraction we started
15 with. 09:51
16 Throughout your reply declaration,
17 there's -- oftentimes it appears as
18 "reset/initialization/default."
19 Can we pick one of those to use to refer
20 to that state? 09:51
21 A No.
22 Q No? Okay.
23 A B here introduces a series of topics.
24 Reset, initialization, and default are related, but
25 they're different. 09:51

Page 33

1 Q Okay. 09:51

2 A And in one way they proceed from left to

3 right. So no, we cannot just say that's reset and

4 that covers everything.

5 Q Okay. 09:52

6 A At this level of abstraction, you know, we

7 have to be -- we have to be a little careful about

8 that.

9 Q Sure. And so reset, initialization, and

10 default, those are three distinct concepts in 09:52

11 electrical engineering?

12 MR. JENSEN: Object to form.

13 THE WITNESS: Yeah, they're related, but

14 yes, they are distinct.

15 BY MR. BRAUSA: 09:52

16 Q Okay. So if I slip up and don't say all

17 three, or my questions are specific to one of the

18 three, just let me know if it's unclear, okay?

19 A All right.

20 Q So in Paragraph 9 there is a reference to 09:52

21 a single ended zero or SE0 signal; correct?

22 A Mm-hmm.

23 Q That's a reset signal; right?

24 A To be precise, reset as an event is

25 recognized to happen when both the D-plus and D-minus 09:52

Page 34

1 signals are at the SE0 state, or voltage level, for a 09:52
2 certain period of time.

3 So yes, as a convenience, sometimes here I
4 say that SE0 is the -- is the reset signal because
5 that seems adequate for the level of detail. 09:53

6 But just to dip down one step further and
7 to be careful, should that be necessary, they're not
8 exactly the same thing.

9 Q Okay. Fair to say that SE0 signal is a
10 type of control signal, would you agree with that? 09:53

11 A No, it's -- well, like many modern data
12 communication systems, the number of wires is limited
13 by physical and economic constraints. So control and
14 data and power are often shared amongst the signals
15 that are there. 09:53

16 So no, it isn't fair to say SE0 is a
17 control signal because we're talking about the state
18 of the data lines, which at other times are data
19 signals and not control signals.

20 Q Okay. Let me make sure I understand. So 09:54
21 in Paragraph 9 you say, [as read]: Here, reset is
22 the signal sometimes referred to as single ended
23 zero/SE0.

24 Correct?

25 A Yes. 09:54

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1 Q You would agree with me that SE0 is a 09:54
2 signal?

3 A At this level of abstraction, yes, that's
4 okay.

5 Q Okay. I mean, I just want to make sure 09:54
6 I'm not mischaracterizing your opinion. You say,
7 [as read]: Here, reset is the signal, sometimes
8 referred to as SE0.

9 A And again, that's true at this level of
10 abstraction. It stands in for the longer thing I said 09:54
11 a few minutes ago.

12 Q Okay. And something causes the SE0 signal
13 to be generated; right?

14 A Mm-hmm.

15 Q Okay. And in this case, it's the upstream 09:54
16 host in Paragraph 9?

17 A That's true, and as I discuss elsewhere, it
18 can sometimes be the absence of something which causes
19 this signal.

20 Q Okay. Now, in your obviousness 09:55
21 combination that's set forth in your opening
22 declaration and referenced in your reply
23 declaration, you opine that a POA would know how to
24 use control signals to reset the MUX or crossbar;
25 right? 09:55

Page 36

1 A Yes. That -- in talking about how do these 09:55
2 multiplexor parts, often off-the-shelf items work,
3 yes, I mentioned, and in some cases, detail what those
4 control signals look like.

5 Q Okay. But the control signals it sounds 09:55
6 like are not the same as the SE0 signal we were just
7 talking about?

8 A That's correct. They're not the same.

9 Q Okay. So SE0 is not an example of a
10 control signal you were referring to with respect to 09:55
11 your obviousness combination in resetting the MUX or
12 crossbar?

13 MR. JENSEN: Object to form.

14 THE WITNESS: There are similarities and
15 differences. I'm just trying to puzzle out what is 09:56
16 the best way to characterize it for this discussion.

17 SE0 happens on a signal line which is used
18 for multiple different things. And strictly
19 speaking, SE0 is the state of that data line. There
20 are many other states that are used for multiple 09:56
21 different purposes. Sometimes with a control affect
22 like this, sometimes with a data effect, which we
23 can take about later.

24 The control signals that you referred to
25 before about controlling a MUX, the ones that I 09:56

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1 provided examples of, in a way those are much 09:56
2 simpler in the sense that those signals, to the best
3 of my memory about examples I put in, are
4 single-purpose signals. They don't do anything else
5 other than set the state of the multiplexor in 09:57
6 realtime.

7 So at some level of abstraction, yes, both
8 of these things are control signals. But if you dig
9 down into the details, there are a lot of
10 differences, too. 09:57

11 BY MR. BRAUSA:

12 Q Okay. Is there another way to refer to
13 the types of reset or control signals you were
14 referring to with respect to the MUX and crossbar
15 besides just calling them "control signals" or 09:57
16 "reset signals"?

17 A Well, okay. As I say in the original
18 comments about reset, one of the challenges with
19 electronics is that if you've got circuit elements
20 that have any kind of state to them, you know, a 09:57
21 registered bit or piece of memory or storage, one
22 category of electrical device comes up on power on in
23 what's known as a meta stable state.

24 What that means is you don't know what
25 state it's actually in. 09:58

And so again, as I said here, there is a requirement -- there is a need to make these things work in a reasonable way that you use a reset process at power on in order to get the system into a known state.

That, in turn, has turned out to be functionally useful, and it's often the case that you want to use an explicit reset state, so bringing reset out as a signal, so that you can put the system back into that state.

Now, so you asked about reset and multiplexors. The examples that I gave, I believe those were mostly analog multiplexors with realtime select lines.

And so the state of those select lines in realtime will state and control exactly what the MUX does.

Now, there are other examples of multiplexors that might have some amount of persistent state in them, meaning they have got a registered bit or something that sort of remembers what the state was.

Those kinds of devices almost invariably would have an explicit reset line to put them into a known state. And then other pins that would say, 09:59

1 Toggle between states or set it to the state or 09:59
2 whatever.

3 Q Okay. But regardless of the specific type
4 of multiplexor or crossbar switch, something would
5 need to send a signal to open or shut the gates or 09:59
6 change the state of the MUX or crossbar; correct?

7 MR. JENSEN: Object to form.

8 THE WITNESS: These are -- these are
9 implementation details. You're right that when you
10 come down to implement one of these things 09:59
11 specifically, yes, you would need to do that, you
12 would need to design the mechanisms for doing that.

13 In my original analysis, I didn't decide
14 to include that level of detail because, like
15 talking about power and many other details here, 10:00
16 they were not included in the target patent -- in
17 particular not the patent claims.

18 And therefore, the appropriate prior art
19 and aspects of the POSITA knowledge that were
20 relevant didn't actually get down to that level of 10:00
21 detail.

22 But yes, if you talk about what does it
23 mean to implement one of these things, then a bunch
24 of other considerations have to be there, like what
25 I said before if you consider plug in, you have to 10:00

Page 40

1 consider unplug in. 10:00

2 Reset is part of that. You have to

3 consider power on reset. You have to consider what

4 it means to go back to the reset state.

5 That's, why for example, I included the 10:00

6 state diagram, Figure 9.1 from the USB spec.

7 Provides context for what reset means in the USB

8 world.

9 BY MR. BRAUSA:

10 Q And you mentioned the appropriate level of 10:01

11 detail with respect to explaining these concepts.

12 Was that something that you decided on

13 independently, or was that in the form of a legal

14 standard provided to you by counsel?

15 And again, if it wasn't explained to you 10:01

16 as a legal standard, I don't want to get into those

17 communications. I'm just trying to understand how

18 you determined what you thought the appropriate

19 level of detail to set forth your opinions should

20 be. 10:01

21 A I'm trying to remember exactly how we

22 started on all of this.

23 I think my first reading of the target

24 patents, the first thing I noticed, just a few

25 seconds in, is, Okay this is about USB, this is 10:02

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1 about something that's meant to interoperate with 10:02
2 USB.

3 So I'll set my mind to have my own USB
4 knowledge at the fore as I read these things,
5 because that's the way I'm going to make sense of 10:02
6 it.

7 Now, as part of doing that, I noticed what
8 the level of abstraction was. So there is a way in
9 which, A, that the relevance of USB and the nature
10 of the level of abstractions, those ideas came to me 10:02
11 very early on in just reading the patents. Okay.

12 So then there was discussion with the
13 attorneys about, you know, what I found and what I
14 thought about. What I found and -- you know, we're
15 not going to talk about that stuff in detail. 10:02

16 But the short answer is that my own sense
17 of the level of detail, the initial take on that
18 came from reading the patents.

19 Q Okay. Turning back to the obviousness
20 combination that you proposed where there is a reset 10:03
21 signal that is sent to the MUX or crossbar, is
22 there -- in your obviousness combination, is there a
23 specific combination that generates and sends that
24 reset signal?

25 A In the way the constructs were put together, 10:03

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1 no, that's a level of detail that we didn't get to. 10:03

2 Q Okay. And did you identify anywhere where

3 such a component would be located in the combination

4 or in the various cartoons that you provided in your

5 report? 10:03

6 A Cartoons.

7 In a way, yes. I was aware fairly early

8 on that there are two kind of multi-host scenarios

9 that are relevant here. One of them is if you plug

10 in something where you don't know what it is 10:04

11 initially, electrically, you don't know what it is.

12 And in that case, you need a detection circuit or

13 some scheme to allow you to figure out what it is.

14 The other case is a case where you have a

15 good expectation about what the device is going to 10:04

16 present as initially. Say it will present as a

17 device. And then there is an interaction between

18 the device and something upstream, possibly the host

19 head end unit, which uses a kind of in-band

20 signaling to ask the device to change modes. 10:04

21 And it does that by electrically

22 disconnecting, changing modes, and re-connecting.

23 Similar to what I've described earlier.

24 And you know, my own personal experiences

25 that I have worked with devices that did that and I 10:04

Page 43

1 had, you know, personal memories of how it worked -- 10:04
2 this is starting to be a longer answer than I
3 intended.

4 But my idea in the very beginning was
5 okay, I could imagine a circuit surrounding these 10:05
6 multiplexors and detectors and bridges, which could
7 be self-contained.

8 Meaning that amongst these things, you
9 would deal with plug in such that the host would see
10 a device being plugged in, or if a host was plugged 10:05
11 in, the other host would see that the bridge that it
12 knew about -- because the bridge appears as a
13 device -- would have seen a host plugged into it and
14 presumably signaled to its original client, if you
15 will, that something had been plugged in. 10:05

16 My point was that my own personal
17 experience makes me aware that how much you have to
18 modify the host if it's an existing device or an
19 existing embedded device or whatever.

20 The cost of changing that can be 10:05
21 relatively high, and so there's value in being able
22 to engineer something which can do all this stuff
23 while contained.

24 This is a long answer because I'm trying
25 to honestly recount my own experience. I have many, 10:06

1 many years of experience designing these systems. 10:06
2 And I know the value of having a clever bit of, you
3 know, sort of devices plugged into each other and so
4 on, having them be self-contained and being able to
5 operate together. 10:06
6 So from that standpoint, I had the idea
7 that reset and the initialization and the default
8 conditions and so on would be managed local there.
9 At the same time, I was aware that some
10 kinds of devices being contemplated here don't work 10:06
11 that way, they can't work that way because of the
12 in-band signaling has to terminate in the host,
13 again, because of how USB works.
14 So I think the answer to your question is:
15 I didn't identify a specific component where reset 10:06
16 would be done, but what I identified was a sort of
17 general locus of control.
18 For that case for supporting those kinds
19 of devices, I can imagine, and there would be value,
20 in designing a subsystem that -- that did the things 10:07
21 that were talked about here, supporting dual devices
22 or mode switching or all those other kinds of
23 things. It was self-contained, meaning reset and so
24 on was done locally.
25 Q So if I understood that answer, you agree 10:07

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1 with me that you didn't identify any specific 10:07
2 component that performs the reset signal in the
3 proposed combination.

4 By that token, I take it you didn't
5 identify where any such component would -- would 10:07
6 specifically be, it was this general locus you
7 identified?

8 MR. JENSEN: Object to form.

9 THE WITNESS: Well, extending the
10 thought -- mental thought process a little further, 10:07
11 I made a quick mental catalog of different kinds of
12 design choices, differentiating between
13 off-the-shelf and custom devices, okay.

14 Hubs, if you're doing a discrete design,
15 hubs are usually commodity devices that you don't 10:08
16 change; bridges can be and might not be;
17 multiplexors are fairly low levels of functionality;
18 and then you need some circuitry to tie this
19 together.

20 So between the custom components -- this, 10:08
21 again, is a long answer, I'm sorry.

22 Between the custom components there would
23 be the actual control logic between going with what
24 the detector found and implementing the appropriate
25 configuration of ports and multiplexors, crossbars, 10:08

Page 46

1 and so on. 10:08

2 And then equally, you know, with a

3 detector or other device, the hub detects unplug,

4 the bridge detects unplug, that that information

5 could then be used again local to these devices and 10:08

6 possibly implemented in the custom circuitry.

7 So no, not a specific trace of a place to

8 implement it, but a general place that okay, we need

9 some control circuitry here, and that would

10 encompass linking together the result of what the 10:09

11 detector finds, the state of these ports, plug and

12 unplug, and the control of the various things that

13 configure the path the multiflexor switch or

14 crossbar or whatever it is.

15 BY MR. BRAUSA: 10:09

16 Q Okay. Maybe we can just -- I think I

17 understand your testimony. Let me make sure I've

18 got it.

19 I'm going to hand you a copy of

20 Exhibit 1013 from the '228 proceedings, which is 10:09

21 your opening declaration.

22 THE VIDEOGRAPHER: Off the record the time

23 is 10:10.

24 (Pause in proceedings)

25 THE VIDEOGRAPHER: Back on the record. 10:11

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```
1 | The time is 10:11. | 10:11
```

2 BY MR. BRAUSA:

3 Q All right. So when we broke, we were
4 talking about the control logic or the control
5 circuitry for generating and providing this reset 10:11
6 signal to the crossbar and MUX in your proposed
7 obviousness combination.

8 In your original report, Exhibit 1013, if
9 I can direct you to one of the cartoons at Page 123,
10 it's Paragraph 229. 10:11

```
11         Do you see here we have one of the
12         crossbar implementations?
```

13	A	Yes, I'm on Page 123.
----	---	-----------------------

14 Q Okay. And this was the implementation
15 where you characterized the entirety of Box 40 in 10:12
16 Chang as the hub of the claims; correct?

17 A I'm not sure I would use the word
18 "implementation." These drawings are conceptual and
19 certainly functional.

20	They give some information that would	10:12
21	inform an implementation. I don't know that I would	
22	call them an implementation, though.	

23 Q Okay. What would you call them?

24 A Well, it's a -- it's a functional
25 description of a certain combination of elements that 10:12

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1 do a particular thing, which that is described and 10:12
2 discussed in the text.

3 Q Okay. And in this illustration, you
4 didn't identify where the control logic originates
5 or what's responsible for generating the control 10:13
6 logic; right?

7 MR. JENSEN: Object to form.

8 THE WITNESS: No, the control -- control
9 logic that you refer to is implicit, like other
10 things, like power and, you know, other things that 10:13
11 USB systems need to operate. The rules about hubs
12 being self powered or bus powered, all those kinds
13 of things are left out as being, you know, a
14 different level of detail that isn't really
15 necessary to make the point that's here. 10:13

16 BY MR. BRAUSA:

17 Q Okay. And you don't show where the
18 detection circuit that interfaces with the control
19 logic is located in this diagram, either; correct?

20 A Not in this one, no. 10:13

21 Q Okay. Do you know whether you ever
22 provided an illustration of one of the
23 configurations with a crossbar switch that does
24 identify with a detection unit?

25 A I don't remember offhand. 10:14

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1 Q Okay. If we can go back to your reply 10:14
2 declaration, Page 9 above Paragraph 14, there's
3 another illustration that you provide; correct?

4 A That's correct.

5 Q And this isn't from any text. This is 10:14
6 your own work?

7 A Yes, I created this drawing.

8 Q Okay. And so this is describing the
9 process of attaching, enumerating, and removing
10 devices from downstream ports; right? 10:14

11 A As described in the USB spec, yes.

12 Q Okay. Understood.

13 And just so I'm on the same page, you
14 explain this in your report, but "attachment," that
15 means opening a data connection, and "removal" means 10:15
16 closing it in USB parlance; correct?

17 A That's -- yes, that's right -- well, to be
18 precise, the open and close of your sentence there,
19 that's not USB parlance. That's a word I use locally
20 here. 10:15

21 "Attach" and "remove" are the words that
22 come from the USB standard.

23 Q Okay. When we say -- or when we look at
24 the box above Paragraph 14, one of the boxes says,
25 "Process device removal." 10:15

Page 50

1	A	Mm - hmm .	10:15
---	---	------------	-------

A Mm-hmm.

10:15

2	Q	What does that mean?
---	---	----------------------

```
3      A    Well, USB subsystem is required to react to
4      device removal as part of the overall hot plug scheme.
```

5 And the idea there is that the individual components 10:15

6 | at a very low level are designed to mate and unmate

7 with the power still present without causing any

8 | electrical problems.

9 As you get up a little further, the low

10	level data transport will see device removal as a	10:16
----	---	-------

level data transport will see device removal as a

10:16

11 state, among other things, an SE0 state present as

```
12 | seen by the host because the device has actually
```

```
13      been removed.  The device no longer has its speed
```

```
14 resistor and is no longer driving data lines.
```

15	And the host has pull down resistors so	10:16
----	---	-------

And the host has pull down resistors so

10:16

16 | it's going to see SE0. So in this context, that

17 particular event, it's a reset event, but it's also

```

18      a device removal event, is recognized by the host

```

19 first in the electronics, and then in the low level

```
20 | protocol stack, and then it goes up the chain.      10:16
```

protocol stack, and then it goes up the chain.

21 So then the -- the device driver, which is

22 dedicated to talking to the -- this device, gets a

```
23 message basically from the rest of the USB stack
```

24 saying, By the way, this device you're interested in

```
25 | has been unplugged. And the expectation has been 10:17
```

has been unplugged. And the expectation has been

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1 that that device is going to clean up after itself. 10:17

2 In turn, it tells its next constituent up

3 the chain about that. So for example, if it was a

4 storage device, storage device driver it says, Okay,

5 that thing's gone away, not much I can do about it. 10:17

6 If I have buffers that are not flushed, that data is

7 probably lost.

8 It then tells the file system, By the way,

9 all these files that you thought you had in your

10 system, they are all gone now. 10:17

11 The file system is expected to handle that

12 reasonably.

13 So in the sense of the way USB works,

14 their idea from the very beginning was you unplug

15 things and it doesn't break. And you reset yourself 10:17

16 into a state where you can plug something in again,

17 you can put the same thing in again. You can plug

18 it into a different port, you can plug a different

19 thing into a different port, or nothing, you don't

20 have to do anything. 10:18

21 It's just the system is expected to okay

22 with this. That's what -- that's what processing

23 device removal and reset port to default state,

24 that's what that's all about.

25 The particular port where the thing has 10:18

1 been removed is now reset and it's initialized, and 10:18
2 then it's in a default state, meaning it's waiting
3 for the next thing to be plugged in.

4 Q Okay. And I think you alluded to this in
5 your answer, but I think you said the USB stack 10:18
6 provides that processing signal that's referenced
7 here?

8 MR. JENSEN: Object to form.

9 THE WITNESS: Well, partly. The -- okay.

10 First of all, the hardware plays its role. 10:18
11 The hardware is going to notice that the device has
12 been electrically removed.

13 Then the lowest level software is going to
14 be a series of bits and pieces working together
15 called the "USB protocol stack." They're going to 10:19
16 get the message next. And they have various things
17 to do.

18 And then that gets that message then gets
19 sent to the device driver, which is designed in the
20 host operating system to occupy a special position 10:19
21 with the protocol stack.

22 And then so on up the --

23 In general, the next thing above the
24 device driver has nothing to do with USB, that's the
25 architecture, it's audio or it's a hidden device or 10:19

it's a storage device or video or whatever. 10:19

BY MR. BRAUSA:

Q You mentioned that the hardware will recognize that a device has been removed and do its job. What hardware are you referring to? 10:19

A Well, all USB systems that I am aware of have dedicated hardware that manage the lowest level USB connection.

So USB uses differential signaling on the D-plus and D-minus lines for performance and noise integrity.

There is, in my experience, always a dedicated bunch of circuitry which is a receiver for those things.

And it calculates the difference between the two signals and converts that to a digital bitstream. So the signals externally are analog, and there will be some circuitry that converts that to a digital bitstream.

In general, especially in a host, there is some dedicated circuitry in the form of an -- a processing core of some kind; that is, a piece of dedicated electronics with a bunch of gates and other logic elements, that actually process -- not just the USB signal, but the very low level part of

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1 the USB protocol. 10:20

2 So, for example, at the lowest level, USB

3 protocol calls for sending these little tokens and

4 receiving them back. And the turnaround time of

5 those things, even in full speed, is pretty rapid 10:21

6 and historically and currently, it's all done with

7 dedicated hardware.

8 Certainly when we got to the high speed of

9 the USB 2 spec and again with the super speed specs,

10 all the stuff that happens really quickly and you 10:21

11 needed dated hardware for that.

12 So that's what I mean by "the hardware."

13 Q In the Chang 2 reference that we've

14 discussed in some detail previously, the hardware

15 that does that is referred to as a CPU in the 10:21

16 control chip; correct?

17 MR. JENSEN: Object to form.

18 THE WITNESS: Well, I would have to look

19 at the Chang reference closely, but I actually don't

20 think so. I think that the control chip you're 10:21

21 talking about is part of the interface logic that

22 does or participates in the signal detection, and

23 then it controls the -- the switch part of Chang 2

24 where it switches the device either through its

25 bridge circuitry or through what it calls the bypass 10:22

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1 circuit where it goes around. 10:22

2 I don't believe that CPU actually gets

3 involved in the -- processing the data stream, at

4 least not the data part of the data stream.

5 It might get involved in detection and 10:22

6 looking for the SE0 state, which involves the data

7 lines but I don't think it's involved with the data

8 stream.

9 BY MR. BRAUSA:

10 Q Okay. Just to refresh, we can look at it 10:22

11 later if we need to. Chang 2 doesn't describe any

12 crossbar switch, does it?

13 A Chang 2 certainly has a switch. It's

14 implied by the drawing you're referring to because you

15 can plug something in, the nature -- I think Chang 2 10:22

16 calls this whole construct the "bridge," which is a

17 different use of bridge than we have in some other

18 places.

19 If figures out what it is and it switches

20 it either to go through the host-to-host bridge like 10:23

21 we use elsewhere or it goes straight through and the

22 expectation is that you've got a host or hub on the

23 other side.

24 So yes, there is a switch in there because

25 it's case of -- it's one port that can have two 10:23

1 paths, and has to be a switch between them. 10:23

2 Q Right. But it's not a crossbar switch;

3 correct?

4 A Except that -- no, except in the sense that

5 the limiting case of a crossbar is a simple switch, 10:23

6 yes.

7 Q If we turn to Paragraph 17 in your reply

8 declaration. You say in the first sentence, [as

9 read]: If a downstream product wishes to reconnect,

10 perhaps because it has reconfigured itself. 10:24

11 Do you see that?

12 A Uh-huh.

13 Q What do you mean by "perhaps because it

14 has reconfigured itself"?

15 A There is two things going on here, and I 10:24

16 apologize for clumsy language.

17 On the one hand, we have electrically

18 disconnecting for any number of reasons. That's

19 something that's been part of USB forever.

20 But then at some later date, a date prior 10:24

21 to the priority date of the patents in question, we

22 start to have the need -- well, you have dual-role

23 devices, or you have the need generally to have one

24 host plugged into another host.

25 The electrical disconnect that this refers 10:24

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1 to is also used for a multimode device that needs to 10:24
2 reconfigure itself.

3 So let's say you've plugged in a
4 smartphone and it initially comes up as a device,
5 and then for the purpose of this particular example, 10:25
6 you use in-band signaling -- this is not what
7 Chang 2 is about, but this still relates here.

8 A host may tell the device that it wants
9 it to change to host mode. What the device then
10 does is it disconnects. It disconnects in the same 10:25
11 electrical way that everything else has. It
12 disconnects in precisely the way anticipated by
13 this.

14 And the reaction of that disconnection is
15 precisely the same as it's been since day one of 10:25
16 USB. A thing once plugged in, it's gone, and let's
17 clean up, and we'll pretend it was never there.

18 Okay. The device in question here, if
19 it's reconfigured itself and it wants to come back
20 will come back. There will be a short delay, I said 10:25
21 100 milliseconds, that's arbitrary. It has to be
22 longer by several factors than the time it takes to
23 recognize that SE0 is recognized as reset.

24 But in practice, you want to wait longer
25 than that, because you want to let the rest of the 10:26

1 system sort of react completely. There's this 10:26
2 shuffling effect where it goes down through all the
3 different subsystems. You want to let all that
4 finish.

5 Anyway, what I mean then is that a 10:26
6 multimode device will disconnect in the way that
7 anything can disconnect, wait some amount of time,
8 and then reconnect. It's not ever physically
9 disconnected; it's still plugged in.

10 But the way USB works, "disconnect" is not 10:26
11 the physical activity of plugging and unplugging the
12 connector. In fact, you can't tell --

13 (Reporter seeks clarification.)

14 THE WITNESS: "Disconnect" is not the
15 physical unplugging of the port, yes. "Disconnect" 10:26
16 is an electrical activity.

17 BY MR. BRAUSA:

18 Q Turning back to the language in
19 Paragraph 17, why did you say "perhaps"?

20 A Because I'm talking about two different 10:27
21 things here. "Perhaps" meaning -- okay. The first
22 part of this is that something disconnects, that's
23 very ordinary.

24 Now, the "perhaps" part is, okay, if this
25 is the case where it's a dual mode device, maybe it 10:27

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1 wants to get back on as something else. That's the 10:27
2 "perhaps" part.

3 Q Okay. But USB 2.0 didn't set forth the
4 way in which a dual mode device can disconnect and
5 reconnect, right, that was an OTG? 10:27

6 MR. JENSEN: Object to form.

7 THE WITNESS: That's not quite true.

8 USB 2 sets out the way in which a device
9 disconnects, and it's the thing that we've talked
10 about here. 10:27

11 The thing that USB 2 doesn't do is it
12 doesn't provide a scheme for plugging in something,
13 and then trying to figure out what it is, and maybe
14 it's a host or maybe it's something else.

15 You're right that OTG address that in one 10:28
16 way. USB C power delivery addresses that in a
17 different much more general way.

18 But the underlying mechanism about
19 disconnect as the first step in a multi-role device
20 in the context of this stuff, that was certainly 10:28
21 part of the USB 2 spec.

22 BY MR. BRAUSA:

23 Q When you say "that was certainly part,"
24 you just mean the general disconnect process?

25 A Yeah. The general -- right, the disconnect 10:28

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1 process generally and specifically, right. 10:28

2 Q Okay. And again, the Chang 2 reference,
3 it doesn't ever disclose a device reconfiguring
4 itself, as you're referring to in Paragraph 17 of
5 your report; right? 10:28

6 A Okay. Chang 2 exists for the purpose of
7 plugging in something, figuring out whether it's a
8 host or a device, and then taking the appropriate
9 action.

10 Because of the way USB works a dual mode 10:29
11 device is supported by that because a dual mode
12 device always starts by disconnecting. Chang 2
13 supports disconnect, whether it was a host or
14 device. And it supports reconnect.

15 The fact that those two things are 10:29
16 together doesn't really matter.

17 A POSITA would understand Chang 2 and in
18 particular that flow diagram, Figure 6 I think it
19 is, that its statement include the necessary
20 operation to support a device that rolls switches. 10:29

21 Q But in your original report you presented
22 a modified version of Chang 2's Figure 6, right, for
23 the flow diagram?

24 A Yes, for the purpose of explaining that,
25 not -- not creating it, not modifying Chang 2. 10:30

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1 Q Okay. So this is another example of 10:30
2 something you think is implicit in the disclosure of
3 Chang 2?

4 A I do.

5 Q But just as a -- as factual matter, 10:30
6 Chang 2, regardless of what it supports, it doesn't
7 ever describe a device switching from host to device
8 or from device to host in the way described in
9 Paragraph 17.

10 MR. JENSEN: Object to form, asked and 10:30
11 answered.

12 THE WITNESS: Yeah, I don't remember it
13 saying that. My position is that a POSITA would
14 know that that's the effect, you get that for free,
15 basically. 10:30

16 BY MR. BRAUSA:

17 Q When you say "you get that for free," what
18 do you mean?

19 A The behavior. You -- Chang 2, without being
20 modified, without changing what its original 10:30
21 conception was, would support a device which was dual
22 mode, which plugged in and presented a certain mode,
23 and then unplugged itself for whatever reason and
24 presented a different mode.

25 The description and teaching of Chang 2 10:31

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1 makes that possible. 10:31

2 Q Okay. It makes it possible, but it

3 doesn't actually describe it; right?

4 MR. JENSEN: Object to form.

5 THE WITNESS: Not in those words, no. 10:31

6 BY MR. BRAUSA:

7 Q Okay. And Chang 2 does not describe using

8 any OTG ports; correct?

9 MR. JENSEN: Object to form.

10 THE WITNESS: I vaguely remember the 10:31

11 Chang 2 said, you know, we're sort of agnostic, you

12 can use any -- you can use any connectors that are

13 described in the spec. So that would include --

14 that would include the connectors that were

15 originally anticipated for OTG. 10:31

16 BY MR. BRAUSA:

17 Q Okay. Beyond that general disclosure, are

18 there any other references to OTG in Chang 2?

19 A I would have to study it, I don't remember

20 any. 10:31

21 MR. BRAUSA: Is now a good time for a

22 break?

23 MR. JENSEN: Okay with me.

24 THE VIDEOGRAPHER: Off the record. The

25 time is 10:31. 10:32

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1 (Recess taken.) 10:32

2 THE VIDEOGRAPHER: This marks the

3 beginning of Media Number 2 in the deposition of

4 Eric Welch. We're back on the record. The time is

5 10:45. 10:45

6 BY MR. BRAUSA:

7 Q If we turn back to your reply declaration,

8 Exhibit 1102, Paragraph 14, in the illustration

9 above it.

10 A Okay. I've got that. 10:45

11 Q Okay. We were talking about the

12 processing device removal step. It also says that a

13 step occurs where the -- one resets the port to a

14 default state.

15 What's the default state of a port? 10:46

16 A Okay. A downstream facing port, either of a

17 host or a hub, has -- these questions always have "it

18 depends" answers.

19 Okay. In the USB 2 world, let's just

20 stick with that for a moment, a host port is going 10:46

21 to have a pull-down resistors on the data lines. It

22 will have its data transceivers powered on, so it's

23 willing to accept something, and it will have turned

24 on V Bus.

25 Now, just to thought this in context, when 10:46

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1 you role forward to OTG an embedded hosts, the rules 10:46
2 are relaxed about V Bus.

3 So while I mentioned in the original deck
4 the V Bus could be used as one part of a detection
5 scheme, it's not the only one and there are 10:47
6 certainly perfectly good detection schemes that work
7 without V Bus.

8 Q And does USB define a default state for a
9 given port, or is that a design choice that you can
10 make with respect -- 10:47

11 A The things I just said all come from the
12 spec.

13 Q Okay. What about OTG ports, what is the
14 default state of an OTG port?

15 A To the best of my memory, about the spec 10:47
16 itself, an OTG port turns V Bus off. It doesn't have
17 an advanced sense of whether it's going to be a host
18 or a device.

19 And OTG ports are required to be Micro AB
20 only, that's the only case that's allowed. And the 10:48
21 ID pin in the Micro AB connector tells the device
22 what role it's to play.

23 Now, in the spec, that include the
24 management of V Bus in practice, especially after
25 the OTG spec and various other things, USB is -- 10:48

1 sorry, V Bus is sometimes managed in some special 10:48
2 way.

3 But the answer to your question about the
4 OTG spec is that the default state of an OTG port is
5 that V Bus is off and it allows the plug in of a 10:48
6 host or a device which is expected to identify what
7 it is by the state of the ID pin.

8 Q And as I understood your explanation in a
9 default state, is the ID pin set to anything in
10 particular? 10:49

11 A It's not set. But the -- an OTG port
12 expects that the incident device, the thing that's
13 plugged in, will either leave the ID pin floating or
14 it will ground it.

15 And one means device and the other means 10:49
16 host.

17 So what the owner of the port does is,
18 okay, now we're just tip-toeing over the -- from the
19 spec to the design, one way you would manage that is
20 you put a pullup resistor on that pin. 10:49

21 And when something is plugged in, if it
22 doesn't change, that means it's the one that --
23 let's see, what does that mean -- it means it's a
24 host, right.

25 So what would you expect at that point is 10:49

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1 to see the other side turn on V Bus. 10:50

2 If, when you plug it in, that pin goes

3 low, so it was previously high because of the pullup

4 you had, it goes low, that's that thing plugged in,

5 it's a device and therefore on the OTG port side, it 10:50

6 behaves like -- it behaves like a device. And it

7 expects the other side to provide V Bus.

8 Q Okay.

9 A So just to summarize, an OTG port does not

10 presume the plugged-in thing is going to be a host or 10:50

11 device, but it does expect that the ID pin will tell

12 it which it is, and then it can provide accordingly.

13 Q Okay. And POSA in your view would

14 recognize that the default state of the dual-use

15 port, doesn't have to be host or device, leaving it 10:50

16 the same or leaving it unchanged, the pin, doesn't

17 have to correspond to host or device; right?

18 MR. JENSEN: Object to form.

19 THE WITNESS: Okay. Remember I said

20 earlier there are two cases here. If we ignore the 10:51

21 one where you can make an assumption about what it's

22 going to be initially, yes.

23 If you don't know what it is, then you

24 don't configure your side to expect either one.

25 BY MR. BRAUSA: 10:51

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1 Q Okay. And those are design choices that a 10:51
2 POSA would need to make; right?

3 A Well, yes. At several levels. You have to
4 decide what kind of devices you're going to support,
5 and then -- then if you're going to support the kind 10:51
6 that you're referring to where you don't know what it
7 is, then yes, you have to make design decisions about
8 how to do that.

9 Q Okay. And so there's nothing inherent in
10 dual-role ports, for example, that would say the 10:51
11 default is always to assume what's connected is a
12 host?

13 MR. JENSEN: Object to form.

14 THE WITNESS: In general, that's true. I
15 can actually imagine a case where you could make an 10:52
16 assumption, and then change your mind once the
17 device is plugged in.

18 But I can't give you details of that. But
19 in general, what you said was accurate.

20 BY MR. BRAUSA: 10:52

21 Q Okay. Let's go to Paragraph 32 in your
22 reply declaration. Exhibit 1102 in the '228
23 proceedings.

24 And here's one of the areas in your reply
25 declaration where you do refer back to portions of 10:53

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1 your original declaration, including a citation to 10:53
2 paragraphs 183 to 197; correct?

3 A Right. And I actually reproduce 192 to 193,
4 yes.

5 Q And on Page 21 in Paragraph 32, you say 10:53
6 that in your original declaration, and doing so in
7 this discussion, you think you gave more detail and
8 explanation than the challenged patents provide or
9 the claims require on the subject.

10 Do you see that statement? 10:53

11 A I do.

12 Q Why did -- why did you think that was
13 important to include?

14 A I don't know that it's that important. If
15 anything, I want to avoid confusion. You know, 10:53
16 referring back to our earlier discussion about how you
17 present these things, there are times when more detail
18 could be useful.

19 So no, there's nothing particularly
20 special about that here. 10:54

21 Q Okay. I want to look at a couple of these
22 paragraphs that are cited in Paragraph 32 of your
23 reply declaration, in your original declaration,
24 which I think you still have it in front of you --

25 A I do have it. 10:54

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1 Q -- it's Exhibit 1013. 10:54
2 We can turn to paragraph -- let's start
3 with the first one, Paragraph 183 of Exhibit 1013.
4 And these paragraphs that you cited are in
5 the overall section of your original declaration 10:55
6 referring to a motivation to combine.
7 A Mm-hmm.
8 Q Okay. And actually, I misspoke. Let's go
9 to 186 -- Paragraph 186, excuse me.
10 Do you see that paragraph? 10:55
11 A I do.
12 Q And do you stand by the opinion set forth
13 in that paragraph?
14 A I do.
15 Q Okay. And here you recognize that Chang 10:56
16 discloses a bridge, but does not detail the bridge;
17 right?
18 A Well, yes and no. Change doesn't talk
19 about -- Chang's approach is different because he
20 refers to off-the-shelf bridges, and there is a little 10:56
21 bit of detail about that. It's not provided by him.
22 But a POSITA would understand and go look up those
23 data sheets.
24 Q Okay.
25 A So the data is available. 10:56

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1 Q Okay. You refer to Chang's referenced 10:56
2 commercial bridge chips. But your opinion is that
3 Chang does not detail the bridge, as you wrote in
4 your report; right?

5 A Yeah. 10:56

6 Q And then in contrast, you say that Chang 2
7 discloses its bridge in significant detail,
8 including detection and switching functionality.

9 A Right.

10 Q And then in the next paragraph you said, 10:57
11 [as read]: That would motivate a POSITA to combine
12 or consider Chang's teachings with Chang 1; right?

13 A That's right.

14 Q And so Chang 2 is providing the details of
15 how the bridge works and the proposed combination; 10:57
16 right?

17 MR. JENSEN: Object to form.

18 THE WITNESS: I wouldn't say it that way.
19 Both of these things provide bridges, and they
20 approach it differently. So I would say that there 10:57
21 are differences in the details, but the primary
22 thing here is that both of them have a bridge.

23 BY MR. BRAUSA:

24 Q Okay. You say that, in Paragraph 186, a
25 POSITA would consider Chang 2 teachings; right? 10:57

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1	A	Yes.	10:57
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2 Q What Chang 2 teachings were you referring
3 to there?

4 A I have to go back and remind myself of
5 exactly how we talked about this. Okay. 10:58

```
6         It's been awhile, but -- so on Page 93 we
7     have Chang's original scheme with some annotation,
8     device path and host path.
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9           And there is a hub here so we have
10  multiple ports.  And so Chang brings multiple ports    10:59
11  to the party.
```

12 Chang 2 brings a detection scheme and the
13 idea that you could -- you could have a port which
14 allowed you to effectively combine these two things.
15 And therefore, subsequent drawings show a MUX here 10:59
16 or a crossbar here.

17 So the short answer to your question is
18 that both of them have bridges, but Chang brings
19 multiple ports and Chang 2 brings detection and the
20 ability to switch between them. 10:59

21 Q Okay. And so the teachings of Chang 2
22 that you're referring to in Paragraph 186, those
23 would be applied to the bridge in Chang 1 that we
24 see on Page 93; correct?

25	A	Not exclusively. Both of them have bridges. 10:59
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1 And the combined reference could potentially make use 10:59
2 of the commercial bridges that Chang discloses. Or a
3 dedicated bridge in an ASIC that Chang 2 anticipates
4 or even describes, I forget the actual details.

5 So no, I don't think the combination 11:00
6 excludes either of those. And the choice about that
7 is a question of design and implementation.

8 Q The choice about what is a choice of
9 design and implementation?

10 A Well -- okay. Whether you use a commercial 11:00
11 bridge, which Chang talks about, or a custom bridge,
12 which Chang 2 talks about, that's not excluded from
13 the combination, and it's available as one of the
14 choices to be made in implementation.

15 Q Let's go to Page -- Paragraph, excuse me, 11:00
16 189 of your original declaration, which is also a
17 cross-reference in your reply declaration.

18 Here, you're describing how the detection
19 circuitry and logic flow works in the Chang 2
20 bridge; right? 11:01

21 A Hold on. Let me just remind myself of what
22 this is.

23 Yes, that's right.

24 Q Okay. And then in Paragraph 190, you say
25 that [as read]: Chang discloses the bridging 11:01

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1 detection signal causes the switching to the 11:01
2 appropriate transmission path to use; correct?

3 A That's right.

4 Q Okay. And so in Paragraph 189, is it fair
5 to say that you're relying on all of these teachings 11:01
6 from Chang 2 to combine with Chang 1 in your
7 obviousness implementation?

8 MR. JENSEN: Object to form.

9 THE WITNESS: Not necessarily. I have to
10 sort of unpack this a little bit. As I said before, 11:02
11 Chang brings the idea of detection to the party.
12 The term "control chip" is just what Chang 2 calls
13 some aspect of this.

14 And then as I detail it in 189, there's
15 some detail about what -- the way Chang 2 talks 11:02
16 about doing the detection.

17 So it talks about this inquire and --
18 inquire signal and bridge detection signal and slave
19 detection signal. Those are Chang 2 details about
20 how his detection scheme works. 11:02

21 In the net of combining Chang 1 and
22 Chang 2, I'm not limiting detection just to that of
23 Chang 2. So in that sense, no, I'm not -- I'm not
24 taking all of these teachings.

25 The teaching here is that there is 11:03

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1 detection. 11:03

2 Later on, we develop the idea that there
3 are choices around doing detection. And there is a
4 bunch of issues there like, you know, the design
5 thing about do you know in advance what the -- what 11:03
6 the device is going to be, does it always start by
7 presenting a device and therefore maybe you don't
8 need this kind of detection circuit, you can do it
9 with in-band signaling, that's one whole case
10 that's -- that's considered here. 11:03

11 If you don't know, then you do need some
12 kind of detection circuit, but the choices for that
13 as I detailed elsewhere in the original report.

14 There's lots of different ways of doing
15 it. This is one. There are lots of different ones. 11:03
16 BY MR. BRAUSA:

17 Q Okay. In your original report or in your
18 reply declaration, for that matter, I didn't see
19 anywhere where you identified what specific
20 teachings of Chang 2 you were relying on or were 11:03
21 necessary and which teachings that a POSA wouldn't
22 need.

23 Did you provide that analysis anywhere, to
24 your knowledge?

25 MR. JENSEN: Object to form. I think this 11:04

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1 is going beyond the scope of his reply declaration. 11:04
2 If you happen to know, you can answer.
3 THE WITNESS: I don't remember providing a
4 list. We take and don't take these Chang 2 things
5 or modify them this way. 11:04
6 Instead, what I remember is there are a
7 number of analyses. We do one set of analyses here
8 initially when we talked about combination, and then
9 we go on to things like the motivation to combine
10 and testability and there are things in there. 11:04
11 Later, when they do detail analysis for
12 particular claims, we present some of these
13 combinations in different ways.
14 So if I were to follow each one of those
15 things, you know, we could detail which of Chang 2 11:04
16 is used here and which of Chang 1.
17 But the literal answer to your question is
18 no, I don't provide a list that says we use these
19 here and we didn't use those over there.
20 BY MR. BRAUSA: 11:05
21 Q Okay. Speaking of the detail analysis of
22 the claims, can we turn to Paragraph 239 of your
23 opening report under subsection G, Claim element
24 1-F.
25 And in the first sentence of this 11:05

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1 paragraph you say, [as read]: A POSITA would 11:06
2 understand that one obvious implementation of a
3 detection circuit would be to include it in the
4 bridge.

5 Right? 11:06

6 MR. JENSEN: Object to form, and scope.

7 THE WITNESS: Yes, I see that in 239.

8 BY MR. BRAUSA:

9 Q Okay. And you agree that's an
10 implementation you relied on in this claim element 11:06
11 to support your opinion?

12 MR. JENSEN: Object to form, and scope.

13 THE WITNESS: Yes, that's correct.

14 BY MR. BRAUSA:

15 Q And in paragraphs 240, 241, all the way 11:06
16 through 245, which round out the discussion of this
17 claim element, I didn't see any discussion of
18 putting the detection circuit anywhere else.

19 Can you take a little bit of time to
20 review those and let me know if I missed it. 11:06

21 MR. JENSEN: Object to form, and scope.

22 I'll just note for the record that this is
23 one of Mr. Welch's original declarations, and I
24 don't brief these sections were included anywhere in
25 his reply declaration which is the subject of this 11:07

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1 deposition. 11:07

2 THE WITNESS: Rather than doing what you

3 suggested, let me answer the question a different

4 way.

5 I can remember, and I've detailed in the 11:07

6 new declaration, three different ways of including

7 the detection circuit. One of them is between a

8 multiplexor or switch and the external port. One is

9 in the multiplexor switch. And the third is in the

10 bridge. 11:07

11 BY MR. BRAUSA:

12 Q Understood that's in your reply

13 declaration. My question was a little different,

14 which is:

15 Do you see that anywhere, those other two 11:07

16 options you referenced, in your reply declaration in

17 Paragraphs 239 to 245?

18 MR. JENSEN: Same objections. This wasn't

19 something he was, I think, preparing for for this

20 deposition because it's not discussed in his reply 11:08

21 declaration.

22 MR. BRAUSA: Yeah, I can just respond to

23 that briefly, which in his reply declaration, he

24 readily says he did describe three potential

25 embodiments with respect to the implementation. So 11:08

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1 this is just asking him to confirm that he's not 11:08
2 discussing three implementations here.

3 MR. JENSEN: Same objections.

4 THE WITNESS: Well, I will say that I
5 don't see it mentioned explicitly in this section 11:10
6 based just on briefly skimming it. I didn't prepare
7 for this deposition by a detailed review of this
8 second on.

9 I can't rule out that the other
10 possibilities for a detection circuit aren't in here 11:10
11 implicitly. They may well be.

12 BY MR. BRAUSA:

13 Q Okay. So just so I get a clean answer for
14 the record, you don't see any explicit reference to
15 it, and you're not sure if it might be implicit in 11:10
16 what you say in these paragraphs?

17 A That's right.

18 Q Okay. If you can turn to Paragraph 244 of
19 Exhibit 1013 in the '228 proceeding. This is with
20 respect to the same claim element 1-F. 11:11

21 This again describes the detection
22 circuitry and control of Chang 2's control chip;
23 right?

24 MR. JENSEN: Same objections.

25 THE WITNESS: Well, I don't remember 11:12

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1 explicitly. But I have a sense that the -- that 11:12
2 Chang inquiry signal has been developed elsewhere.
3 I don't remember where, to include variations on the
4 theme of how to do detection.

5 BY MR. BRAUSA: 11:12

6 Q Okay. But in Paragraph 244, you're not
7 describing any further development of the Chang 2's
8 protocol, you're just describing what Chang 2's
9 control chip, which is located in the bridge device,
10 does; right? 11:12

11 MR. JENSEN: Object to form.

12 THE WITNESS: As far as I can tell, yes.

13 BY MR. BRAUSA:

14 Q And then after that paragraph, you provide
15 your summary opinion that ground one renders obvious 11:12
16 this sub element; right?

17 A I see that in 245.

18 Q Okay. Let's go to Paragraph 270. It's in
19 Exhibit 1013 from the '228 proceeding.

20 In Paragraph 270, which is talking about 11:13
21 the limitations in dependent Claim 6, you state that
22 the bridge device in Chang 2 controls routing;
23 right?

24 MR. JENSEN: Same objections.

25 THE WITNESS: Well, I don't remember 11:14

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1 exactly. But we may have a case here where a bridge 11:14
2 device in Chang 2's language is a larger construct
3 than bridge elsewhere. So yes, Chang's bridge
4 device controls routing, but his bridge device is
5 larger than other bridge devices. And so -- 11:14

6 BY MR. BRAUSA:

7 Q Okay.

8 A -- a careful answer to your question has to
9 include that he's talking about something specific to
10 his construct here. 11:15

11 Q Okay. Sure.

12 And then in the second sentence, Chang 2
13 says that [as read]: The bridge device includes
14 Control Chip 13, which is shown in greater detail in
15 Figure 5 of Chang 2. 11:15

16 Right?

17 A I see that, yes.

18 Q And then you would agree, as your report
19 says, that the Control Chip 13 includes a Detection
20 Unit 134 and a CPU 135; right? 11:15

21 A That's certainly Chang's teaching.

22 Q Okay. And then the last sentence in
23 Paragraph 270 of Exhibit 1013 in the '228
24 proceedings, states that [as read]: The CPU and
25 detection unit are responsible for controlling 11:15

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1 switching: The detection unit determines the type 11:15
2 of device currently connected, i.e., host or device,
3 and sends the CPU a detection signal which the CPU
4 uses to send signals to switch to the appropriate
5 host or bypass path. 11:16

6 That's your opinion regarding Chang 2's
7 disclosures; right?

8 A I see that language here, yes.

9 Q Okay. And then in -- and you agree with
10 that; right? 11:16

11 A Yes.

12 Q Okay. And then in Paragraph 271, you say,
13 [as read]: By applying this teaching to Chang, the
14 bridge in ground one would be configured to manage
15 the control inputs for the crossbar. 11:16

16 Right?

17 MR. JENSEN: Object to form, and scope.

18 THE WITNESS: Yes, that's what's written
19 here. I would comment that none of these analyses
20 are meant to be limiting. None of these are 11:17
21 intended to exclude other ways of doing these
22 things. These are just one example.

23 BY MR. BRAUSA:

24 Q Okay. But there is no Paragraph 272 with
25 respect to Claim 6; right? It's just 270 and 271. 11:17

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1 Those are the two specific examples you provided for 11:17
2 Claim 6 in your opinion?

3 A Yes, that's right.

4 Q Okay. And when you say in Paragraph 271,
5 [as read]: By applying this teaching to Chang. 11:17
6 You're referring to the disclosures set
7 forth in 270; right?

8 MR. JENSEN: Object to form, and scope.

9 THE WITNESS: Yes, that's what's here.
10 Again, it's not limiting, but that's what's here. 11:18

11 BY MR. BRAUSA:

12 Q That's what it's limited to with respect
13 to at least Claim 6 in your analysis in this report;
14 right?

15 MR. JENSEN: Object to form, asked and 11:18
16 answered.

17 THE WITNESS: Yes, this is the analysis
18 about Claim 6, that's true.

19 BY MR. BRAUSA:

20 Q Okay. Let's go back to your reply 11:18
21 declaration, Exhibit 1102.

22 And we talked about this earlier, but you
23 cross-reference paragraphs 183 to 197 in
24 Paragraph 32; right?

25 A Yes. 11:19

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1 Q And then you reproduce paragraphs 192 and 11:19
2 193 of your original report thereafter?

3 A Mm-hmm, that's right.

4 Q And Counsel had some objections that I was
5 asking you about paragraphs that -- in your original 11:19
6 report that you don't refer to in your reply report,
7 and you said you didn't review those portions of
8 your original report in preparation for today's
9 deposition; right?

10 A That's correct. 11:19

11 Q Okay. Why didn't you cite Paragraphs 244
12 or 270 to -71 that I just asked you about in this
13 discussion in your reply report?

14 A Because I considered that the things that I
15 did reference here were the correct reference for the 11:19
16 point I was trying to make in this section.

17 Q Okay. In Paragraph 192, that is
18 reproduced on, I guess, as part of Paragraph 32 of
19 Exhibit 1102 on Page 22 --

20 A Yes. 11:19

21 Q A lot of twos.
22 -- that shows one of the MUX cartoons;
23 right?

24 A Mm-hmm.

25 Q There's nothing in your opening report or 11:20

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1 reply report in which you show the detection unit in 11:20
2 this location for one of the crossbar
3 implementations; correct?

4 MR. JENSEN: Object to form.

5 THE WITNESS: I don't remember. 11:20

6 BY MR. BRAUSA:

7 Q Okay. And in this depiction that we have
8 on Page 22 of your reply declaration, the detection
9 unit isn't shown directly connected to downstream
10 port 50, is it? 11:20

11 MR. JENSEN: Object to form.

12 THE WITNESS: At the end of 193, I say,
13 [as read]: Additionally, the detection unit must
14 connect to the downstream port to detect the mode as
15 shown in Chang 2, Figure 5. 11:21

16 BY MR. BRAUSA:

17 Q My question was a little bit different.
18 In Paragraph 192 in the illustration you provided,
19 the detection unit is not directly connected to
20 downstream port 50, is it? 11:21

21 MR. JENSEN: Object to form, asked and
22 answered.

23 THE WITNESS: It's true that it's not in
24 this picture, but it is in the text.

25 BY MR. BRAUSA: 11:21

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1 Q Okay. Well, the text doesn't say directly 11:21
2 connect that you read from, does it, in
3 Paragraph 193 of your original report?

4 MR. JENSEN: Object to form.

5 THE WITNESS: The word "directly" doesn't 11:21
6 appear there, but I think that's what that sentence
7 means.

8 BY MR. BRAUSA:

9 Q Is that implicit in that sentence?

10 A I think so. 11:21

11 Q Okay. And just to be clear, both
12 Paragraphs 192 and 193 that you reproduced in your
13 reply declaration are dealing with a MUX
14 implementation, right, not a crossbar
15 implementation? 11:22

16 MR. JENSEN: Object to form.

17 THE WITNESS: That's true, but as
18 developed elsewhere, the MUX is a limiting case of a
19 crossbar. And in some cases, you know, I developed
20 both separately, and other cases I allowed that to 11:22
21 be in the text and/or implicit because they are very
22 similar.

23 BY MR. BRAUSA:

24 Q Okay. So another example of an implicit
25 explanation is this difference between a MUX and a 11:22

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1 crossbar and where the detection unit would be? 11:22

2 A I don't remember the original report in that

3 particular detail.

4 Q Okay. Do you think it would be more

5 accurate in the diagram shown in Paragraph 192 of 11:22

6 your original declaration as reproduced in

7 Paragraph 32 of your reply declaration,

8 Exhibit 1102, to draw a direct connection between

9 the detection unit and downstream port 50?

10 A When you're doing drawings to illustrate a 11:23

11 point, there's always a question about how much detail

12 to put in.

13 I considered a number of different

14 possible additions that can be made to this drawing.

15 I may have even sketched some of them out. And I 11:23

16 concluded in the end that this was the best case

17 because while it did not have every single detail,

18 it illustrated what was going on.

19 These drawings were meant to be

20 functional. They are not meant to be 11:23

21 implementations or, you know, a precise laying out

22 of exactly how these things would be done.

23 And the value of having a drawing that's

24 functional is it shows how these pieces operate

25 generally. 11:23

1 The detection unit is associated with a 11:23
2 MUX as it's drawn here. I considered it to be an
3 implementation detail that's important enough to
4 describe in the text. I didn't want to include more
5 lines on the drawing because I thought that would 11:24
6 make it confusing.

7 Q So what other -- what other details did
8 you consider including in this diagram we see from
9 Paragraph 192 in your original report?

10 A Well, there was a long time when I 11:24
11 considered adding V Bus to a lot of these drawings,
12 and I left that out.

13 There's -- the complicated business about
14 whether ports are inside the hub or not. And we did
15 go to the trouble of developing the hub 40 versus 11:25
16 the hub 46 drawings in order to make that point.

17 The detection unit is only mentioned in
18 the '643 patent and not in the other three, to the
19 best of my memory.

20 And including it in more detail than this 11:25
21 seemed like it was potentially going to create
22 confusion.

23 So that's a brief history of how these
24 drawings were done.

25 Q Okay. So I just want to make sure I 11:25

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1 understand your testimony. The detection union is 11:25
2 not mentioned in the other patents except for the
3 '643; that's your understanding?

4 A That's -- yeah, that's my understanding.

5 Q Okay. 11:25

6 A Not -- I'm sorry. It's not mentioned in the
7 claims of the patents other than '643.

8 The -- the specifications, a lot of those
9 are common.

10 Q Okay. And looking at the claims, for 11:26
11 example, of the '420 patent, you think a POSITA
12 would have an understanding that some detection
13 circuitry is required to perform the functionality
14 set forth in the claim?

15 MR. JENSEN: Object to form. 11:26

16 THE WITNESS: I would have to go back and
17 look at '420 and those details.

18 BY MR. BRAUSA:

19 Q Okay. Can you envision a scenario where
20 you're dealing with mode switching between a 11:26
21 downstream device and you don't have some sort of
22 detection circuitry?

23 A Sure.

24 Q What scenario would that be?

25 A Well, if you know what the device is on its 11:26

1 initial plug in, this is an important case because 11:26
2 it's the way most smartphones operate.

3 Based on the cable you use, you know in
4 advance what they're going to present as.

5 Detection in that sense proceeds from the 11:27
6 normal USB detection where you have a device that,
7 for example, if you know it's always going to be a
8 USB device mode, it connects through a hub to the
9 host.

10 And then what happens in this case, as 11:27
11 I've described in a couple of different places here,
12 is there is an in-band signaling scheme where the
13 host can ask the device to change modes.

14 When it changes mode, it gets off the bus.

15 But in this case, you can coordinate that 11:27
16 from the host and when you see that the disconnect
17 the host can issue the signals to the routing logic
18 and cause the bridge to be switched into place.

19 That's an example. That's a use case
20 that's here, as far as I understand it, where you 11:27
21 don't have to have a, quote/unquote, "detection
22 circuit."

23 Q Okay. And did you provide any analysis of
24 that type of embodiment in your opinions in this
25 case? 11:28

1 A I believe I did. It appears in two places. 11:28
2 Again, from memory, the background spec -- sorry, the
3 USB background section talks about the OTG spec, and
4 there is a bunch of things in there.

5 One of the aspects of OTG is something 11:28
6 called the host negotiation protocol. That is, in
7 fact, such a scheme where it's the OTG cable and
8 which way you plug it in that tells each device what
9 mode to come up in initially.

10 And then from there, the one of those 11:28
11 that's a device exposes a special interrupt end
12 point and you can sent a signal on that end point
13 that says that you want the device to change mode.

14 So I talk about that in respect to the OTG
15 spec. 11:29

16 I think -- I don't remember exactly. I
17 think there is another paragraph that describe
18 in-band signaling as another way to affect changes
19 in the configuration of the downstream devices.

20 Q Okay. Without going through it, we can 11:29
21 certainly do that on our own time, but do you recall
22 any analysis of the specific claims that you did
23 that didn't include a detection circuit of some
24 sort?

25 MR. JENSEN: Object to form, and scope. 11:29

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1 THE WITNESS: Again, I would have to look 11:29
2 at -- I'd have to look at specific ones. But I
3 think in cases where the claims did not include a
4 detection circuit or a detection unit, the -- the
5 analysis of the prior art didn't -- didn't need to 11:29
6 emphasize the detection circuit in that case.

7 BY MR. BRAUSA:

8 Q Okay. Turning back to the picture on
9 Page 22 of your reply declaration, here, you did
10 include a detection unit; agreed? 11:30

11 A Mm-hmm.

12 Q Okay. Walk me through -- well, actually,
13 strike that.

14 What is the -- once the detection circuit
15 performs its function, it detects what type of 11:30
16 device is in a downstream port, where does it send
17 that information to?

18 A Well, this is an implementation detail, but
19 a POSITA would understand that one way to do that is
20 to control the select lines on a switch or a MUX or a 11:30
21 crossbar so that the port where you've performed the
22 detection is routed as appropriate, either to the
23 bridge or around the bridge directly to a port on the
24 hub.

25 Q So in that scenario, the detection unit 11:31

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1 itself would have the software or hardware necessary 11:31
2 to generate that control signal from the MUX?

3 A For example, yes, that would be -- that
4 could be one way of doing it.

5 Q Okay. What other ways would there be of 11:31
6 doing it?

7 A If you consider the Figure 5, I think it is,
8 in Chang where a lot of the stuff is rolled up into
9 one control, one chip, an ASIC presumably, he shows
10 the bypass path as one case and the bridge path -- he 11:31
11 doesn't quite call it that in that drawing -- as
12 another case.

13 I think the actual connection of signals
14 required to make all of that work is slightly
15 different from the one I just -- I just laid out 11:32
16 when you asked me about this figure on Page 22.

17 So in other words, the -- arguably, the
18 switch is implemented in that design in several
19 different places.

20 For example, you implement the switch by 11:32
21 turning on one route with some kind of control
22 signal and simultaneously turning off a different
23 route, perhaps with a different signal.

24 That's just a -- that's just a minor
25 variation, but it's a different example about how 11:32

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1 detection and routing could be done differently 11:32
2 than -- than they are shown here.

3 Q Sure. And that different example you
4 pointed to, that's from Chang 2?

5 A That particular one, yes. 11:32

6 Q Okay. We can turn to Paragraph 40 of your
7 reply declaration. Actually, before we do that I
8 had one more question about this picture, cartoon,
9 from Paragraph 192 of your original report set forth
10 on Page 22 of Exhibit 1102. 11:33

11 A Mm-hmm.

12 Q In your original report, and just in your
13 testimony a few minutes ago, you said that the
14 detection unit here is depicted as being associated
15 with the MUX. Do I have that right? 11:33

16 A What I meant to say there was it's drawn
17 that way here. And that's one of several different
18 ways of locating the detection unit, yes.

19 Q Okay. My question is just in this
20 particular way that it's drawn, what is does it mean 11:34
21 to be -- for the detection unit to be associated
22 with the MUX?

23 A That's mostly an implementation detail, but
24 again, if you're doing this with discrete parts and
25 you're going to use, for example, an off-the-shelf 11:34

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1 bridge, and for example, an off-the-shelf hub chip, 11:34
2 you could build up a combined MUX or crossbar that has
3 detection circuitry in it as one discrete device.

4 It could be a very simple ASIC, and in
5 that case, it wouldn't be unreasonable to say the 11:34
6 detection unit is associated with the MUX.

7 It doesn't -- it doesn't change the sort
8 of functional character of this drawing and other
9 drawings. These are just -- these are just
10 implementation details. 11:34

11 Q And so -- but the implementation detail
12 you're trying to show here is where you've built up
13 a custom MUX or crossbar with detection circuitry
14 included?

15 A Well, that's just -- 11:35

16 MR. JENSEN: Object to form.

17 THE WITNESS: Sorry.

18 That's just an example.

19 BY MR. BRAUSA:

20 Q Okay. 11:35

21 A This drawing was really just a convenience
22 of adding the detection unit and showing that it
23 operates in this part of the system.

24 And again, it's functional, it's not
25 structural, so... 11:35

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1 Q Okay. I guess I'm trying to understand 11:35
2 besides, building a custom crossbar or MUX with
3 detection circuitry in it, are there other
4 implementations of the detection unit that were
5 intended to be conveyed with this functional 11:35
6 diagram, to use your words?

7 MR. JENSEN: Object to form.

8 THE WITNESS: I could -- I could dream up
9 different examples, I'm not sure if that's what
10 you're interested in. 11:35

11 BY MR. BRAUSA:

12 Q Sure. Why don't we start with that. What
13 examples could you dream up that are reflected in
14 diagram?

15 A Okay. 11:35

16 MR. JENSEN: Object to form.

17 THE WITNESS: All right. So this goes to
18 the implementation detail about how a multiplex or
19 such as this needs to work.

20 A multiplexor has two states, in one 11:36
21 state, let's call it an initial state, it's not yet
22 taken on the job of routing the USB data signals in
23 one direction or another. That comes as a result of
24 doing detection.

25 But at the point where the multiplexor is 11:36

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1 required to do the job of holding up one of these 11:36
2 connections, you don't want that connection
3 disrupted. It needs to persist.

4 Just considering this drawing here. Other
5 things might get plugged and unplugged to these 11:36
6 other ports on the hub, those plug and unplug
7 things, you don't want those to disrupt what the
8 multiplexor does.

9 These kind of multiplexors are, at the
10 core, analog devices because the USB data signals 11:36
11 are analog devices.

12 And the simplest form of a select line is
13 you have all those signals in a steady state in order
14 to cause it to do something.

15 In order to have a persistent state which 11:37
16 would be one design choice, you could add a little
17 bit of additional circuitry.

18 These kind of circuit elements in this
19 context, they have extremely trivial cost. That's
20 an ASIC that cost vanishingly small. 11:37

21 So in that particular case, you could have
22 the detection circuit sort of off to the side
23 connected to the external ports, but it provides a
24 momentary pulse on, say, one of two lines indicating
25 this is the device mode and this is the host mode. 11:37

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1 But those pulses can go away. And what 11:37
2 the MUX does in this particular made-up-on-the-spot
3 implementation, is they could switch or flip-flop
4 one way or the other to -- to control what the route
5 is. 11:37

6 And that could persist. Now, once you've
7 got elements like that, you would want to have a
8 reset signal. So at the point that the thing was
9 unplugged, you would reset that so that the MUX
10 wasn't doing either of those things. 11:38

11 But that's just another minor variation on
12 how this was done -- how this was done, you know,
13 and the cost would be trivial and the detail choices
14 would depend on other design factors like how -- how
15 much -- which is the discrete part of this, which is 11:38
16 the custom part, all those other kind of things,
17 which we don't presume any of those at this point.

18 BY MR. BRAUSA:

19 Q Okay. And Chang 2 doesn't describe a
20 detection unit associated with any MUX; right? 11:38

21 A Well, sort of does. I mean, the way his
22 Figure 5 is drawn, there's a bunch of things rolled up
23 together in his bridge device. It does detection, it
24 does routing, it does bypass, it does buffering.

25 All of these are different. 11:38

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1 His drawing is a slightly different view 11:38
2 of all this stuff. But in that thing, sure, the
3 detection unit is certainly part of the -- the
4 detection unit is part of the overall bridge which
5 is different than the bridge in this picture. But 11:39
6 that's just because of his language.

7 But in that thing, yes, his detection unit
8 is certainly associated with his switching elements.

9 Q Okay. If we go to now Paragraph 40 of
10 your report -- your reply declaration. 11:39

11 Above Paragraph 40 we see the annotated
12 version of Figure 5 of Chang 2's control chip;
13 right?

14 A Yes.

15 Q And here we see the detection unit 11:39
16 highlighted, and the second connection interface
17 which is effectively a downstream port; right?

18 A Yes.

19 Q Okay. And at least as depicted in
20 Chang 2, this does not include a MUX between the 11:39
21 detection units and the second connection interface;
22 right?

23 A The way I read this drawing, the detection
24 unit is directly connected to the downstream port, and
25 it makes use of that direct connection in the sense 11:40

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1 that it always has access to those data lines so it 11:40
2 can tell what's plugged in.

3 The switching activity happens between the
4 second USB controller and the bypass circuit. And
5 the drawing of the lines -- so the connection unit 11:40
6 does its job, it sends a signal as drawing here to
7 the CPU 135, which in turn sends a signal to two
8 places. One is the second USB controller and the
9 other is the bypass circuit.

10 My reading of this is that those latter 11:40
11 two things, 132 and 133, constitute a switch or MUX.
12 It's implemented a little differently than suggested
13 in that other drawing, but it's functionally the
14 same.

15 And the control of that is from the CPU 11:40
16 which takes, as one possible input, the result of
17 the detection unit.

18 Q Right. So your interpretation of Figure 5
19 of Chang 2 is that there is a switch that toggles
20 between the second USB controller, 132, and the 11:41
21 bypass circuit unit, 133, but that the detection
22 unit, 134, is always connected to the second
23 connection interface -- or directly connected, to
24 use your words?

25 A I agree with the second half of what you 11:41

1 | said. 11:41

2 When you characterize my testimony as
3 stating that there is a switch here, I don't mean
4 that there is an element in here that is not in the
5 drawing. I mean that the things that are in the 11:41
6 drawing constitute a switch in the way I describe.

7	Q	Got it.
---	---	---------

8 And so if we go back to now Page 22, again
9 this depiction from your original report in
10 Paragraph 192 that's produced. 11:42

```
11         I now want to focus on the bridge, the
12     MUX, and the downstream port 50.  Do you see those
13     three elements as depicted?
```

14	A	Mm-hmm.
----	---	---------

15 Q The bridge in that embodiment is not 11:42
16 directly connected to the downstream port 50 in the
17 same way we see -- or in the same way you're using
18 the term "direct connection" with respect to
19 Figure 5 of Chang, is it.

20	A	As drawn, no.	11:42
----	---	---------------	-------

21 Q So there is a MUX in between them; right?

```
22      A      There is a MUX in between.
```

23	Q	And if the MUX is configured so that it	
24		directs port 50 to the hub control unit, there is no	
25		electrical connection between port 50 and the bridge	11:42

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1 as shown in this diagram; correct? 11:42

2 A That's correct.

3 Q Okay. And so that means current wouldn't

4 flow between downstream port 50 and the bridge if

5 the MUX is configured to route things to the hub 11:42

6 control unit; fair?

7 A Well, let's -- let's be careful about that.

8 Such a connection is correct, and it persists as long

9 as the device is plugged in.

10 That's the job of the MUX and any other 11:43

11 control circuitry that's related here. As soon as

12 you unplug the device, the MUX detection, all these

13 other things, have a second job, and that is to go

14 back to the default state.

15 The default state is: You don't know 11:43

16 what's going to get plugged in next. And therefore,

17 you make no assumptions about that. The next thing

18 that happens is the same as the first thing that

19 happened because you're in a default state.

20 Q Okay. But when you have the device 11:43

21 plugged in, if it's -- the MUX is routing signals to

22 the hub control unit, it's electrically disconnected

23 from the bridge; right?

24 A Mm-hmm.

25 Q Okay. Now, if we go to Paragraph 42 of 11:43

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1 your declaration -- Exhibit 1102, your reply 11:44

2 declaration, excuse me.

3 Here, you're talking about an embodiment
4 where the detection unit is located in the bridge;
5 right? 11:44

6	A	That's correct.
---	---	-----------------

7 Q And in your view, in this configuration,
8 the detection unit is simply placed in a different
9 location, but it operates in the same way; that's
10 what you say? 11:44

11	A	That's correct.
----	---	-----------------

12 Q But then you say that [as read]: The
13 detection unit in this context needs only a high
14 impetus passive view of the downstream port signals
15 and wouldn't interfere with other activity 11:44
16 connections, e.g., MUX, crossbar connections on the
17 port.

18	Right?
----	--------

19 A Yes, that's here, right.

20 Q So it's not just moving the detection unit 11:45
21 to a different location, you've also got to make
22 sure you add a high impetus passive connection to
23 the downstream port; right?

24 MR. JENSEN: Object to form.

25	THE WITNESS: Yes, that's right. In this	11:45
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1 case, we're talking about the detection unit having 11:45
2 direct access to the external port signals. But in
3 a non-interfering way.

4 BY MR. BRAUSA:

5 Q Right. And so you have to have an 11:45
6 additional connection that's direct to the
7 downstream port from the detection circuit in this
8 embodiment; right?

9 MR. JENSEN: Object to form.

10 THE WITNESS: I wouldn't say that it has 11:45
11 to be separate. Only what I've said here, I stick
12 by. It needs a connection. It doesn't have to be
13 separate. It could be shared in some way.

14 Those are implementation details that I am
15 not trying to nail down here. 11:46

16 BY MR. BRAUSA:

17 Q Okay. But the detection circuit, you
18 would agree, would need to be electrically connected
19 to the downstream port in some way --

20 A Yeah. 11:46

21 Q -- in order to detect what's going on at
22 the downstream port?

23 A That's right.

24 Q Okay. If we can turn back to your opening
25 declaration. 11:46

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1 A 1013? 11:47

2 Q Yes, 1013 from the '228 proceeding.

3 A Okay.

4 Q If we look at the depiction here on

5 Page 131, Paragraph 239 of Chang hub 46 that you've 11:47

6 shown; right?

7 A Mm-hmm.

8 Q And this has the communication pathway

9 going through the bridge; correct?

10 A That's what this picture shows, yes. 11:47

11 Q I want you to assume that in this

12 embodiment, the detection circuitry is in the

13 bridge, right, it's that embodiment.

14 MR. JENSEN: Object to form, and scope.

15 THE WITNESS: Okay. Let's say that for 11:48

16 the sake of argument.

17 BY MR. BRAUSA:

18 Q Okay. Well, that was actually your

19 argument in Paragraph 239; right?

20 MR. JENSEN: Object to form, and scope. 11:48

21 Again, this is something that's not, I don't think,

22 discussed in his reply declaration.

23 THE WITNESS: Okay, yeah.

24 BY MR. BRAUSA:

25 Q In that scenario, the detection unit in 11:48

1 the bridge is not directly connected to downstream 11:48
2 port 50, right, it's connected through the crossbar
3 switch?

4 MR. JENSEN: Object to form, and scope.

5 THE WITNESS: Okay. Let me pull back from 11:48
6 this for a second.

7 In trying to respond to the notion of a
8 dead end state, I've considered two cases. One is
9 the case where the detector is in the bridge and has
10 direct access to the external port, and that could 11:49
11 be here. That's not excluded.

12 The other is where it has access to the
13 external port through the crossbar or MUX or switch
14 or whatever it is.

15 And that works because the reset circuit 11:49
16 puts the entire system back into the appropriate
17 state where, in particular, the external port is in
18 that case switched to the bridge so that it can
19 detect whatever is plugged in next.

20 Both of those cases allow the system to 11:49
21 work and they don't result in a dead end state.
22 That's true about this picture and many others.

23 BY MR. BRAUSA:

24 Q Okay. But just in this picture at least
25 as shown, if the detection -- there is no direct 11:50

1 connection shown between the bridge and downstream 11:50
2 port 50; right?

3 MR. JENSEN: Objection to form.

4 THE WITNESS: That's an implementation
5 detail, yes, that's been left out. 11:50

6 BY MR. BRAUSA:

7 Q And in the other embodiment you described
8 where there's a reset signal that toggles back to
9 the -- from device mode to the bridge, that's what
10 you're talking about; right? 11:50

11 MR. JENSEN: Object to form.

12 THE WITNESS: I'm not sure I understand
13 the question.

14 BY MR. BRAUSA:

15 Q That was not a great question. Let me try 11:50
16 it again.

17 A Yes.

18 Q In the other embodiment you just testified
19 to, there is a reset signal sent to the port that
20 causes it -- or a reset signal -- excuse me -- sent 11:50
21 to the crossbar switch in your view, that would
22 reset the crossbar switch to route signals from
23 downstream port 50 through the bridge?

24 MR. JENSEN: Object to form.

25 THE WITNESS: Well, putting aside the 11:51

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1 details of how it worked, yes, that's largely 11:51
2 correct.
3 BY MR. BRAUSA:
4 Q In that embodiment, where is the reset
5 signal sent to the crossbar switch coming from? 11:51
6 MR. JENSEN: Same objections.
7 THE WITNESS: Okay. That hypothetical
8 example, the crossbar switch by itself can detect
9 that whatever was plugged in has been unplugged
10 because the data lines are tristated and, you know, 11:51
11 various other reasons that are discussed elsewhere.
12 So it's not the detection circuit per se,
13 but it's a disconnect detector which is common,
14 ubiquitous in USB.
15 So remember I said earlier in answer to 11:51
16 some other question you asked, that the reset signal
17 can be the presence of something or the absence of
18 something.
19 In this case, it's the absence because
20 you've unplugged something, it's no longer there, 11:52
21 and you take the state of the data lines that
22 results from that as a reset event, and then proceed
23 accordingly.
24 BY MR. BRAUSA:
25 Q Okay. And your testimony was that would 11:52

1 be an additional component beyond the crossbar 11:52
2 switch, or the crossbar switch would do that itself?

3 MR. JENSEN: Object to form.

4 THE WITNESS: Well, you have to remember
5 the design process here. You'd never do this as an 11:52
6 afterthought. This is not an, Oh, by the way.

7 At the beginning when you design this
8 stuff, you figure out how plug works and you figure
9 out how unplug works. You could decide to put the
10 detector in the bridge for reasons that we talked 11:52
11 about.

12 That would require, as an example, this
13 crossbar switch being able to detect unplug and to
14 reset itself to a known state. That's just one
15 example. There are other ways you could do this. 11:52

16 BY MR. BRAUSA:

17 Q What other ways could you do it?

18 A Well, Chang 2 has -- I'll avoid speculating.

19 It has been suggested here in -- somewhere
20 else, I don't remember exactly where, that the head 11:53
21 end unit gets involved in detection in some way.

22 I'm not going to speculate what that might
23 be, but the locus of control might be there. You
24 know, again, that's one of these things that would
25 be decided very early in the design process. You 11:53

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1 would never come back and sort of retrofit that. 11:53
2 That would be extremely cumbersome.

3 But it might make sense depending on a lot
4 of other factors that aren't really relevant here
5 that you could do detection and bridging and 11:53
6 configuring of these -- of these switches with a
7 locus of control in a different place.

8 Chang 2 has its own dedicated processor.
9 You know, that could be used in a construct that's
10 build up from its teachings and other things and the 11:54
11 POSITA knowledge and the decision about configuring
12 the routing things.

13 Even the persisting state of the select
14 lines, all of that could be implemented inside the
15 CPU. Again, implementation, details, choices, and 11:54
16 alternatives.

17 Q You mentioned that you could have the
18 control logic originating from the head end unit?

19 A Uh-huh.

20 Q What do you mean by a "head end unit"? 11:54

21 A I think it's called the host or the embedded
22 host. And for these proceedings, we agree that
23 "embedded host" means that it's in a car, even though
24 that isn't what the USB IF states.

25 That's what I'm talking about as the host. 11:54

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1 Q Okay. And Chang 1 and Chang 2 don't refer 11:54
2 to the head end unit controlling a or MUX or
3 crossbar?

4 A They don't use that term, no.

5 Q Okay. Do you know whether the '420 11:54
6 patent, for instance, describes using the head end
7 unit?

8 A I'd have to look at it. I don't remember.

9 Q Do you have any view on whether that was
10 important to the invention claimed in the '420 11:55
11 patent?

12 A I don't have an opinion about that, no.

13 Q Why don't we go back to Paragraph 44 of
14 your reply declaration.

15 A Okay. 11:55

16 Q And here's the portion of your reply
17 declaration where you opine that even if the
18 detection unit in the bridge was not directly
19 connected to the port, and it was connected to the
20 multiplexor crossbar instead, your view is the 11:55
21 embodiment would still work just fine; correct?

22 MR. JENSEN: Object to form.

23 THE WITNESS: Yes, my opinion in this
24 paragraph is that even if you except this proposed
25 modification, what's described here as the incorrect 11:56

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1 understanding of the proposed modification, even if 11:56
2 we accept that, it is my opinion that there is no
3 dead end problem because reset is fundamental to how
4 USB works.

5 This is not -- this is not in addition or 11:56
6 an enhancement or new information or anything like
7 that. This is fundamental to how USB works.

8 And A POSITA would have dealt with this as
9 part of the very early design process.

10 BY MR. BRAUSA: 11:57

11 Q Okay. But it would be something that the
12 POSITA would need to have to account for in their
13 design process; right?

14 A Okay. As I said earlier, the process of
15 designing for USB starts with two things, what's being 11:57
16 plugged into what, and then the sort of next thing is
17 how do you handle plug in and how do you handle
18 unplug.

19 That's fundamental. Every POSITA knows
20 that's how it works, would plan on and would expect 11:57
21 to proceed with those steps just fundamentally
22 because of how USB works.

23 Q Okay. Now, you didn't say, though --
24 strike that.

25 After you say that a POSITA would 11:57

1 understand such an embodiment would still work just 11:57
2 fine, you add a caveat, which is [as read]: provided
3 that a default initialization of reset state were
4 available.

5 Right? 11:57

6 A Yeah, that suggests there are cases when it
7 would not be available. That's not what I meant by
8 writing that sentence at all. I was really only
9 putting that in there in order to frame the
10 understanding here. 11:58

11 Q Okay. So I read the implication of this
12 sentence to be just what you said, which is that
13 there are scenarios where a default initialization
14 reset state are not available.

15 A That's not what I intended here. What I 11:58
16 meant was available in the sense of understood, which,
17 again, with my view of the USB knowledge required
18 here, that's not really available, but it's a
19 requirement. It's fundamental to the -- to the
20 design. 11:58

21 Q Okay. And here you say that [as read]:
22 The only real dispute is whether the system could
23 switch from a host-to-device connection back to a
24 host-to-host connection?

25 A That's right. 11:59

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1 Q But there is no reason from a design 11:59
2 standpoint that the default state couldn't be a
3 host-to-device connection, is there?

4 MR. JENSEN: Object to form.

5 THE WITNESS: Okay. Let's get that 11:59
6 question into context.

7 If you're talking about the case where you
8 have a multiplexor and a bridge, and on the far side
9 of the bridge you have a hub, and that the
10 multiplexor switch is between the bridge and the 11:59
11 hub, and further more, for various whatever reason
12 you've decided to put the detector in the bridge,
13 then the default state of the multiplexor has to
14 connect the external port to the bridge.

15 Now, we call that a host-to-host 11:59
16 connection because that's the bridge's job. That's
17 really only shorthand for meaning we've activated
18 that route, not because we presume what the incident
19 device is going to be, but because to make this
20 configuration work, that's how you have to do it. 12:00
21 You have to switch the MUX in its default state to
22 connect to the bridge as if it were a host-to-host
23 connection.

24 But it isn't any kind of connection
25 initially, it's just a switch there so the detector 12:00

1 can do its job. When you plug the thing in, 12:00
2 whatever it is, the detector then can do -- the
3 detector then does its job.

4 And it could decide that it's going to
5 route because it's a host-to-host, or it will switch 12:00
6 the multiplexor or crossbar or whatever it is so
7 that the device that's just been plugged in is
8 routed to one of the hub ports.

9 BY MR. BRAUSA:

10 Q Okay. If we go to Paragraph 45 in your 12:00
11 reply declaration, you refer to patent owner's
12 product documents. Do you see that?

13 A Which paragraph is this?

14 Q Paragraph 45 in Exhibit 1102.

15 A Okay. Yeah. 12:01

16 Q An there you say that [as read]: These
17 product documents show a default connection state
18 which is a host device connection because host
19 device detection occurs in the head end instead of
20 the bridge. 12:01

21 Right?

22 A Yes, the point is that the quoted sentence
23 here, [as read]: USB port routing is direct to the
24 hub for initial connection as a normal USB device.

25 I take that to mean that the use case 12:01

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1 contemplated here is just that. When you plug the 12:01
2 thing in, it's always going to be a device;
3 therefore, you make this connection.

4 Q Okay. That's not quite what the sentence
5 before it says. It says it's a host device 12:02
6 connection because host device detection occurs in
7 the head end instead of the bridge.

8 A Well, there's several things going on here.
9 From the low level USB standpoint, the first thing
10 that happens is that the system sees a USB device 12:02
11 plugged in.

12 My understanding of the product
13 documentation is that there are cases when the head
14 unit might look at the device that's been plugged
15 in. 12:02

16 Let's imagine hypothetically that some
17 kind of smartphone works this way. Plug it in, it's
18 always a device initially. And then the head end
19 could look at it decide what it is, that's a sort of
20 detection thing, detection step, it's different than 12:02
21 the other one because it's being done in band.

22 But it decides, okay, I know what this is,
23 this is an X. Even though it's presenting as a
24 device right now, in order to do the job we want to
25 have done here, we have to get that thing to get off 12:03

1 the bus and come back as a host. 12:03

2 And so there's various circuitry out there

3 that does that. But in this particular case, it's

4 the host, as I understand the way this thing works,

5 I'm no expert, I've just reviewed this and found 12:03

6 this information.

7 This appears to describe that sort of

8 activity.

9 Q Okay. Why did you think patent owners'

10 product documentation was relevant to your 12:03

11 obviousness opinions?

12 A Mostly I was looking for an example of port

13 routing and I stumbled on this.

14 Q And in this example, the default state is

15 host-to-device connection; right? 12:03

16 A Yes, because the device that you plug in is

17 normally -- is known to be and is expected to be a

18 device at this initial point.

19 You know, this is different than what's

20 going on in the earlier discussion because in that 12:04

21 case, you don't know what it's going to be; and

22 therefore, you have to proceed differently.

23 And if the detection circuit's in the

24 bridge, you have to start there, because that's the

25 place you get to figure out what it is, and then 12:04

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1 switch to as appropriate. 12:04

2 Q Okay. And just to confirm, in your

3 obviousness analysis, you never analyzed a

4 configuration where the detection circuit is in the

5 head end as described here; right? 12:04

6 MR. JENSEN: Object to form.

7 THE WITNESS: I don't remember using this

8 for specific claims. But I did, in the

9 background -- as I said before, I did include the

10 OTB host negotiation protocol as one way to cause 12:04

11 switching to happen between one mode and another.

12 And because I happen to know that some smartphones

13 work that way.

14 So again, the analysis of each claim was

15 specific to the language of the claim. Offhand, I 12:05

16 don't remember any claim language that bore on this

17 issue.

18 If I had, you know, I might have included

19 this.

20 But I included it in the background 12:05

21 because I think it's a useful -- if nothing else, a

22 useful contrast with the kind of detection that has

23 to take place electrically in realtime right at the

24 point that you plug in the device.

25 BY MR. BRAUSA: 12:05

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1 Q Okay. So again, the reason you cite this 12:05
2 in your reply is because it was an example you found
3 of a default connection state?

4 A Well, it's an example of a couple of things.
5 It's an example of what you do for a potentially 12:05
6 dual-role device where you know in advance what it is.

7 Q Okay. And this was patent owner's own
8 work; right?

9 A I don't know anything about that. All I
10 know is that this came out of the document that I 12:06
11 cited.

12 Q Okay. And do you know whether these
13 documents are even prior art?

14 A Not offhand, no.

15 MR. BRAUSA: I think now is a good time 12:06
16 for lunch.

17 MR. JENSEN: Okay.

18 THE VIDEOGRAPHER: This marks the end of
19 Media Number 2. Off the record. The time is 12:06.

20 (Lunch recess taken.) 12:06

21 THE VIDEOGRAPHER: This marks the
22 beginning of Media Number 3 in the deposition of
23 Eric Welch. We're back on the record. The time is
24 12:46.

25 BY MR. BRAUSA: 12:47

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1 Q All right. If we can turn back to your 12:47
2 reply declaration, Exhibit 1102, in Paragraph 48 on
3 Page 30.

4 A I got that.

5 Q And this relates to the discussion we were 12:47
6 having before the break about closing a data
7 connection or removing a device electronically,
8 whether that signals a form of a reset to the head
9 end unit; right?

10 A Right. 12:47

11 Q And here you say that [as read]: This is
12 a scenario that exists, the upstream host at the
13 head end will already know when data connection when
14 the downstream USB product has been closed.

15 Right? 12:47

16 A That's correct.

17 Q And do you know whether you described this
18 scenario that's referenced in Paragraph 48 anywhere
19 in your opening declaration?

20 MR. JENSEN: Object to form. 12:48

21 THE WITNESS: I don't remember exactly,
22 but I believe the original technology background
23 section about USB did talk about devices and hosts
24 connecting and disconnecting.

25 BY MR. BRAUSA: 12:48

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1 Q Okay. But certainly, this wasn't an 12:48
2 embodiment that you relied on in your claim-by-claim
3 analysis in any other proceedings; right?

4 MR. JENSEN: Object to form.

5 THE WITNESS: Well -- okay. In the 12:48
6 original document, anyplace that I talk about a
7 dual-role device, I did talk about connecting and
8 re-connecting. So in that sense, this is part of
9 the original -- beyond that, I would have to look at
10 specific claim analysis to see how this fit in or 12:49
11 not.

12 BY MR. BRAUSA:

13 Q Okay. But what you're saying in
14 Paragraph 48 is the head end at the upstream host
15 detects when a device has been disconnected; right? 12:49

16 A That's true. That's how USB works.

17 Q Okay.

18 A And that is -- that statement, that part of
19 this is in the original technology.

20 Q Okay. And without going through it, 12:49
21 though, you wouldn't -- you don't know whether that
22 description of the USB technology is actually relied
23 on anywhere in your claim-by-claim analysis?

24 A I don't remember, yes.

25 Q If we go to Paragraph 52 on Page 32 of 12:49

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1 Exhibit 1102, this is describing what happens after 12:50
2 the head end becomes aware of a reset event; right?

3 A Okay. Yeah, I've got that.

4 Q In Paragraph 52 you say, [as read]: The
5 head end will use this information to notify the MUX 12:50
6 crossbar to revert to a default state, in which it
7 routes the incoming USB signal to the bridge where
8 the detection unit can then process it.

9 Right?

10 A That's correct. Although I think I'm 12:50
11 talking about one of several ways that this could be
12 done. Having the host manage that configuration,
13 that's not the only alternative, it's just one.

14 Q Okay. So there are other alternatives,
15 but the one you're referring to in Paragraph 52 of 12:51
16 your reply declaration is where the head end, the
17 host is sending a signal to the MUX crossbar to
18 revert to a default state; correct?

19 A That's right.

20 Q And what sort of signal is it sending? 12:51
21 What sort of signal is the head end -- excuse me.
22 Let me back up.

23 What type of signal is the head end
24 upstream host sending the MUX crossbar in this
25 example you provide in Paragraph 52? 12:51

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1 A It's an implementation detail. But an 12:51
2 example could be that the embedded host has some GPIO
3 lines available and it can connect directly to some of
4 the logic elements in the collection of multiplexor,
5 bridge, and other components. 12:52

6 Q Okay. But you would agree with me that
7 the POSITA would need to program the head end
8 upstream host to generate this signal, and also
9 program the MUX crossbar to respond to that signal
10 in some way; right? 12:52

11 MR. JENSEN: Object to form.

12 THE WITNESS: Yeah, in general, that's
13 true.

14 BY MR. BRAUSA:

15 Q Okay. And then in Paragraphs 55 -- or I'm 12:52
16 sorry -- Paragraphs 54 and 55, you talk about the
17 programming that a POSA would need to do -- or a
18 POSITA would need to do for the MUX implementations
19 in Paragraph 54 and the crossbar implementations in
20 Paragraph 55; right? 12:52

21 A Yes, 54 is about the MUX case.

22 Yes, and that's covered in 55 for the
23 crossbar case.

24 Q Okay. In both of these paragraphs
25 describing this additional programming that the 12:53

1 POSITA would do, are -- are referring to ways in 12:53
2 which you could avoid what you call the dead end
3 problem, or what's been called the dead end problem?

4 A I would characterize it a little
5 differently. I don't believe there is a dead end 12:54
6 problem. I believe that the design choices here would
7 all be made in the beginning. And any configuration
8 or programming or logic design or any of that would
9 all be done once. And it would cover the plug in and
10 the detection, and the unplug case. 12:54

11 This is not an add-on, it isn't new stuff,
12 it's fundamental to the way USB works.

13 Q Do you recall whether those programming
14 steps referenced in Paragraphs 54 and 55 of your
15 reply declaration were set forth in your opening 12:54
16 declaration in the claim-by-claim analysis?

17 A I don't remember. For the most part, these
18 are implementation details which I -- I refer to. But
19 I don't necessarily put them together in detail.

20 In all of the analysis of prior art, and 12:55
21 in particular, combinations thereof, I analyze them
22 far enough to be sure that I was confident that they
23 could be turned into an implementation.

24 I did not go farther than that because it
25 didn't seem relevant to the activity at hand. 12:55

But I did go far enough to be sure that it could be done, using the material as it was presented, using the knowledge of the POSITA, and, you know, considering the context of all of this activity.

Q Okay. And when you say you didn't go further, because you didn't consider it relevant to the matter at hand, what did you mean by that?

A Well, there is an implementation phase to putting one of these things together. And I did not 12:55 take any of these designs far enough to draw an actual schematic or write actual code or write actual Verilog. That isn't necessary to know that the thing is going to work.

But by the same token, I did take it far enough to be confident that it would work. It's not a guess or a -- or a conjecture that the implementation could be done.

I'm confident that it could, and I've analyzed it -- all of these different cases, I've analyzed them that far.

There's many reasons not to take this into actual implementation because to do an actual implementation, you have to ask and answer questions that the patents' teachings, and all manner of other 12:56

1 things, would also need in order to actually 12:56
2 implement asking.

3 You know, we've analyzed several different
4 cases of devices that are in an unknown state when
5 you plug them in or they're in a known state when 12:57
6 you plug them in.

7 And before you actually build something,
8 you answer that question: Which is it? Which of
9 those cases do we have? Is it one or the other or
10 is it both? That informs a lot of different details 12:57
11 and so on.

12 And every step of the way, there are
13 issues that are not discussed in detail anywhere
14 here.

15 But I want to be clear that I am confident 12:57
16 those issues could be discussed, they could be --
17 those questions could be asked and answered, and the
18 proposed combinations rendered into an effective
19 implementation that would do what's contemplated.

20 Q If we go to Paragraph 55, you say that in 12:57
21 the crossbar implementation, you need to use basic
22 logic, such as the extremely well-known "if"
23 condition.

24 Could you explain to me what you meant by
25 that? 12:57

1 A The "if" condition in this context merely 12:57
2 means if -- okay. It's a junction between sort of two
3 logic conditions. There -- there is some logic
4 someplace that represents the state of something. A
5 device has been plugged in or a device has been 12:58
6 unplugged.

7 The "if" condition could be used just to
8 detect that, to ascertain that that's the case, and
9 then do something as a result of that.

10 Furthermore, the general case of "if" 12:58
11 could involve multiple terms: If this is true and
12 at the same time that is not true, then we do
13 something.

14 You know, this kind of logic has been
15 around for a long, long time. And it plays out in 12:58
16 circuit design, it plays out in programming, it
17 plays out in FPGA or ASIC programming, programming
18 languages like Verilog and many other places.

19 Q And so in the context of the crossbar
20 implementations you're referring to in 55, my 12:59
21 understanding is that you're saying the POSITA would
22 need to add this "if" condition of logic to check to
23 see if there is an existing host-to-host connection
24 on a port so that it's not interrupted by changing
25 the state of the device; is that -- 12:59

1 A For example, yes. That's one -- that's one 12:59
2 sort of thing you need to account for.

3 Q Okay. And you say -- and in fact, the
4 only citation you have in this paragraph is a
5 footnote paragraph, Footnote 5, where it's a 12:59
6 citation to the challenged patents' recognition of
7 this idea; right?

8 A Yes, that's right.

9 Q Okay. And then you say, [as read]: And
10 in this way, persistence is maintained for an 12:59
11 existing host-to-host connection, and any other
12 downstream USB product subsequently plugged in will
13 be routed as host device connections.

14 Right?

15 A Yes. 01:00

16 Q Why was it significant to you to identify
17 conditions necessary for persistence to be
18 maintained?

19 A At the level of detail that we've tried to
20 maintain here, and in the context of what we're 01:00
21 talking about in this paragraph, it seemed appropriate
22 to mention that, to make it clear that that feature,
23 that manner of functioning of all USB systems,
24 basically, is not in question here.

25 We're not talking about changing the way 01:00

1 USB works. And it seemed useful to mention that 01:00
2 particular aspect of it because you can imagine
3 scenarios where if you don't cover that case, while
4 the hub by itself is perfectly capable of doing this
5 because that's its job and that's what is it's 01:01
6 designed to do and those are essentially commodities
7 that are known to do that, you'd have to make sure
8 that the design of the add-on facilities, the
9 multiplexors, the detectors, the bridges, and all
10 these other kind of things, was consistent with 01:01
11 normal USB operations.

12 That's one example. And I included it for
13 that reason, to make sure that I'm being clear that
14 what's being done here does not in any way change
15 USB compatibility on this point particularly. 01:01

16 Q Okay. Your testimony is that's what you
17 were trying to convey in Paragraph 55?

18 A You mentioned one of the cases where that
19 would be important. If you have a scenario where a
20 system has one bridge and you have a crossbar with 01:02
21 multiple ports, you have to handle the case where the
22 one bridge is already in use. And then you plug
23 something else in which would otherwise use that. We
24 have to make sure that you don't interfere with the
25 function of that. 01:02

So that's just an example of the kind of think that I had in mind to include that language.

Q Why would you have to make sure that you wouldn't interfere with the function of the existing host-to-host connection? 01:02

A Well, not to put too fine a point on it, your motion to strike suggests that some aspect of the construction that I have put together here does fail and it results in this dead end connection.

I disagree with that for the reasons that I've said.

But it is possible to look at these things and come up with what I'd consider to be erroneous conclusions. I wanted to head that off in this particular case.

01:03

Q What's the erroneous conclusion that's being referenced in Paragraph 55?

A Well, by inference, what I'm saying is that this does not operate in such a way that existing connections through the hub or through the existing bridge would not be disrupted when you plug something else in.

It's a way of further characterizing and clarifying what the combined prior art references with a POSITA with knowledge, how those things

1 actually work and what they do functionally. 01:03

2 Q Okay. But in Paragraph 55, you don't cite

3 any of the prior art. The only thing cited, as I

4 think we established, is the challenged patent;

5 right? 01:03

6 A True.

7 Q And Paragraph 55 you certainly wrote

8 before reviewing our motion to strike; right?

9 A I don't remember on that detail. I was just

10 giving you an example of the way in which things could 01:04

11 be -- no, that's useless.

12 In the original -- okay. I don't actually

13 remember precisely why I put this in here. But I'll

14 make the general comment that because of the way

15 some of the patents are worded and some of the prior 01:04

16 art was worded, it was clear that amongst the

17 parties, that this was an issue of concern.

18 So I wanted to make sure to just address

19 that here. If you have a crossbar implementation,

20 one condition for making that successful is this. 01:04

21 Q Okay. And so persistent connection, if I

22 understand your testimony and your recollection, is

23 an element in some of the claims; right?

24 A I didn't say that. I'm making a much more

25 vague statement that in reviewing the original 01:05

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1 material, I have -- I have a memory which is not 01:05
2 precise that this was a concern.

3 I don't remember specifically if it's
4 mentioned in any of the claims.

5 Q Okay. But certainly, this was a -- this 01:05
6 paragraph was something that you added in your reply
7 declaration, this example of how persistence is
8 maintained wasn't provided in your original
9 declaration; right?

10 MR. JENSEN: Object to form. 01:05

11 THE WITNESS: I don't remember, I don't
12 remember.

13 BY MR. BRAUSA:

14 Q Okay. During the breaks today, did you
15 discuss your testimony with counsel at all? 01:05

16 A Not with anybody.

17 Q Okay. Well, thank you for your time.

18 MR. BRAUSA: I pass the witness, subject
19 to recross.

20 EXAMINATION 01:05

21 MR. JENSEN: Thank you.

22 BY MR. JENSEN:

23 Q Good afternoon, Mr. Welch. I think I just
24 have one topic that I wanted to address with you.

25 A Okay. 01:05

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1 Q And do you have Exhibit 1013 from the '228 01:06
2 proceeding?

3 A I do. It's right here.

4 Q Could you turn to Paragraph 239.

5 A Yes, I have that. 01:06

6 Q And do you recall being asked some
7 questions by patent owner's counsel about this
8 paragraph and the figure?

9 A I do.

10 Q Was Paragraph 239 something that you 01:07
11 discussed in your reply declaration?

12 A Not to the best of my memory, no.

13 Q In preparing for today's deposition, did
14 you have any reason to review Paragraph 239?

15 MR. BRAUSA: Objection, leading. 01:07

16 THE WITNESS: No.

17 BY MR. JENSEN:

18 Q Did you review Paragraph 239 in
19 preparation for your deposition today?

20 A I did not. 01:07

21 Q And Paragraph 239 is in the section of
22 your original declaration addressing Claim 1 of the
23 '420 patent; correct?

24 A That's right.

25 Q Let's just put a bookmark on 01:07

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1 Paragraph 239. And let me direct your attention to 01:07
2 another section of your original declaration at
3 Paragraphs 175 to 202.

4 A Okay. I see that.

5 Q And what section of your declaration 01:08
6 contains Paragraphs 175 to 202?

7 A This appears all to be, and the entirety of
8 Section 9, motivation to modify Chang in the view of
9 Chang 2, and the knowledge of the POSITA -- of a
10 POSITA. 01:09

11 Q And is that the section of your
12 declaration where you set forth the proposed
13 modification that you used for the subsequent claim
14 analysis?

15 A Yes, that's correct. 01:09

16 MR. BRAUSA: Objection, leading.

17 BY MR. JENSEN:

18 Q And that section includes Paragraphs 192
19 and 193; correct?

20 A That is correct. 01:09

21 Q I think there was a suggestion by Counsel
22 that the description of the location of the
23 detection unit was only contained in your reply
24 declaration; is that correct?

25 MR. BRAUSA: Objection, mischaracterizes 01:09

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1 the question. 01:09

2 THE WITNESS: Yes, I think that's true.

3 BY MR. JENSEN:

4 Q Is it, in fact, the case that the

5 discussion of Paragraph -- well, strike that. 01:10

6 Do you discuss in Paragraphs 192 and 193

7 of your original declaration the various locations

8 where you propose locating the detection unit?

9 MR. BRAUSA: Objection, leading.

10 THE WITNESS: Yes, in 193 it says, [as 01:10

11 read]: This detection circuitry could be deployed

12 in several obvious ways. In the example above, it's

13 with the MUX.

14 In another obvious example it could be

15 separate and between dual-role port 50 and the MUX. 01:10

16 This location is obvious because it's the

17 first place signal for the downstream USB product.

18 And the third obvious location, it could

19 be located in the bridge to take advantage of

20 existing logic and circuitry. 01:10

21 And so on, yes.

22 BY MR. JENSEN:

23 Q And again, that's in your original

24 declaration, not just your reply declaration;

25 correct? 01:10

1	A	It's in both places it's part of	01:10
2		Paragraph 193.	

3 Q When you did your analysis of Claim 1 in
4 the '228 proceeding, did you in any way exclude from
5 your analysis any of those three locations for the 01:11
6 detection unit?

7 MR. BRAUSA: Objection, leading.

8 THE WITNESS: I did not. I did not
9 exclude all -- all of those possibilities going
10 forward from the original motivation to combine are 01:11
11 present in all of the analysis.

12 BY MR. JENSEN:

13 Q So if we return now to Paragraph 239, and
14 let me know when you're there.

15	A	I'm at 239.	01:11
----	---	-------------	-------

16 Q Counsel directed you to the first sentence
17 that says -- of Paragraph 239 that says, [as read]:
18 A POSITA would understand that one obvious
19 implementation of a detection circuit would be to
20 include it in the bridge.

21	Do you see that?
----	------------------

22	A	I do.
----	---	-------

23 Q In making that statement, were you
24 intending to exclude from your analysis the other
25 two locations of the detection unit that you 01:12

1 described when you set forth the proposed 01:12
2 combination?

3 MR. BRAUSA: Objection, form, leading.

4 THE WITNESS: I was not intending to
5 exclude other locations of the detection circuit. 01:12

6 MR. JENSEN: No further questions.

7 MR. BRAUSA: Nothing further.

8 MR. JENSEN: Okay.

9 THE VIDEOGRAPHER: We are off the record
10 at 1:12 p.m. And this concludes today's testimony
11 given by Eric Welch.

12 The total number of media used was three,
13 and will be retained by Veritext Legal Solutions.

14 (Proceedings concluded at 1:12 p.m.)
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1 1 I, LYNNE M. LEDANOIS, a Certified
2 2 Shorthand Reporter of the State of California, do
3 3 hereby certify:

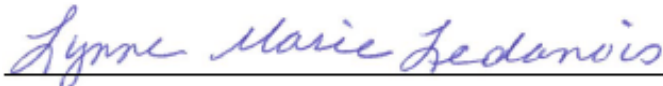
4 4 That the foregoing proceedings were taken
5 5 before me at the time and place herein set forth;
6 6 that a record of the proceedings was made by me
7 7 using machine shorthand which was thereafter
8 8 transcribed under my direction; that the foregoing
9 9 transcript is a true record of the testimony given.

10 10 Further, that if the foregoing pertains to
11 11 the original transcript of a deposition in a Federal
12 12 Case, before completion of the proceedings, review
13 13 of the transcript [] was [x] wasn't requested.

14 14 I further certify I am neither financially
15 15 interested in the action nor a relative or employee
16 16 of any attorney or party to this action.

17 17 IN WITNESS WHEREOF, I have this date
18 18 subscribed my name.

19 19
20 20 Dated: February 28, 2025

21 22
22 23
23 24 

24 LYNNE MARIE LEDANOIS

25 25 CSR No. 6811

1 NAME OF CASE: Microchip v Aptiv

2 DATE OF DEPOSITION: 1/27/25

3 NAME OF WITNESS: Eric Welch

4 Reason codes:

5 1. To clarify the record.

2. To conform to the facts.

6 3. To correct transcription errors.

7 Page ____ Line ____ Reason____

From _____ to_____

8

9 Page ____ Line ____ Reason____

From _____ to_____

10

11 Page ____ Line ____ Reason____

From _____ to_____

12

13 Page ____ Line ____ Reason____

From _____ to_____

14

15 Page ____ Line ____ Reason____

From _____ to_____

16

17 Page ____ Line ____ Reason____

From _____ to_____

18

19 Page ____ Line ____ Reason____

From _____ to_____

20

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22

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25

Signature of Deponent

Page 139

1 Adam R. Brausa, Esq.

2 abrausa@mofo.com

3 February 28, 2025

4 RE: Microchip Technology Inc. v. Aptiv Technologies AG

5 2/27/2025, Eric Welch (Job No. 7176178)

6 The above-referenced transcript has been

7 completed by Veritext Legal Solutions and

8 review of the transcript is being handled as follows:

9 ___ Per CA State Code (CCP 2025.520 (a)-(e)) - Contact Veritext
10 to schedule a time to review the original transcript at
11 a Veritext office.

12 ___ Per CA State Code (CCP 2025.520 (a)-(e)) - Locked .PDF
13 Transcript - The witness should review the transcript and
14 make any necessary corrections on the errata pages included
15 below, notating the page and line number of the corrections.
16 The witness should then sign and date the errata and penalty
17 of perjury pages and return the completed pages to all
18 appearing counsel within the period of time determined at
19 the deposition or provided by the Code of Civil Procedure.
20 Contact Veritext when the sealed original is required.

21 ___ Waiving the CA Code of Civil Procedure per Stipulation of
22 Counsel - Original transcript to be released for signature
23 as determined at the deposition.

24 ___ Signature Waived - Reading & Signature was waived at the
25 time of the deposition.

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2 Transcript - The witness should review the transcript and
3 make any necessary corrections on the errata pages included
4 below, notating the page and line number of the corrections.
5 The witness should then sign and date the errata and penalty
6 of perjury pages and return the completed pages to all
7 appearing counsel within the period of time determined at
8 the deposition or provided by the Federal Rules.
9 _X_ Federal R&S Not Requested - Reading & Signature was not
10 requested before the completion of the deposition.

1 Microchip Technology Inc. v. Aptiv Technologies AG
2 Eric Welch (Job No. 7176178)

3 E R R A T A S H E E T

4 PAGE_____ LINE_____ CHANGE_____

5 _____

6 REASON_____

7 PAGE_____ LINE_____ CHANGE_____

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9 REASON_____

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18 REASON_____

19 PAGE_____ LINE_____ CHANGE_____

20 _____

21 REASON_____

22 _____

23 _____

24 (Eric Welch)

Date

25

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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