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

_____)	
MARVELL SEMICONDUCTOR, INC.,)	
) Petitioner,	
) vs.	Case No.
) CREDO TECHNOLOGY GROUP, LTD.,)	IPR2025-01218
) Patent Owner.	
_____)	

DEPOSITION OF MICHAEL CHEN, Ph.D.
LOS ANGELES, CALIFORNIA
WEDNESDAY, APRIL 29, 2026

Reported Stenographically By:
Cody Knacke, RDR, CSR No. 13691

1 DEPOSITION OF MICHAEL CHEN, Ph.D., taken
2 before Cody Knacke, RDR, CSR No. 13691, a Certified
3 Shorthand Reporter for the State of California,
4 commencing on Wednesday, April 29, 2026, at
5 9:07 a.m., at 350 South Grand Avenue, 40th Floor,
6 Los Angeles, California.

7

8

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1 I - N - D - E - X

2 EXAMINATION BY: PAGE
3 BY MR. DaMARIO 5

4

5 * * * *

6

E - X - H - I - B - I - T - S

7

8 MARKED DESCRIPTION PAGE

9

Exhibit 1001 U. S. Patent No. 10,877,233, 11
Dai, et al.

10 Exhibit 1003 Declaration of Michael S. Chen 12
(IPR2025-01218)

11

12 Exhibit 1004 U. S. Patent No. 9,882,706, 12
Lugthart, et al.

13 Exhibit 1005 U. S. Patent No. 7,233,617, 12
Gorecki

14

15 Exhibit 1006 U. S. Patent No. 8,516,238, 12
Cornelius, et al.

16 Exhibit 1007 High-Speed Serial Bus Repeater 12
Primer, Revision 1.2, Oct. 2015

17

18 Exhibit 1008 Article, Why Thunderbolt cables 13
will be expensive until 2013

19 Exhibit 1009 Intersil article, 10.3125 Gb/s 13
Retiming Dual-Channel
20 Transceiver

21 Exhibit 1011 Quick Reference Guide SFP+ High 13
Speed Copper Cable Assemblies

22

23 Exhibit 1012 Cisco 40GBASE QSFP Modules Data 13
Sheet

24 Exhibit 1013 Article, Intel details 13
Thunderbolt, says Apple has full
25 year head start

1	E - X - H - I - B - I - T - S		
2	(Continued)		
3	MARKED	DESCRIPTION	PAGE
4	Exhibit 1014	Article, Intel: Apple	13
5		Transferring Thunderbolt	
		Trademark To Us	
6	Exhibit 1015	Article, Intel's Codename Light	13
7		Peak Launches as Thunderbolt	
8	Exhibit 1016	Article, The technology inside	13
		Apple's \$50 Thunderbolt cable	
9	Exhibit 1019	Screenshot of video description	13
10		10G SFP+ to SFP+ DAC Direct	
		Attach Copper Cable FS	
11	Exhibit 1026	Article, How to Reduce Jitter	13
12		and Improve Signal Integrity in	
		Source and Sink System Designs	
		Supporting HDMI 2.0	

QUESTIONS INSTRUCTED NOT TO ANSWER

None.

INFORMATION REQUESTED

None.

1 LOS ANGELES, CALIFORNIA; WEDNESDAY, APRIL 29, 2026

2 9:07 A.M.

3 THE STENOGRAPHER: This is the deposition
4 of Michael Chen in the matter of Marvell Technology,
5 Inc. versus Credo Technology Group Holding.

6 If counsel would please introduce
7 themselves.

8 MR. LIANG: Jeffrey Liang for Petitioner
9 Marvell.

10 MR. DaMARIO: Tom DaMario from Benesch on
11 behalf of Patent Owner Credo Technology.

12 THE STENOGRAPHER: This is Cody Knacke,
13 CSR 13691. This deposition is being recorded
14 stenographically.

15 MICHAEL CHEN, Ph.D.,
16 called as a witness, having been first duly sworn,
17 testified as follows:

18 EXAMINATION

19 BY MR. DaMARIO:

20 Q. Thank you. Maybe we could just go through
21 some housekeeping first.

22 So just for the record, can you please
23 state and spell your name.

24 A. Sure. I'm Michael Chen, M-I-C-H-A-E-L,
25 Chen, C-H-E-N.

1 Q. Thank you.

2 As we just did introductions, my name is
3 Tom DaMario. I represent the patent owner in this
4 case.

5 Can you tell me, have you ever been deposed
6 before, Dr. Chen?

7 A. Yes.

8 Q. Can you give me an estimate about how many
9 times you've been deposed?

10 A. I've been doing this a few years, a few
11 times. I don't recall the exact numbers, but I
12 think in the past year or two years, I think there
13 were, I don't know, maybe three times, four times.

14 Oh, I did one just last month, so the most
15 recent one that I remember, yeah.

16 Q. Okay. Just so I'm clear, when you say
17 you've been doing this, you've been acting as an
18 expert witness, is that what you mean?

19 A. That's right.

20 Q. And you said you've been acting as an
21 expert witness for about three years or so?

22 A. Oh, I think it's more than that. Let me
23 try to remember. I think probably around the time
24 of COVID.

25 Q. Okay.

1 A. Or right... a little bit before COVID,
2 something like that, yeah. Basically something
3 related to COVID, yeah.

4 Q. Sorry. I didn't mean to speak over you
5 earlier. And I guess that leads me to something.
6 Just because we have the stenographer here, I'll do
7 my best not to speak over you and let you finish
8 your sentence, answers, and I would ask the same of
9 you as well.

10 A. Sure.

11 Q. And so I'm sorry, in -- you know, since
12 around 2019, you said you've been deposed maybe
13 three or four times? Is that accurate?

14 A. Oh, three or four times, I think that's
15 what I meant in the last couple years.

16 Q. Okay.

17 A. Yeah, yeah.

18 Q. Do you have an estimate of how many times
19 you've been deposed since 2019?

20 A. I don't recall.

21 Q. Okay.

22 A. It's been a long time, yeah.

23 Q. I assume it's more than three or four
24 times?

25 A. I think that should be true, yeah.

1 Q. Okay. Is it closer to ten times? Would
2 that be accurate?

3 A. It might be. Maybe less. Like I said,
4 it's been a long time.

5 Q. That's okay.

6 A. Yeah.

7 Q. Of the times that you've been deposed, has
8 it -- how many of those times have been in
9 connection with an inter partes review proceeding,
10 or IPR?

11 A. If I remember correctly, most of them are
12 related to IPR.

13 Q. Okay.

14 A. The case was always district court
15 litigation.

16 Q. Was the district court litigation that
17 you're referring to part of a patent case or was
18 that a different subject matter altogether?

19 A. I believe that's different. It's not a
20 patent case.

21 Q. Were you acting as an expert witness in
22 that case as well?

23 A. Yeah, I went to the court to testify, yeah.

24 Q. Okay. How many times have you testified in
25 court?

1 A. That was one time.

2 Q. So it sounds like you're relatively
3 familiar with the deposition proceedings, having sat
4 through a number of them. I'm going to go over a
5 couple ground rules but same general rules, I'm
6 sure, will apply.

7 So first off, there may be times -- I'm
8 obviously going to ask you a number of questions. I
9 will finish my question and then let you finish your
10 answer before I ask you another question.

11 If you don't understand the question for
12 some reason, can we agree that you'll ask for
13 clarification?

14 A. That makes sense.

15 Q. Great.

16 I fully expect this will be a very quick
17 deposition, but we can take breaks as needed. So
18 just let me know if you'd like a break and, you
19 know, we'll work that in.

20 I guess the only thing that I ask is, if
21 there's a question pending when you need to take a
22 break, let's just answer that question and then we
23 can take a break.

24 A. Sure.

25 Q. Is there any reason that you can't provide

1 truthful testimony today?

2 A. No.

3 Q. Maybe we can start with a little bit of
4 your preparation for today's deposition.

5 Can you tell me, do you remember when you
6 started working on this matter?

7 A. This one I think was sometime last year.
8 All I remember is around summertime.

9 Q. Yeah.

10 A. It was warm. Yeah, that's all I remember.
11 So I think it was around summertime, yeah, last
12 year.

13 Q. Okay. And actually, before we get into
14 that, I see you have two binders in front of you.
15 Can you tell me what's in those binders?

16 A. Sure. Yeah, I think, for example, by the
17 ones, I think those are the material that's, you
18 know, including my report. And the material
19 actually involved in this case -- patents, prior
20 art, patents, exhibits that I think I cited in my
21 report.

22 Q. Okay. Do you mind if I -- well, actually,
23 before that, are there any of your own markings in
24 either of those binders?

25 A. No.

1 Q. Okay. So all of the documents that are in
2 those two binders have been submitted in this case?
3 Is that correct?

4 A. Yeah, I think so.

5 Q. And they're in the same form in which they
6 were submitted in this case; is that right?

7 A. I think so.

8 Q. Do you mind if I quickly take a look at
9 those binders? I'm happy to use those as exhibits,
10 I just want to quickly take a look, so we speed
11 things up.

12 Thank you, Dr. Chen.

13 A. Sure.

14 Q. Dr. Chen, if you could open Binder Number 1
15 for me, please, to the title page, or the cover
16 page.

17 A. Sure.

18 Q. Thank you.

19 A. Sure.

20 Q. Just for the record, and please correct me
21 if I'm wrong, Binder Number 1 contains Exhibit 1001,
22 which is a copy of the '233 patent.

23 (Exhibit 1001 was marked.)

24 MR. DaMARIO: Exhibit 1003, which is a copy
25 of the declaration that you submitted in this case

1 that is dated August 1, 2025.

2 (Exhibit 1003 was marked.)

3 (Stenographer clarification.)

4 MR. DaMARIO: Exhibit 1004 in this
5 proceeding, which is a copy of the reference
6 referred to as Lugthart.

7 (Exhibit 1004 was marked.)

8 MR. DaMARIO: Exhibit 1005, which is a copy
9 of the reference referred to as Gorecki.

10 (Exhibit 1005 was marked.)

11 MR. DaMARIO: Exhibit 1006, which is a copy
12 of the reference referred to as Cornelius.

13 (Exhibit 1006 was marked.)

14 MR. DaMARIO: And Exhibit 1007, which is a
15 copy of the reference referred to as Samaan,
16 S-A-M-A-A-N.

17 (Exhibit 1007 was marked.)

18 BY MR. DaMARIO:

19 Q. Is that correct?

20 A. That is correct.

21 Q. And for the record -- you can close
22 Binder 1 for now.

23 If you open Binder 2 to the title page, can
24 you read a list of -- you don't have to read the
25 titles, but just the exhibit numbers for the record.

1 A. Sure.

2 MR. DaMARIO: The first one is

3 Exhibit 1008.

4 (Exhibit 1008 was marked.)

5 MR. DaMARIO: Second one is Exhibit 1009.

6 (Exhibit 1009 was marked.)

7 MR. DaMARIO: Third one is Exhibit 1011.

8 (Exhibit 1011 was marked.)

9 MR. DaMARIO: The fourth one is

10 Exhibit 1012.

11 (Exhibit 1012 was marked.)

12 MR. DaMARIO: Number 5 is Exhibit 1013.

13 (Exhibit 1013 was marked.)

14 MR. DaMARIO: Number 6 is Exhibit 1014.

15 (Exhibit 1014 was marked.)

16 MR. DaMARIO: Number 7 is Exhibit 1015.

17 (Exhibit 1015 was marked.)

18 MR. DaMARIO: The eighth one is

19 Exhibit 1016.

20 (Exhibit 1016 was marked.)

21 MR. DaMARIO: The ninth one is

22 Exhibit 1019.

23 (Exhibit 1019 was marked.)

24 MR. DaMARIO: The last one is Exhibit 1026.

25 (Exhibit 1026 was marked.)

1 MR. DaMARIO: Thank you, Dr. Chen.

2 Can we go off the record for just a minute.

3 MR. LIANG: Sure.

4 THE STENOGRAPHER: Off the record.

5 (Recess.)

6 MR. DaMARIO: We can go back on the record.

7 BY MR. DaMARIO:

8 Q. Dr. Chen, during the break, we labeled each
9 of the exhibits that you referenced earlier as
10 exhibits in this deposition.

11 The exhibit numbers that you referenced
12 earlier correspond to the exhibit numbers that they
13 were labeled with as part of this deposition.

14 So just going back to the question that I
15 asked earlier, I asked when you started working on
16 this matter. You think it was sometime around
17 summer of 2025; is that correct?

18 A. That is what I remember.

19 Q. Okay. Your declaration that you submitted
20 in this proceeding, which is Exhibit 1003, is dated
21 August 1, 2025; is that correct?

22 I'll refer you to page 150 of that exhibit,
23 if that helps.

24 A. Yeah. That's right, Counsel. Yep, I do
25 see that, August 2025.

1 Q. Okay. Does that refresh your memory as to
2 when you started working on this matter?

3 A. So for sure it is summertime. Yeah. I
4 couldn't remember the exact time that we started.
5 It could be July that we started the office. Or it
6 could be June. I just don't recall the exact time.

7 Q. Okay. Do you remember how much time
8 approximately you spent on this matter to date?

9 A. To date? So from the beginning to now?

10 Q. Correct. Since the beginning till today.

11 A. Yeah. I think it's a lot of time, numerous
12 hours spent into all this preparation, yeah,
13 documents.

14 Q. If you had to put a number on that, would
15 you be able to provide an estimate?

16 A. Yeah, I don't recall the exact hours, but I
17 wouldn't be surprised if that's tens hours or it
18 could be even more than that. But I do remember it
19 is — I feel there is a lot of hours going into
20 this.

21 Q. So tens of hours or more? Is that correct?

22 A. I think so.

23 Q. Okay. Is it more than 50 hours?

24 A. I think that could be more than 50 hours,
25 yeah.

1 Q. More than 70 hours?

2 A. It is possible.

3 Q. Okay. Of the time that you spent on this
4 matter, how much of that time did you spend on your
5 declaration that's in front of you?

6 A. Yeah. So if that goes back to last summer,
7 basically all the time was spent for that
8 declaration report. Yeah, I think most of the time
9 just go there, you know, review the arts, review the
10 patent, form my opinions, you know, things like
11 that.

12 Q. So is it fair to say that other than the
13 time that you've spent preparing for today's
14 deposition, the remainder of that time that you
15 spent on this matter was in preparation of your
16 declaration?

17 A. I think that's fair to say that, yeah.

18 Q. Okay. What did you do to prepare for the
19 deposition today?

20 MR. LIANG: And I caution you not to reveal
21 the contents of any of our conversations, but you
22 can answer in general in terms of at a high level.

23 THE WITNESS: Sure.

24 For today's deposition, I do have a couple
25 meetings with the counsels. I reviewed my report.

1 It's been a while. And I need to refresh what I
2 provided in the report.

3 BY MR. DaMARIO:

4 Q. So you said you met with counsel more than
5 once? Is that correct?

6 A. Yeah, I think more than once.

7 Q. Was it -- I think you said a couple times.

8 A. Couple times.

9 Q. Was it more than two times?

10 A. It could be two, it could be three, around
11 that number.

12 Q. Two or three times?

13 A. I think so, yeah.

14 Q. Okay. Do you remember when you met with
15 counsel those two or three times?

16 A. Oh, it's very recent. So I think most of
17 the meetings was last week. And of course this week
18 also.

19 Q. So the meetings started last week, and also
20 you had one or two meetings this week?

21 A. This week I believe -- today is Wednesday;
22 right?

23 Q. Correct.

24 A. Yeah, I think this week we just meet once.

25 Q. Okay. But you had at least one or two

1 meetings last week?

2 A. That sounds about right, yeah.

3 Q. Okay. And when you refer to counsel, are
4 you referring to Mr. Liang?

5 A. Correct. So Mr. Liang, and I think there
6 was another counsel I also met.

7 Q. Do you remember who that was?

8 A. I think it was a Ms. Zhang.

9 Q. Oh, okay.

10 A. Yeah.

11 Q. Other than counsel for Marvell, did you
12 meet with anyone else in preparation of your
13 deposition today?

14 A. No.

15 Q. Did you speak with anyone from
16 TE Connectivity Corporation?

17 A. No.

18 Q. Did you speak with anyone from
19 Molex Corporation?

20 A. No.

21 Q. Did you speak with anyone from
22 Amphenol Corporation?

23 A. No.

24 Q. Did you speak with anyone from Golex?

25 A. No.

1 Q. Okay. Prior to this case, have you worked
2 with or for Marvell, the petitioner in this case?

3 A. So I'm a university professor. I have
4 research projects. And I -- from time to time I do
5 interact with Marvell due to the vicinity of our
6 area of interest.

7 Q. Your interactions with Marvell are in your
8 capacity as a -- were in your capacity as a
9 university professor; is that correct?

10 A. That's correct.

11 Q. Did you have any interactions with Marvell
12 outside of this case as a -- in your capacity as a
13 consultant?

14 A. Consultant. No, I don't think so.

15 Q. If you turn to your report, which is
16 Exhibit 1003, at Appendix 2, which I believe is on
17 page 166 to 167.

18 Let me know once you're there, please.

19 A. Counsel, I'm there.

20 Q. I think earlier you mentioned you reviewed
21 your declaration and the documents cited therein in
22 preparation for today's deposition.

23 Did you review any documents that are
24 outside of your materials considered list?

25 A. So, Counsel, I think documents I reviewed

1 are all within the scope of this.

2 Q. Okay. Thank you.

3 So staying with your declaration, taking a
4 step back.

5 If you need to refer to -- if I ask you a
6 question regarding your declaration or any other
7 documents and you need to refer to other documents
8 in order to answer the question, that's fine. You
9 obviously have a number of documents in front of
10 you. Please feel free to reference them as you
11 need.

12 Can you please just let me know which
13 document you're looking at if you're referring -- if
14 you're reviewing another document?

15 A. I will.

16 Q. Thank you.

17 So at a high level, in this case you
18 analyzed the claims of U.S. patent number
19 10,877,233.

20 Does that sound right?

21 A. That is correct.

22 Q. If I refer to that as the '233 patent, will
23 you know what I'm referring to?

24 A. I think I will understand you.

25 Q. Okay. And that's Exhibit 1001; correct?

1 A. That is correct.

2 Q. Okay. And you opine that certain
3 challenged claims in the proceeding are unpatentable
4 based on certain prior art references that you
5 included in your declaration; does that sound right?

6 A. That is correct.

7 Q. And all of your opinions in this case are
8 provided in Exhibit 1003, which is your declaration;
9 is that right?

10 A. That is correct.

11 Q. Okay. I want to kind of go through various
12 sections of your declaration, if we could. I'm
13 going to -- I'll direct you to those sections, but
14 if you want to refer to other sections, please feel
15 free.

16 The first section that I want to review
17 starts on page 11, paragraph 11.

18 A. It comes in on page 11.

19 Q. So the section that I'm referring to starts
20 at paragraph 11 and continues on through
21 paragraph 18.

22 But in general this section discusses
23 pre-equalization.

24 Is that fair? A fair assessment?

25 A. I think it is fair. The section title is

1 actually Pre-Equalization.

2 Q. Okay. And in particular, you talk about
3 pre-equalization, you talk about different types of
4 pre-equalization.

5 In paragraph 15 in particular you talk
6 about what's referred to as a finite impulse
7 response, or FIR filter.

8 Does that sound accurate?

9 A. Counsel, yeah, in reading the paragraph 15,
10 it does talk about the FIR filter.

11 Q. Okay. And use of an FIR filter is one form
12 of pre-equalization; is that correct?

13 A. Counsel, as I mentioned in my report, it is
14 often implemented, I mean the pre-equalization
15 transmitters, is often implemented using finite
16 impulse response filter, and that is what we refer
17 as FIR filter.

18 Q. Okay. So an FIR filter is one
19 implementation of pre-equalization; is that right?

20 A. It is one implementation.

21 Q. Okay.

22 A. As I mentioned in the report.

23 Q. Are there other implementations of
24 pre-equalization?

25 A. Oftentimes — as I actually already

1 mentioned in the report, oftentimes it is using the
2 FIR, so you have multiple taps of the coefficient.

3 That is the one that, you know, we usually
4 see in the pre-equalization implementation.

5 Q. I understand from your report that
6 that's -- it sounds like that's the most common form
7 of pre-equalization.

8 Are there other forms of pre-equalization?

9 A. I think from what I recall, yeah, most of
10 the implementations that I can think of at this
11 moment, they are all in the FIR filters format. But
12 as you can see, you know, here the key with
13 pre-equalization is to provide some kind of
14 frequency response shaping. So something that can
15 implement that response, you know, is a form of
16 pre-equalization. But as I said, you know, the most
17 common implementation is FIR filter.

18 Q. So I want to make sure I understand your
19 response.

20 As you sit here today, FIR filter is the
21 only specific form of pre-equalization that you can
22 think of at this moment?

23 A. Sitting here, you know, what that -- come
24 to me and also what I show in the report is the FIR
25 filter, because it is the most common way that we

1 use in the art to implement -- to provide that
2 pre-equalization.

3 Q. Okay. And you can't think of any other
4 forms of pre-equalization as you sit here today?

5 A. The form that I think that a POSITA would
6 consider makes more sense, the common practice is
7 the FIR filter.

8 Q. I didn't -- I want to make sure that -- I
9 don't want to limit you to just, you know, the
10 '233 patent or, you know, what a POSITA would know.
11 I'm just curious as to whether you can think of any
12 other pre-equalization methods other than an FIR
13 filter.

14 A. If there's an embodiment that I can see,
15 you know, that provides this frequency shaping, as I
16 just mentioned, that -- I understand that can be a
17 form of pre-equalization.

18 Q. Okay. And I realize that that's what, you
19 know, pre-equalization -- frequency shaping is a
20 characteristic of pre-equalization. Can you think
21 of anything other than an FIR filter that performs
22 frequency shaping in the context of
23 pre-equalization?

24 A. There could be ways to provide that
25 frequency shaping, but as I said, you know, in this

1 context, in this area, the most common way that I've
2 seen is using an FIR, which means you have different
3 taps, you have coefficient to perform that
4 pre-equalization.

5 Q. Okay. Have you heard of the term called a
6 feed-forward equalizer, commonly referred to as FFE?

7 A. I have heard about that.

8 Q. Okay. Have you heard of a -- something
9 called a decision feedback equalizer, also referred
10 to as a DFE?

11 A. I have heard that.

12 Q. Are those forms of pre-equalization?

13 A. They are a form of equalization.

14 Q. Okay.

15 A. So because there's a transmitter, there's a
16 receiver. So, Counsel, the one that you mentioned,
17 usually that's on the receiver equalization.

18 Q. Is pre-equalization always conducted on the
19 receiver side?

20 A. So, Counsel, as I show also -- showed in my
21 report, pre-equalization usually is what -- a POSITA
22 understands is, you know, they consider that in the
23 transmitters because the transmitter is in charge of
24 transmitting the signal.

25 So if you provide that equalization, you

1 pre-equalize it before you even send it out. I
2 think that's usually how a POSITA would understand;
3 that equalization would provide at the transmitter's
4 side, is what we refer to as pre-equalization.

5 Q. Sorry. I think I asked the wrong question
6 earlier. Let me try it again.

7 So is pre-equalization always conducted on
8 the transmitter side?

9 A. Counsel, I think I already answered that
10 question. There are equalization that we provide
11 into this communication -- high-speed communication
12 link, and there may be some equalization show up in
13 the transmitter side because you do that before you
14 transmit the signal. That's why we call that as a
15 pre-equalization.

16 (Stenographer clarification.)

17 THE STENOGRAPHER: If I can ask everyone to
18 speak a little more loudly.

19 MR. DaMARIO: Will do.

20 THE STENOGRAPHER: Thank you.

21 BY MR. DaMARIO:

22 Q. So let me ask this a different way.

23 If you have equalization on the receiver
24 side, that is by definition not pre-equalization; is
25 that correct?

1 A. So POSITA would understand this is part of
2 equalization. Usually what POSITA would consider
3 pre-equalization is because the reason I just
4 mentioned. Before you transmit that data or the
5 signals, you perform this equalization. So you
6 pre-equalize the signal.

7 So I think that is what a POSITA would
8 understand in our field.

9 Q. And I guess that happens on the transmitter
10 side. I'm asking about the receiver side.

11 Is there any form of pre-equalization on
12 the receiver side that you're aware of?

13 A. Counsel, as I mentioned here, you know, the
14 equalization transmitter or receiver, like you are
15 mentioning the receivers, they essentially are doing
16 the noise -- sorry -- frequency shaping.

17 So as long as you are doing this, you are
18 in a form of equalization. The difference here is
19 that, you know, if you do that before you transmit
20 the signals, that's what POSITA usually understands
21 that as you do pre-equalization.

22 Q. Okay.

23 A. Yeah.

24 Q. Thank you.

25 There was another section of your report

1 that I really just wanted clarification on.

2 So if you could turn to paragraph 36 and
3 let me know when you're there.

4 A. Counsel, I'm at paragraph 36.

5 Q. Paragraph 36 provides just a high-level
6 overview of all of the invalidity grounds that you
7 reference in your report; is that accurate?

8 A. Counsel, that is accurate.

9 Q. Okay. I'd like to quickly look at Ground 1
10 if we could in the table that starts on page 22 and
11 spills over to page 23.

12 Ground 1 has a statutory basis of
13 Section 103 and the prior art referenced is
14 Lugthart.

15 Do you see that?

16 A. Counsel, I see that.

17 Q. And the challenged claims with respect to
18 Ground 1 are Claims 1, 6, 8, 13, and 15.

19 Did I read that correctly?

20 A. Counsel, I think that is correct.

21 Q. Claims 1, 8, and 15 are independent claims;
22 is that right?

23 A. Counsel, yeah, Claim 1, 8, 15 are
24 identical.

25 Q. And Claims 6 and 13 are dependent claims.

1 Do you see that?

2 A. Counsel, I think that is correct. Claims 6
3 and 13 are dependent claims.

4 Q. Okay. If I could turn your attention to
5 Claim 6 of the '233 patent.

6 There's a listing of claims in Appendix 3
7 of your report -- or feel free to refer to the
8 patent itself.

9 A. Counsel, you're referring to Claim 6?

10 Q. Yes.

11 A. Yep, I see that on my report, yeah. I do
12 have Claim 6.

13 Q. So that's a dependent claim that depends
14 from Claim 4 of the '233 patent.

15 Do you agree with that?

16 A. Yeah, Counsel, I see that. It's the
17 dependent claim on Claim 4.

18 Q. And in turn, Claim 4 depends from Claim 3
19 of the '233 patent.

20 Do you see that?

21 A. Counsel, I see that Claim 4 is dependent on
22 Claim 3.

23 Q. Okay. I just want -- I want to make sure I
24 understand your basis for Ground 1.

25 You're not suggesting that Lugthart

1 independently teaches Claims 3 or 4 of the
2 '233 patent, are you?

3 A. Counsel, did you ask Claim 3 and Claim 4?

4 Q. I'm asking you whether there are any
5 opinions in your declaration that Lugthart alone
6 teaches Claims 3 or Claim 4.

7 A. Counsel, I see that in my report, I use
8 Ground 2 to address that Claim 3 and Claim 4, which
9 is a combination of Lugthart and Gorecki.

10 Q. Thank you. My question's a little bit
11 different.

12 I'm curious as to whether there are any
13 opinions in your report that Lugthart alone teaches
14 Claims 3 or Claim 4.

15 A. I'm sorry, I thought I already answered the
16 questions. It's Ground 2, which is a combination of
17 the Lugthart and I think -- and Gorecki is the
18 second reference I use -- to form my opinions in
19 Claim 3 and Claim 4.

20 Q. Okay. Ground 2 is a combination of
21 Lugthart and Gorecki; correct?

22 A. Let me double-check.

23 Yes, Counsel, I believe that is correct.

24 Q. Okay. Are there any opinions in your
25 report that Lugthart alone, not in combination with

1 any other reference, teaches Claims 3 or Claim 4?

2 A. Yeah, Counsel, I think, as I explained
3 before, it is a combination of the Lugthart and the
4 Gorecki that I formed my opinion in Claim 3 and
5 Claim 4.

6 Q. So for Claims 3 and Claim 4, you need the
7 combination of Lugthart and Gorecki; is that
8 correct?

9 A. I did use the combination in Claim 3 and
10 Claim 4.

11 Q. Okay. And you're not aware of any opinions
12 in your report that do not use a combination of
13 Lugthart and Gorecki with respect to Claims 3 and
14 Claim 4?

15 A. Counsel, you can see in my report there
16 will be a section that I obviously used Lugthart to
17 explain and that's used in conjunction with the
18 Gorecki's teaching.

19 Q. Okay. I think we may be talking past each
20 other.

21 I just want to make sure that with respect
22 to Claims 3 and Claim 4, there are no opinions that
23 those are taught by only Lugthart.

24 A. Yeah, I think it's a combination, as I
25 mentioned; however, there will be paragraphs that I

1 show in section of this is just on the Lugthart
2 itself.

3 Q. Can you refer me to those paragraphs,
4 please?

5 A. For instance, in paragraph 99, you know,
6 here I offer my opinion which is based on "Lugthart
7 teaches that DRR devices are programmed to use the
8 transmit coefficient values, for example."

9 (Stenographer clarification.)

10 BY MR. DaMARIO:

11 Q. So when you refer to paragraph 99, you're
12 referring to the portion of dependent Claim 3 that
13 is allegedly taught by Lugthart; is that correct?

14 A. Counsel, this is the programming part of
15 this Claim 3.

16 Q. Okay. There are other parts of Claim 3
17 that Lugthart doesn't teach; correct?

18 A. So, Counsel, there are parts of this. I
19 did use the Gorecki, which is the second reference,
20 as I used for the combination to explain the other
21 parts of this claim.

22 Q. Okay. Thank you.

23 I want to turn your attention to Claim 13
24 of the '233 patent.

25 A. Counsel, you asked Claim 13? 13.

1 Q. Correct, 13, Claim 13.

2 A. Yep, I'm at Claim 13.

3 Q. Okay. Claim 13 depends from Claim 11; is
4 that correct?

5 A. Counsel, that is correct.

6 Q. And if you look at Claim 11, Claim 11
7 depends from Claim 10.

8 Do you see that?

9 A. Counsel, I see that Claim 11 is dependent
10 on Claim 10.

11 Q. Similar to the questions that we were
12 referring to with respect to earlier, you don't have
13 any opinions in your declaration that Lugthart alone
14 teaches either Claim 10 or 11; correct?

15 A. Counsel, did you ask Claim 10 and 11?

16 Q. That's correct.

17 A. 10 and 11.

18 Yes, Counsel, let's start on Claim 10. So
19 this one, the limitation is very similar to Claim 3.
20 So as we just went over this, that's using the
21 Ground 2 combination. So that is for Claim 10.

22 Q. So -- sorry. I didn't mean to interrupt
23 you.

24 Were you finished?

25 A. I think I finished.

1 Q. Okay. Let me make sure I understood.

2 So your analysis with respect to Claim 10
3 uses the Ground 2 combination of Lugthart and
4 Gorecki; correct?

5 A. Counsel, I think that is correct. Claim 3
6 used Ground 2.

7 Q. Maybe I can short-circuit this.

8 Your analysis for Claim 10 is the same as
9 it is for Claim 3; is that correct?

10 A. Counsel, as I mentioned in my report, there
11 is similarity between Claim 10 and Claim 3; so I
12 applied the same reason explained in Claim 3 and I
13 applied to Claim 10.

14 Q. Okay. And with respect to Dependent
15 Claim 11, you rely on the combination of Lugthart
16 and Gorecki; correct? You don't — there's no
17 opinion in your report that indicates that Lugthart
18 alone teaches Claim 11, is there?

19 A. So, Counsel, I see that this Claim 11, I
20 used Ground 2 to explain which is the combination of
21 Lugthart and Gorecki.

22 Q. Okay. Thank you.

23 Are you doing okay on time? Do you need a
24 break? I'm happy to keep going, but I'll want to
25 defer to you.

1 A. Yeah, it's about an hour. Maybe it would
2 be good to have a break, a short break.

3 Q. Sure. Let's take a five-, ten-minute
4 break.

5 THE STENOGRAPHER: Off the record.

6 (Recess.)

7 THE STENOGRAPHER: Back on the record.

8 BY MR. DaMARIO:

9 Q. Dr. Chen, I just have a few more questions
10 for you. Let me find my page number.

11 So I'm looking at your declaration at
12 paragraph 114.

13 Let me know once you're there.

14 A. Counsel, I'm at my report page 114.

15 Q. Sorry. If you could turn to paragraph 114.

16 A. Oh, sorry.

17 Q. Page 66. I may have misspoke.

18 A. I apologize.

19 Counsel, I'm at paragraph 114.

20 Q. Okay. Paragraphs 114 and 115 of your
21 declaration refer to Ground 3 in which you allege
22 that Samaan further teaches Claim 7.

23 Do you see that?

24 A. Counsel, I see that for paragraph 114, 115
25 is under that Ground 3 with Samaan.

1 Q. Okay. And in paragraph 115, you indicate
2 that the coefficients C-1 and C+1 can range from
3 0 to .25.

4 Do you see that?

5 A. Counsel, I see that C-1 and C+1 can range
6 from 0 to 0.25.

7 Q. And in paragraph 115 you state that, "C-1
8 and C+1 should both be set to 0 and that the only
9 remaining tap is the main cursor (data) sample."

10 Do you see that?

11 A. So, Counsel, I see here I say that when
12 both are 0, which refer to C-1 and C+1, then the
13 only remaining tap is the main cursor (data) sample,
14 which is -- yeah, that's what is explained in the
15 previous content is mathematically equivalent to
16 turning the pre-emphasis off. I see that.

17 Q. Okay. Say we set taps C-1 and C+1 to 0,
18 the main cursor data is still flowing through the
19 FIR filter; correct?

20 A. So what I said here is that when we set C-1
21 and C+1, the signal would flow through that C 0
22 path, which, Counsel, if you can see that figure
23 underneath, that paragraph 115, you see that red
24 circle, yeah, that's the path that will still pass
25 through the signals. And that's the main cursor

1 that I refer to.

2 Q. Okay. Looking at what's labeled Figure 22
3 in paragraph 115, that's a representation of an FIR
4 filter; correct?

5 A. Counsel, that figure, it shows the FIR
6 filter. Because I see the taps, I see the filter.

7 Q. Okay. I just want to make sure that I
8 understand.

9 Your opinion is not that the FIR filter
10 should be eliminated. It's that the taps C-1 and
11 C+1 should be set to 0; correct?

12 A. Counsel, what I say here is actually what I
13 just read, you know, out of my report. My opinion
14 formed here is that when we set C-1 and C+1 to be
15 off, it's equivalent mathematically to turn off that
16 pre-emphasis.

17 Q. Okay. And in the scenario where we have
18 C-1 and C+1 set to 0, the main cursor data sample
19 still flows through the FIR filter; correct?

20 A. Counsel, as I mentioned before, the data
21 would still flow through that C 0 signal path.

22 Q. Okay. Thank you.

23 I want to back up a little bit to
24 paragraphs 111, which is on page 65, through 113,
25 which is on page 66 of your report.

1 A. Counsel, you asked paragraph 113 and 111?

2 Q. Close. I'm referring to paragraph 111
3 through 113.

4 A. Oh. I see that.

5 Q. Okay. Paragraphs 111 through 113 refer to
6 your opinion on the same Claim 7, correct, only with
7 Gorecki, the Gorecki combination?

8 A. That is correct.

9 Q. Okay. And the same is true of Gorecki --
10 strike that.

11 The same analysis that we went through,
12 Samaan, is -- applies to your combination with
13 Gorecki; correct? We're talking about setting the
14 tap coefficients to 0?

15 A. Counsel, as I, you know, showed in my
16 reports, let's say paragraph starting 111, Gorecki
17 actually specifically pointed out that leading
18 and/or trailing taps may be turned off or disabled.
19 And turning off those leading and trailing tap, you
20 know, leaves only the main cursor tap and therefore
21 it's mathematically equivalent to performing normal
22 equalization.

23 Q. So in that combination, the main cursor tap
24 still flows through the FIR filter; correct?

25 A. Well, Counsel, as I also provide in my

1 report, because an FIR filter calculates the
2 weighted average when only the tap for the current
3 sample is enabled, the filter performs an average of
4 only a single sample itself, leaving only the
5 current sample. And that will be the scenario that
6 Gorecki teaches.

7 Q. Let me maybe rephrase it to make sure I
8 understand.

9 In paragraph 111, you talk about the
10 leading and trailing taps being turned off or
11 setting them to 0, as we saw with the Samaan
12 reference. But the main cursor tap is unaffected in
13 your combination; correct?

14 A. So, Counsel, the signal going through the
15 current sample in Gorecki, that one still would pass
16 through.

17 Q. Okay. The main cursor tap, the signal that
18 goes through the main cursor tap in Gorecki still
19 goes through the FIR filter; correct?

20 A. If we refer that main cursor tap as the
21 current samples, then that is the current sample
22 that is still enabled.

23 Q. And that signal still goes through the FIR
24 filter; correct?

25 A. Counsel, so the signal will go through

1 that -- the current sample will still go through
2 that signal path. I think that's what I would
3 understand.

4 Q. Okay. I want to turn to a different topic.

5 If I could direct you to Appendix 1 of your
6 report, which starts on page 151.

7 A. Counsel, did you say page 154?

8 Q. 151.

9 A. 151, sorry.

10 Yes, I'm at page 151.

11 Q. Appendix 1 is your CV; correct?

12 A. That is correct.

13 Q. Does -- as you sit here today, does the
14 Appendix 1 accurately reflect your education, work
15 experience, and relevant technical experience as it
16 relates to this proceeding?

17 A. Counsel, I do see this is indeed my CV and
18 that describes my background and all the expertise.

19 Q. Okay. Earlier today we talked about your
20 consulting experience, and it sounded like your
21 consulting experience started just before COVID,
22 around 2019.

23 I'm looking at page 152 at the bottom.

24 There's a heading labeled "Consulting Experience."

25 Do you see that?

1 A. I see that.

2 Q. And there's a bullet point that says "Legal
3 Consulting." And underneath that it says
4 "(2019–2022) Xilinx–ADI Litigation."

5 Do you see that?

6 A. I see that, Counsel.

7 Q. Does that refresh your recollection as to
8 when you started your consulting experience?

9 A. It does, yeah. That was the first case I
10 started working, and that's COVID.

11 Q. Thank you. Thank you.

12 In that ADI litigation, which party did you
13 represent?

14 A. I believe I represented the Xilinx side.

15 Q. And going on to the next page, page 153,
16 there are more instances where you acted as a legal
17 expert. There is an instance from 2023 to present
18 day involving Aptiv and Microchip.

19 Can you tell me which party you represented
20 in that instance?

21 A. Sure. The Aptiv case, I think that's the
22 side that I'm on.

23 Q. You represented Aptiv in that litigation?

24 A. Aptiv, Aptiv.

25 Q. And moving down, from 2023 to 2024, there

1 was a litigation involving ARM and Qualcomm. Can
2 you tell me which party you represented in that
3 litigation?

4 A. Sure. I'm on the ARM side.

5 Q. Did you represent ARM or did you represent
6 another party that was aligned with ARM?

7 A. If I recall, I think just ARM and Qualcomm,
8 so should be just ARM.

9 Q. Okay. You said ARM side, so I wasn't sure
10 if there were multiple parties on the ARM side. It
11 wasn't a trick question.

12 A. Sorry.

13 Q. It's okay.

14 So in that instance you represented ARM.

15 Moving down from 2025 to present, there is
16 an Apple and Vampire Labs consulting — or legal
17 expert engagement.

18 Can you tell me which party you
19 represented?

20 A. Sure. I'm on the Apple.

21 Q. Apple.

22 Moving down the list, there is an
23 engagement with BOE and Samsung.

24 Can you tell me which party you
25 represented?

1 A. Sure. I'm on the POE side. Sorry. I mean
2 BOE.

3 Q. And moving down there's a Marvell and Credo
4 engagement. I think I know which one you
5 represented in that case.

6 Moving to 2025 to present, there's a
7 Renesas and Monterey Research engagement.

8 Can you let me know which party you
9 represented?

10 A. Sure. Renesas.

11 Q. Moving down to the next bullet point,
12 there's a technical consulting engagement.

13 In that engagement, that doesn't involve a
14 legal proceeding; is that correct?

15 A. That is correct.

16 Q. Okay. Does the -- do the engagements that
17 we just went through represent all of the legal
18 consulting engagements that you've had?

19 A. So, Counsel, there is another one, I
20 mentioned, just last month. I think it's not listed
21 here.

22 Q. And can you let me know who the parties are
23 in that engagement?

24 A. I know I represent a company called Demi,
25 D-E-M-I. I apologize. I forgot the full name of

1 the company. And I also forgot what's the opposing
2 side.

3 Q. Okay. That's a recent engagement, though?

4 A. Correct.

5 Q. I didn't see it in your CV, but I just want
6 to confirm, you're not an attorney; correct?

7 A. Correct.

8 Q. And you're not a patent attorney?

9 A. Correct, no.

10 Q. Have you ever been involved in filing a
11 patent with the Patent and Trademark Office?

12 A. So I work at university, so our university
13 do have these patent offices. So sometimes we do
14 file patent through that legal offices on some of
15 our research products. That's to the extent that I
16 think related to what you just asked.

17 Q. Okay. But you weren't filing the patent
18 yourself. You were working with legal counsel in
19 that case; correct?

20 A. Not to myself, yes.

21 Q. Okay.

22 A. It's not allowed.

23 (Stenographer clarification.)

24 THE WITNESS: It's not allowed as a
25 university professor.

1 MR. DaMARIO: Dr. Chen, at this point I'll
2 pass the witness. I don't have any additional
3 questions for you at this time.

4 MR. LIANG: Nothing from me.

5 We can end the deposition.

6 (Deposition concluded at 10:32 a.m.)

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I hereby declare under penalty of perjury
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In witness thereof, I hereby subscribe my
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MICHAEL CHEN, Ph.D.

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3

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11 a full, complete, and true record of said
12 proceedings.

13 I further certify that I am not of counsel
14 or attorney for either or any of the parties in the
15 foregoing proceedings and caption named or in any
16 way interested in the outcome of the cause in said
17 caption.

18 The dismantling, unsealing, or unbinding of
19 the original transcript will render the reporter's
20 certificate null and void.

21 In witness whereof, I have hereunto set my
22 hand this day: April 30, 2026.

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24

25



CODY KNACKE, RDR, CSR No. 13691