

Deposition of  
**Marwan Hassoun, Ph.D., MS**  
February 18, 2025  
Volume II

Qualcomm  
vs.  
Network System Technologies



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| 14       | Minneapolis, Minnesota                         | 14       | Exhibit 2083 Declaration of Dr. Marwan 188       |
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| 16       |                                                | 16       | matter                                           |
| 17       |                                                | 17       | Exhibit 1001 United States Patent No.: 194       |
| 18       |                                                | 18       | 7,594,052 B2                                     |
| 19       |                                                | 19       | Exhibit 1052 The Authoritative Dictionary of 199 |
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| 22       | Reporter: Renee Combs Quinby, RDR, CRR, CA CSR | 22       | Telecom Dictionary entries                       |
| 23       | #11867, TX CSR #12184, MO CCR #1291, IL CSR    | 23       | Exhibit 1007 U.S. Patent Publication No.: US 228 |
| 24       | #084-004867                                    | 24       | 2002/0129173 A1                                  |
| 25       | Job No.: 10158454                              | 25       | Exhibit 1053 The Hierarchical Multi-Bank 232     |

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| 1        | REMOTE APPEARANCES                           | 1        | DRAM: A High-Performance                          |
| 2        |                                              | 2        | Architecture for Memory                           |
| 3        | FOR THE PETITIONER:                          | 3        | Integrated with Processors                        |
| 4        | J. Derek Vandenburg, Esq.                    | 4        | Exhibit 1055 TMS320C6000 Technical Brief 237      |
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| 6        | Carlson Caspers Vandenburg & Lindquist, P.A. | 6        | Article                                           |
| 7        | 225 South Sixth Street, Suite 4200           | 7        | Exhibit 2068 9/11/24 Deposition of Dr. 252        |
| 8        | Minneapolis, MN 55402                        | 8        | Marwan Hassoun                                    |
| 9        | (612)436-9600                                | 9        | Exhibit 1005 "An Efficient On-Chip Network 264    |
| 10       | dvandenburg@carlsoncaspers.com               | 10       | Interface Offering Guaranteed                     |
| 11       | apederson@carlsoncaspers.com                 | 11       | Services, Shared-Memory                           |
| 12       | FOR THE PATENT OWNER:                        | 12       | Abstraction, and Flexible                         |
| 13       | Angelo J. Christopher, Esq.                  | 13       | Network Configuration" Paper                      |
| 14       | Peter Krusiewicz, Esq.                       | 14       | Exhibit 1006 Open Core Protocol 285               |
| 15       | Nixon Peabody LLP                            | 15       | Specification                                     |
| 16       | 70 West Madison Street, Suite 5200           | 16       | Exhibit 1052 The Authoritative Dictionary of 301  |
| 17       | Chicago, IL 60602                            | 17       | IEEE Standard Terms (Corrected)                   |
| 18       | (312)977-4391                                | 18       | (The original exhibits were provided to the court |
| 19       | achristopher@nixonpeabody.com                | 19       | reporter electronically to be attached to the     |
| 20       | pkrusiewicz@nixonpeabody.com                 | 20       | original and copies of the transcript.)           |
| 21       |                                              | 21       |                                                   |
| 22       |                                              | 22       |                                                   |
| 23       |                                              | 23       |                                                   |
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| 25       |                                              | 25       |                                                   |

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| 18 | APTUS MONITOR: Chris Landrum |
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1 UNITED STATES PATENT AND TRADEMARK OFFICE  
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD  
3 --o0o--  
4 QUALCOMM INCORPORATED, )  
5 )  
6 Petitioner, )  
7 )  
8 vs. ) U.S. Patent No. 7,594,052  
9 ) Inter Partes Review No.  
10 ) IPR2024-00343  
11 NETWORK SYSTEM )  
12 TECHNOLOGIES, LLC, )  
13 )  
14 Patent Owner. )  
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1 VIDEOCONFERENCE DEPOSITION OF MARWAN HASSOUN,  
2 Ph.D., MS, produced, sworn, and examined on Tuesday,  
3 February 18, 2025, with the witness appearing via  
4 videoconference, taken on behalf of the Patent  
5 Owner, before Renee Combs Quinby, RDR, CRR, CA CSR  
6 #11867, TX CSR #12184, MO CCR #1291, IL CSR  
7 #084-004867.  
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Page 161

1 --o0o--  
2 IT IS HEREBY STIPULATED AND AGREED by and  
3 between the parties that this deposition may be  
4 taken remotely in machine shorthand by RENEE COMBS  
5 QUINBY, a Certified Shorthand Reporter, and  
6 afterward transcribed into typewriting by agreement  
7 of counsel and consent of the witness.  
8 --o0o--  
9 P R O C E E D I N G S 9:07 a.m.  
10 MARWAN HASSOUN, Ph.D., MS,  
11 of lawful age, having been first duly sworn to  
12 testify to the truth, the whole truth, and nothing  
13 but the truth in the case aforesaid, was examined  
14 and testified as follows:  
15 --o0o--  
16 EXAMINATION  
17 BY MR. CHRISTOPHER:  
18 Q. Good morning. Can you please state  
19 your name for the record.  
20 A. Marwan Hassoun.  
21 Q. Thank you. Is there any reason why you  
22 cannot give complete, truthful, and accurate  
23 testimony today, Dr. Hassoun?  
24 A. No.  
25 Q. Okay. It's nice to see you again.

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1 Since we have gone through the deposition process  
2 before, I'm not going to spend our time going over  
3 the usual ground rules, although I do want to ask a  
4 couple questions about your setup since we're doing  
5 this remotely.  
6 Where are you physically located for  
7 today's deposition?  
8 A. At the Carlson Caspers offices in  
9 Minneapolis, Minnesota.  
10 Q. I'm guessing based on my video screen,  
11 is counsel for Petitioner Qualcomm with you in the  
12 room?  
13 A. Yes.  
14 Q. Is there anyone else in the room with  
15 you today for today's deposition?  
16 A. Two attorneys.  
17 Q. Who are the -- who are the attorneys?  
18 MR. PEDERSON: Aaron Pederson.  
19 MR. VANDENBURGH: And Derek  
20 Vandenburg.  
21 BY MR. CHRISTOPHER:  
22 Q. Okay. All right. Exhibits. I'm happy  
23 to put them in the Zoom chat, but if you have your  
24 own copies on your computer, I'm okay with you  
25 referring to those. What do you prefer?

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1 A. If you'd just give me what you need me  
2 to look at. I don't have a computer here. Thank  
3 you.  
4 Q. So here is a copy of your declaration.  
5 While I'm finding the second one, I'm going to put a  
6 copy of Exhibit 1003 in the Zoom chat.  
7 (Whereupon, Exhibit 1003 was  
8 marked for identification.)  
9 BY MR. CHRISTOPHER:  
10 Q. Let me know when you have that open.  
11 I've also put in the Zoom chat a copy of  
12 Exhibit 1030. We can just open both of those up.  
13 Let me know when you have them.  
14 (Whereupon, Exhibit 1030 was  
15 marked for identification.)  
16 THE WITNESS: We might have to go off  
17 the record here.  
18 MR. CHRISTOPHER: Let's go off the  
19 record.  
20 (Recess taken from 9:10 to 9:23.)  
21 BY MR. CHRISTOPHER:  
22 Q. Dr. Hassoun, are you able to open up a  
23 copy of Exhibit 1003 and Exhibit 1030?  
24 A. Yes.  
25 Q. Okay. Can you confirm for me that

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <p style="text-align: right;">Page 164</p> <p>1 Exhibit 1003 is a copy of your first declaration in<br/>2 this IPR proceeding?</p> <p>3 A. Yes, I can confirm that.</p> <p>4 Q. Okay. And just so we are on the same<br/>5 page in terms of terminology today, is it<br/>6 understandable to you if I refer to Exhibit 1003 as<br/>7 your first declaration?</p> <p>8 A. Yes. That's fine.</p> <p>9 Q. Perfect. And then do you recognize<br/>10 Exhibit 1030 as a copy of your second declaration in<br/>11 this IPR?</p> <p>12 A. Yes.</p> <p>13 Q. If you could scroll for me to the very<br/>14 last page of Exhibit 1030. Let me know when you're<br/>15 there.</p> <p>16 A. I'm there.</p> <p>17 Q. This declaration is dated January 17th,<br/>18 2025. Correct?</p> <p>19 A. Correct.</p> <p>20 Q. And is that your signature on the<br/>21 right-hand side of the last page in Exhibit 1030?</p> <p>22 A. Yes, it is.</p> <p>23 Q. Okay. How long did you spend preparing<br/>24 your second declaration?</p> <p>25 A. I don't -- I don't remember. I'm</p>                                                                          | <p style="text-align: right;">Page 166</p> <p>1 that a POSA would have been<br/>2 motivated, with a reasonable<br/>3 expectation of success, to combine<br/>4 Weber and Radulescu2004, in a way<br/>5 that meets all of the claimed<br/>6 limitations.<br/>7 Do you see that?</p> <p>8 A. Yes, I do.</p> <p>9 Q. Okay. And then in the third sentence<br/>10 of paragraph 89, you wrote, (quote as read):<br/>11 It would have been obvious to<br/>12 implement the combination on an<br/>13 integrated circuit for the reasons<br/>14 discussed above and in my first<br/>15 declaration with respect to Weber's<br/>16 disclosure of an integrated<br/>17 circuit.<br/>18 Do you see that?</p> <p>19 A. Yes.</p> <p>20 Q. Okay. You did not specifically assert<br/>21 in your first declaration that it would have been<br/>22 obvious to implement the Weber and Radulescu<br/>23 combination on a single integrated circuit, correct?</p> <p>24 A. No. That's not correct.</p> <p>25 Q. So your testimony is that you did</p>                                  |
| <p style="text-align: right;">Page 165</p> <p>1 trying to think of the time. I don't have a number<br/>2 in my head right now.</p> <p>3 Q. Can you at least give me an estimate,<br/>4 range of hours?</p> <p>5 A. Rough estimate, 40 to 50. But I'm<br/>6 not -- I'm not sure because it was over Christmas<br/>7 and Thanksgiving, so it's tough. But that would be<br/>8 an estimate.</p> <p>9 Q. Understood. Did you write your second<br/>10 declaration?</p> <p>11 A. Yes.</p> <p>12 Q. Perhaps to speed this along, I'll<br/>13 represent to you that you stated in your first<br/>14 declaration that you were being compensated at a<br/>15 rate of 650 an hour for your time. Did you apply<br/>16 the same hourly rate for your time working on the<br/>17 second declaration?</p> <p>18 A. Yes, I have.</p> <p>19 Q. Okay. I want to start today with<br/>20 Ground 4. Can you turn to paragraph 89 of your<br/>21 second declaration? Let me know when you're there.</p> <p>22 A. I'm there.</p> <p>23 Q. In paragraph 89, you wrote in the first<br/>24 sentence, (quote as read):<br/>25 In my first declaration, I opined</p> | <p style="text-align: right;">Page 167</p> <p>1 specifically assert that it would have been obvious<br/>2 to implement the Weber and Radulescu2004 combination<br/>3 on a single integrated circuit?</p> <p>4 A. Yes, I have.</p> <p>5 Q. Okay. In paragraph 89 you cited<br/>6 paragraphs 185, 191, 233, and 234 of your first<br/>7 declaration.<br/>8 Do you see that?</p> <p>9 A. I do.</p> <p>10 Q. Okay. Can you turn for me to paragraph<br/>11 185 of Exhibit 1003, your first declaration. It's<br/>12 on page 118 of the PDF.</p> <p>13 A. I'm -- that's fine. What was the<br/>14 paragraph number again? 185?</p> <p>15 Q. 185, correct.</p> <p>16 A. Okay. I'm there.</p> <p>17 Q. Paragraph 185 of your first declaration<br/>18 is in the Ground 3 section of your first<br/>19 declaration, correct?</p> <p>20 A. That is correct.</p> <p>21 Q. And Ground 3 is an anticipation ground,<br/>22 correct?</p> <p>23 A. That is correct.</p> <p>24 Q. Okay. Paragraph 191 of your first<br/>25 declaration which is on page 122 of the PDF is also</p> |

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| <p style="text-align: right;">Page 168</p> <p>1 in the Ground 3 section of your first declaration,<br/>2 correct?</p> <p>3 A. That is correct.</p> <p>4 Q. Okay. Turn to paragraph 233 of your<br/>5 first declaration. This is page 160 of the PDF.<br/>6 Let me know when you're there.</p> <p>7 A. I'm there.</p> <p>8 Q. Okay. You would agree that paragraph<br/>9 233 of your first declaration does not expressly<br/>10 mention implementing the Weber and Radulescu<br/>11 combination on a single integrated circuit, correct?</p> <p>12 A. I -- I disagree.</p> <p>13 Q. Well, you would agree that the words<br/>14 "single integrated circuit" don't appear in<br/>15 paragraph 233, correct?</p> <p>16 A. Paragraph 233 discusses meeting -- I<br/>17 quote, in a way that meets all of the claimed<br/>18 limitations, end of quote, which includes integrated<br/>19 circuit.</p> <p>20 Q. Understood. But that's not my<br/>21 question. Paragraph 233 doesn't actually use the<br/>22 words "integrated circuit," correct?</p> <p>23 A. The words don't -- are not in that<br/>24 paragraph, but that paragraph is setting up my<br/>25 discussion in this section regarding all the</p>                                                                       | <p style="text-align: right;">Page 170</p> <p>1 of ordinary skill in the art would understand is<br/>2 integrated circuits.</p> <p>3 Q. Understood. But you agree that<br/>4 paragraph 234 does not expressly state that<br/>5 Radulescu and Weber would be implemented on a single<br/>6 integrated circuit in your proposed combination. Do<br/>7 you agree with that?</p> <p>8 MR. VANDENBURGH: Objection. Asked and<br/>9 answered.</p> <p>10 THE WITNESS: I would have to disagree<br/>11 on that. There is discussion of network-on-chip<br/>12 here, and the section is all about the Weber and<br/>13 Radulescu combination, so it is part of the<br/>14 discussion about integrating both on a single<br/>15 integrated circuit.</p> <p>16 BY MR. CHRISTOPHER:</p> <p>17 Q. You would agree that paragraph 234<br/>18 doesn't mention Radulescu expressly, correct?</p> <p>19 A. Well, I'll -- I'll have to check the<br/>20 references in -- in the paragraph in order to answer<br/>21 that completely. But -- and I'm happy to do that.<br/>22 But regardless, in my opinion, it is in the section<br/>23 discussing the combination of Weber and Radulescu,<br/>24 so that's what the discussion is about here.</p> <p>25 Q. The Radulescu reference is Exhibit 1005</p> |
| <p style="text-align: right;">Page 169</p> <p>1 limitations -- all the claimed limitations.</p> <p>2 Q. Do you see paragraph 234 underneath<br/>3 paragraph 233?</p> <p>4 A. I do.</p> <p>5 Q. Paragraph 234 of your first declaration<br/>6 discusses the interconnect means claim limitation,<br/>7 correct?</p> <p>8 A. It does -- it does discuss the<br/>9 interconnect means. It also discusses on-chip<br/>10 implementation in on-chips and NoCs in that section.</p> <p>11 Q. But you would agree that paragraph 234<br/>12 does not expressly mention implementing the Weber<br/>13 and Radulescu combination on a single integrated<br/>14 circuit, correct?</p> <p>15 A. Well, the entire section is about<br/>16 implementation is the combination of Weber and<br/>17 Radulescu2004 as it pertains to all the claim<br/>18 elements, so there is discussion in this whole<br/>19 section on integrating both Radulescu and Weber on a<br/>20 single integrated circuit.</p> <p>21 And if you look, for example, in this<br/>22 section, there is discussion of networks-on-chip, a<br/>23 NoC, and then discussion of on-chip. So while the<br/>24 word "integrated circuit" doesn't show up in this<br/>25 paragraph, there is discussion of chips, which one</p> | <p style="text-align: right;">Page 171</p> <p>1 in this proceeding. Do you understand that?</p> <p>2 A. If you -- if you so stipulate. I still<br/>3 can't remember them all.</p> <p>4 Q. Sure. Fair enough. So I'll represent<br/>5 to you that the Radulescu2004 reference is<br/>6 Exhibit 1005 in the proceeding. You don't cite<br/>7 Exhibit 1005 in paragraph 234. Can we agree on<br/>8 that?</p> <p>9 A. I'll have to check the references back<br/>10 that I have because I do reference back to other<br/>11 sections. So to answer your question, I have to go<br/>12 check those.</p> <p>13 Q. Let me just move on. Let's go to<br/>14 paragraph 90 of your second declaration.</p> <p>15 A. Okay.</p> <p>16 Q. You beat me there. All right. In the<br/>17 first sentence of paragraph 90 of your second<br/>18 declaration you wrote, (quote as read):<br/>19 Dr. Bagherzadeh asserts that<br/>20 because Weber touts or otherwise<br/>21 provides benefits over traditional<br/>22 buses a POSITA would not have been<br/>23 motivated to combine Radulescu2004<br/>24 with Weber, because Weber already<br/>25 provides these benefits.</p>                                                                                                                          |

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| <p>Page 172</p> <p>1 Do you see that?</p> <p>2 A. I do.</p> <p>3 Q. You would agree that Weber does provide</p> <p>4 benefits over traditional buses, correct?</p> <p>5 A. Yes. I agree.</p> <p>6 Q. Okay. Next paragraph, paragraph 91,</p> <p>7 the first sentence, you wrote, (quote as read):</p> <p>8 Dr. Bagherzadeh also suggests that</p> <p>9 the potential disadvantages of</p> <p>10 Radulescu's -- Radulescu2004's NoC</p> <p>11 need to be considered.</p> <p>12 Do you see that?</p> <p>13 A. Yes.</p> <p>14 Q. You would agree that a POSITA would</p> <p>15 recognize that there are some potential</p> <p>16 disadvantages to using an NoC compared to a</p> <p>17 traditional bus, correct?</p> <p>18 A. Well, as I state in this paragraph, a</p> <p>19 POSITA would have tradeoffs to always make in order</p> <p>20 to implement the combination or to implement any</p> <p>21 system. And as I quote in my last sentence here, it</p> <p>22 says "In any case, the mere presence of tradeoffs</p> <p>23 alone would not discourage a POSA from trying the</p> <p>24 proposed combination," end quote.</p> <p>25 Q. Understood. You would agree then that</p> | <p>Page 173</p> <p>1 using an NoC as opposed to a traditional bus would</p> <p>2 involve tradeoffs, correct?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. In the second sentence of</p> <p>5 paragraph 91 of your second declaration, you wrote,</p> <p>6 (quote as read):</p> <p>7 I did take into account any</p> <p>8 potential disadvantages because I</p> <p>9 expressly consider Radulescu2004's</p> <p>10 NoC as compared to a bus and</p> <p>11 conclude that there can be (on</p> <p>12 balance) advantages for</p> <p>13 Radulescu2004 NoC.</p> <p>14 Do you see that?</p> <p>15 A. Yes.</p> <p>16 Q. Okay. And then you cite paragraphs 283</p> <p>17 through 241 of your first declaration in that</p> <p>18 sentence. Do you see that?</p> <p>19 A. Just to correct you, 238 to 241.</p> <p>20 Q. I'm sorry. I misspoke. That is what I</p> <p>21 meant. 238 to 241, correct?</p> <p>22 A. Correct.</p> <p>23 Q. Okay. Those paragraphs in your first</p> <p>24 declaration do not expressly address any potential</p> <p>25 disadvantages associated with using Radulescu2004's</p> | <p>Page 174</p> <p>1 NoC in Weber, correct?</p> <p>2 A. I'm going to go look at them.</p> <p>3 Q. Well, let's do that. Let's look at</p> <p>4 paragraph 283 of your first declaration.</p> <p>5 A. Paragraph 238.</p> <p>6 Q. Did I -- did I reverse them again? I'm</p> <p>7 sorry.</p> <p>8 A. I think so.</p> <p>9 Q. Not enough coffee this morning</p> <p>10 apparently. That one is on page 162 of the PDF.</p> <p>11 A. Yes.</p> <p>12 Q. Okay. And the first sentence, you</p> <p>13 wrote, (quote as read):</p> <p>14 It was known in the art in the late</p> <p>15 1990s and early 2000s that NoCs</p> <p>16 such as disclosed in Radulescu2004</p> <p>17 had a number of advantages over</p> <p>18 traditional buses and</p> <p>19 interconnects.</p> <p>20 Do you see that?</p> <p>21 A. Yes.</p> <p>22 Q. So in that sentence you're describing</p> <p>23 advantages associated with Radulescu2004's NoC,</p> <p>24 correct?</p> <p>25 A. Yes, and NoCs in general. I also refer</p> | <p>Page 175</p> <p>1 back to paragraph 51 which is relevant here, but I</p> <p>2 guess that's my answer.</p> <p>3 Q. Okay. We can come back to 51 in a</p> <p>4 minute. In the second sentence of paragraph 38, you</p> <p>5 wrote, (quote as read):</p> <p>6 As the number of components and</p> <p>7 their communication demands</p> <p>8 increased, traditional buses</p> <p>9 struggled to scale, leading to</p> <p>10 performance bottlenecks and</p> <p>11 increased power consumption.</p> <p>12 Do you see that?</p> <p>13 A. Yes.</p> <p>14 Q. And that sentence is describing</p> <p>15 disadvantages associated with using traditional</p> <p>16 buses, correct?</p> <p>17 A. Correct.</p> <p>18 Q. Let's go to paragraph 239, the next</p> <p>19 paragraph. Do you see there's a subheader lower</p> <p>20 case A, "Scalability"?</p> <p>21 A. Yes.</p> <p>22 Q. Scalability is an advantage associated</p> <p>23 with using Radulescu2004's NoC, correct?</p> <p>24 A. Yes.</p> <p>25 Q. And then do you see the next</p> |
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| <p style="text-align: right;">Page 176</p> <p>1 subheading, lower case B, "Flexibility"?</p> <p>2 A. Yes.</p> <p>3 Q. Okay. Flexibility is another advantage</p> <p>4 associated with using Radulescu's NoC as compared to</p> <p>5 a traditional bus, correct?</p> <p>6 A. It's -- it's -- the answer is generally</p> <p>7 yes. What this is describing is important features</p> <p>8 or example features of NoCs such as the one</p> <p>9 disclosed in Radulescu2004.</p> <p>10 Q. Understood. So you would agree that</p> <p>11 the example features that you described in paragraph</p> <p>12 239 of your first declaration are advantages</p> <p>13 associated with using an NoC, correct?</p> <p>14 A. Yes, and it -- it discusses some of the</p> <p>15 disadvantages that you have with other</p> <p>16 implementation, for example, in traditional buses.</p> <p>17 Or a traditional bus to be accurate.</p> <p>18 Q. Okay. You haven't identified any</p> <p>19 disadvantages associated with using an NoC compared</p> <p>20 to a bus in paragraph 239 of your first declaration,</p> <p>21 correct?</p> <p>22 A. One more time. The disadvantage?</p> <p>23 Q. Sure. You have not identified any</p> <p>24 disadvantages associated with using an NoC compared</p> <p>25 to a traditional bus in paragraph 239 of your first</p>                                                 | <p style="text-align: right;">Page 178</p> <p>1 Q. Let's take a look at paragraph 51.</p> <p>2 It's on page 20 of the PDF. If you'd turn there for</p> <p>3 me.</p> <p>4 A. I'm there.</p> <p>5 Q. Paragraph 51 is describing potential</p> <p>6 advantages offered by NoCs, correct?</p> <p>7 A. That's what the first sentence says,</p> <p>8 but I -- I would have to read the -- the entire</p> <p>9 paragraph to see if it's talking about the</p> <p>10 tradeoffs. And I -- my answer is going to be pretty</p> <p>11 much the same, understanding of this discussion is</p> <p>12 about the tradeoffs of using the NoC and, by the</p> <p>13 flip side, not using the NoC or using other</p> <p>14 structures.</p> <p>15 Q. I understand you may need to read</p> <p>16 paragraph 51 to answer this next question, but I</p> <p>17 just want to confirm, paragraph 51 does not</p> <p>18 expressly identify any disadvantage associated with</p> <p>19 using an NoC, correct?</p> <p>20 A. I'll have to read the paragraph to</p> <p>21 answer the question.</p> <p>22 Q. Understood.</p> <p>23 A. It is generally discussing the --</p> <p>24 the -- the advantages of using the NoCs, but again,</p> <p>25 if any one of these advantages are -- are -- are not</p> |
| <p style="text-align: right;">Page 177</p> <p>1 declaration, correct?</p> <p>2 A. That's not 100 percent accurate. You</p> <p>3 know, there's discussions in here about the number</p> <p>4 of components increasing, so if -- if, you know,</p> <p>5 the -- as far as a tradeoff is concerned, you know,</p> <p>6 a decreased -- decreased -- a decreased number of</p> <p>7 components, perhaps an NoC is not the right way to</p> <p>8 do it. Again, depending on the complexity, so there</p> <p>9 are tradeoffs that are being discussed as part of</p> <p>10 paragraph 239.</p> <p>11 Q. You mentioned the number of components</p> <p>12 as a tradeoff. Are there any other tradeoffs</p> <p>13 discussed in paragraph 239?</p> <p>14 A. I would -- so there's -- there's</p> <p>15 discussion -- there's reference back to paragraph</p> <p>16 51, so I would need to go back to 51 to look up</p> <p>17 more.</p> <p>18 But to me, every one of these elements</p> <p>19 that are talked about is discussing what an NoC</p> <p>20 might bring in, and the -- by the flip side, if</p> <p>21 these are things that are not needed, then you</p> <p>22 perhaps would not need the NoC. So for me, this</p> <p>23 entire discussion is the tradeoff of the -- includes</p> <p>24 the tradeoffs of using an NoC or using other</p> <p>25 structures, for example, a traditional bus.</p> | <p style="text-align: right;">Page 179</p> <p>1 a consideration for a designer, then they don't</p> <p>2 necessarily have to use the NoC in whatever</p> <p>3 additional design they require.</p> <p>4 Q. Turn back now to paragraph 91 of your</p> <p>5 second declaration, Exhibit 1030. This is page 77</p> <p>6 of the PDF.</p> <p>7 A. I'm there.</p> <p>8 Q. The very last sentence of that</p> <p>9 paragraph, you wrote, (quote as read):</p> <p>10 In any case, the mere presence of</p> <p>11 tradeoffs alone would not</p> <p>12 discourage a POSA from trying the</p> <p>13 proposed combination.</p> <p>14 Do you see that?</p> <p>15 A. I do.</p> <p>16 Q. Your opinion is that despite any</p> <p>17 potential disadvantages, it would have been obvious</p> <p>18 to try combining Weber and Radulescu2004, correct?</p> <p>19 A. These are both complicated systems, and</p> <p>20 a person of ordinary skill in the art, a designer,</p> <p>21 would look at both systems, their advantages and</p> <p>22 disadvantages, and given the tradeoffs, they would</p> <p>23 try to put them together in order to create overall</p> <p>24 a better system that has the advantages of -- of</p> <p>25 both. So that's really what I'm talking about over</p>     |

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| <p style="text-align: right;">Page 180</p> <p>1 here. And it's a very normal and standard process<br/>2 when combining or when using technologies with each<br/>3 other.<br/>4 <b>Q. Paragraph 92, this is also on page 77</b><br/>5 <b>of the PDF. Do you see that?</b><br/>6 A. I do.<br/>7 Q. All right. First sentence, (quote as<br/>8 read):<br/>9 One of PO's own references provides<br/>10 further evidence of the known<br/>11 interchangeability of<br/>12 Radulescu2004's NoC with the bus<br/>13 topology of Weber.<br/>14 Do you see that?<br/>15 A. Yes.<br/>16 <b>Q. And then in the next sentence you cite</b><br/>17 <b>Exhibit 1021. Do you see that?</b><br/>18 A. Yes.<br/>19 <b>Q. You understand Exhibit 1021 was</b><br/>20 <b>introduced in this proceeding by Petitioner,</b><br/>21 <b>correct?</b><br/>22 A. I do.<br/>23 <b>Q. Okay. If you'd turn to paragraph 94 of</b><br/>24 <b>your second declaration. This is PDF page 79.</b><br/>25 A. I'm there.</p>                                                                                                                                                                                                                                                                                                                                          | <p style="text-align: right;">Page 182</p> <p>1 I can't necessarily say they're talking to different<br/>2 protocols because each one of the interfaces, the<br/>3 declaration in Weber and in Radulescu discuss the<br/>4 interfaces talking to different protocols<br/>5 themselves.<br/>6 <b>Q. Move to a new topic. You reviewed</b><br/>7 <b>Patent Owner's claim construction proposals when you</b><br/>8 <b>prepared your second declaration, correct?</b><br/>9 A. What document are you referring to?<br/>10 <b>Q. Well, let's jump ahead. There's one</b><br/>11 <b>document I could show you perhaps to streamline</b><br/>12 <b>this. All right. I have added a copy of Exhibit</b><br/>13 <b>2070 into the Zoom chat. Let me know when you have</b><br/>14 <b>that open.</b><br/>15 (Whereupon, Exhibit 2070 was<br/>16 marked for identification.)<br/>17 THE WITNESS: I have it open.<br/>18 BY MR. CHRISTOPHER:<br/>19 <b>Q. I'll represent to you that Exhibit 2070</b><br/>20 <b>is a copy of Dr. Bagherzadeh's declaration in this</b><br/>21 <b>IPR. You reviewed Dr. Bagherzadeh's declaration</b><br/>22 <b>when you prepared your second declaration, correct?</b><br/>23 A. I did.<br/>24 <b>Q. Okay. Let's turn to paragraph 100 of</b><br/>25 <b>Exhibit 2070. This is page 50 of the PDF.</b></p> |
| <p style="text-align: right;">Page 181</p> <p>1 <b>Q. Great. In the first sentence of</b><br/>2 <b>paragraph 94, you wrote, (quote as read):</b><br/>3 <b>Dr. Bagherzadeh then asserts that a</b><br/>4 <b>POSA would not be motivated to use</b><br/>5 <b>Radulescu2004's NoC with Weber</b><br/>6 <b>because Weber's interfaces</b><br/>7 <b>communicate in a different protocol</b><br/>8 <b>than Radulescu2004's network.</b><br/>9 <b>Do you see that?</b><br/>10 A. Yes.<br/>11 <b>Q. You would agree that the interfaces in</b><br/>12 <b>Weber do communicate in a different protocol than</b><br/>13 <b>Radulescu2004's network, correct?</b><br/>14 A. Well, the disclosure of the -- the<br/>15 interfaces themselves is that they should<br/>16 communicate using the protocols at hand so -- and<br/>17 that's the disclosure I'm -- I'm relying on.<br/>18 So one of ordinary skill in the art<br/>19 would understand that depending on what protocols<br/>20 these interfaces are going to connect to, they would<br/>21 have to connect to the protocol on one side and<br/>22 another protocol on another side if there are<br/>23 different protocols. And I believe in -- in some of<br/>24 the disclosures, that protocol is not even specified<br/>25 as to what protocol it's communicating to, so the --</p> | <p style="text-align: right;">Page 183</p> <p>1 A. Okay. I'm there.<br/>2 <b>Q. Do you see the chart for the term</b><br/>3 <b>"interconnect means" underneath paragraph 100?</b><br/>4 A. Yes.<br/>5 <b>Q. You understand that Petitioner has</b><br/>6 <b>proposed that the term "interconnect means" is</b><br/>7 <b>subject to section 112, paragraph 6, correct?</b><br/>8 A. Yes.<br/>9 <b>Q. And you understand that Patent Owner</b><br/>10 <b>contends that the term "interconnect means" is not</b><br/>11 <b>subject to section 112, paragraph 6, correct?</b><br/>12 A. Correct.<br/>13 <b>Q. All right. We'll come back to this</b><br/>14 <b>chart if we need it. I would like to turn your</b><br/>15 <b>attention now to paragraph 10 of your second</b><br/>16 <b>declaration. This is on PDF page 7.</b><br/>17 A. I'm there.<br/>18 <b>Q. All right. I want to ask you -- this</b><br/>19 <b>is one, two, three, four, five lines down. There's</b><br/>20 <b>a sentence that reads, (quote as read):</b><br/>21 <b>As discussed in my first</b><br/>22 <b>declaration, the '052 Patent</b><br/>23 <b>clearly identifies each of a bus,</b><br/>24 <b>switch, point-to-point wire, and</b><br/>25 <b>network as example structures of an</b></p>                                                           |

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| <p style="text-align: right;">Page 184</p> <p>1 interconnect.</p> <p>2 Do you see that?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. I just want to confirm. You</p> <p>5 have identified a bus, switch, point-to-point wire,</p> <p>6 and network as the corresponding structures for the</p> <p>7 claimed interconnect means, correct?</p> <p>8 A. Correct.</p> <p>9 Q. Okay. You have not identified a</p> <p>10 network interface as a corresponding structure for</p> <p>11 the claimed interconnect means, correct?</p> <p>12 A. No.</p> <p>13 Q. So you would agree that a network</p> <p>14 interface is not a corresponding structure for the</p> <p>15 claimed interconnect means, correct?</p> <p>16 A. Ask me the question one more time.</p> <p>17 Q. Sure. You would agree that a network</p> <p>18 interface is not a corresponding structure for the</p> <p>19 claimed interconnect means, correct?</p> <p>20 A. I disagree.</p> <p>21 Q. Well, you didn't identify network</p> <p>22 interface as a corresponding structure in either of</p> <p>23 your declarations, correct?</p> <p>24 A. I believe I did by identifying a</p> <p>25 network as part of the structure, a network includes</p>                                                                                                                        | <p style="text-align: right;">Page 186</p> <p>1 opinion is that the claims do not exclude the</p> <p>2 network interface from being a corresponding</p> <p>3 structure for the claimed interconnect means; is</p> <p>4 that correct?</p> <p>5 MR. VANDENBURGH: Objection. Form.</p> <p>6 THE WITNESS: That's not what I said.</p> <p>7 The network is a structure for interconnect means</p> <p>8 and the network includes network interfaces, so the</p> <p>9 question you were asking me is did my definition or</p> <p>10 the definition that I adopted for structure include</p> <p>11 network interfaces, and the answer is yes, through</p> <p>12 that network.</p> <p>13 BY MR. CHRISTOPHER:</p> <p>14 Q. I think I see what you're saying.</p> <p>15 You've opined that a potential corresponding</p> <p>16 structure for -- strike that. Let me ask that</p> <p>17 better.</p> <p>18 One of the corresponding structures</p> <p>19 you've identified for the claimed interconnect means</p> <p>20 is a network, correct?</p> <p>21 A. Correct.</p> <p>22 Q. And in your view the network interface</p> <p>23 is part of the network, correct?</p> <p>24 A. Yes.</p> <p>25 Q. And so the network interface could be</p> |
| <p style="text-align: right;">Page 185</p> <p>1 network interfaces, so I do believe I did identify</p> <p>2 it as a part of the structure.</p> <p>3 Q. Let me try asking this a little bit</p> <p>4 differently. Would you agree that the claims -- let</p> <p>5 me back up. In Claim 6 of the '052 Patent, the term</p> <p>6 "network interface" is recited separately from the</p> <p>7 interconnect means, correct?</p> <p>8 A. I'm not sure I'm following, but there's</p> <p>9 nothing in the claim that precludes interconnect --</p> <p>10 network interface being part of the interconnect</p> <p>11 means.</p> <p>12 Q. Understood. I'm just asking a slightly</p> <p>13 different question to orientate ourselves. The</p> <p>14 claims recite a network interface and an</p> <p>15 interconnect means, correct?</p> <p>16 A. Yes, they do.</p> <p>17 Q. Okay. And is it your opinion that a</p> <p>18 network interface can be the corresponding structure</p> <p>19 for the claimed interconnect means?</p> <p>20 A. I would -- I would phrase it</p> <p>21 differently. The network interface is part of the</p> <p>22 network which is the structure for interconnect</p> <p>23 means, or one of my possible structures for the</p> <p>24 interconnect means.</p> <p>25 Q. Let me see if I understand. Your</p> | <p style="text-align: right;">Page 187</p> <p>1 part of the corresponding structure for the</p> <p>2 interconnect means because the interconnect means is</p> <p>3 part of -- let me restart.</p> <p>4 Because the network interface is part</p> <p>5 of the network, the network interface can be a</p> <p>6 portion of the corresponding structure for the</p> <p>7 interconnect means, correct?</p> <p>8 A. Yes.</p> <p>9 Q. Okay.</p> <p>10 MR. CHRISTOPHER: Let's go off the</p> <p>11 record for a minute. I lost my real-time feed.</p> <p>12 (Recess taken from 10:07 to</p> <p>13 10:27.)</p> <p>14 BY MR. CHRISTOPHER:</p> <p>15 Q. I appreciate the patience, Dr. Hassoun,</p> <p>16 with our technical difficulties.</p> <p>17 A. No worries.</p> <p>18 Q. Before our break we were talking about</p> <p>19 the term "interconnect means" and the corresponding</p> <p>20 structure. Do you recall that?</p> <p>21 A. Yes.</p> <p>22 Q. All right. You understand that there</p> <p>23 is a related district court proceeding between</p> <p>24 Petitioner and Patent Owner that involves the '052</p> <p>25 Patent, correct?</p>                                                                                   |

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| <p style="text-align: right;">Page 188</p> <p>1 A. Yes.</p> <p>2 <b>Q. And you authored a declaration in that</b></p> <p>3 <b>proceeding regarding claim construction for certain</b></p> <p>4 <b>terms in the '052 Patent, correct?</b></p> <p>5 A. I seem to recall that, correct.</p> <p>6 <b>Q. I've introduced into our Zoom chat a</b></p> <p>7 <b>copy of -- this will be Exhibit 2083. If you could</b></p> <p>8 <b>open up Exhibit 2083. Let me know if you have any</b></p> <p>9 <b>issues.</b></p> <p>10 (Whereupon, Exhibit 2083 was</p> <p>11 marked for identification.)</p> <p>12 THE WITNESS: I see it.</p> <p>13 BY MR. CHRISTOPHER:</p> <p>14 <b>Q. All right. Do you recognize</b></p> <p>15 <b>Exhibit 2083 as a copy of your claim construction</b></p> <p>16 <b>declaration in the related district court matter?</b></p> <p>17 A. It seems to be, yes. It's been a while</p> <p>18 since I looked at it.</p> <p>19 <b>Q. Understood. Your testimony in your</b></p> <p>20 <b>claim construction declaration was under oath just</b></p> <p>21 <b>like your testimony in your declarations in this</b></p> <p>22 <b>IPR, correct?</b></p> <p>23 A. Correct.</p> <p>24 <b>Q. All right. If you could turn for me to</b></p> <p>25 <b>PDF page 39 in Exhibit 2083.</b></p> | <p style="text-align: right;">Page 190</p> <p>1 processing modules (M,S)" are: bus,</p> <p>2 switch, point-to-point wire, or</p> <p>3 network.</p> <p>4 That was your testimony in your claim</p> <p>5 construction declaration, correct?</p> <p>6 A. That's what that paragraph reads, yes.</p> <p>7 <b>Q. Thank you. Let's turn back now to</b></p> <p>8 <b>Exhibit 2070 and I will direct you to paragraph 103</b></p> <p>9 <b>which is on PDF page 51.</b></p> <p>10 A. I'm sorry. Which exhibit?</p> <p>11 <b>Q. 2070, please.</b></p> <p>12 A. Okay. PDF page --</p> <p>13 <b>Q. 51. And I'll draw your attention to</b></p> <p>14 <b>paragraph 103.</b></p> <p>15 A. Okay.</p> <p>16 <b>Q. This is Dr. Bagherzadeh's declaration,</b></p> <p>17 <b>correct?</b></p> <p>18 A. Yes.</p> <p>19 <b>Q. And you reviewed this declaration. I</b></p> <p>20 <b>believe we discussed this a few minutes ago before</b></p> <p>21 <b>the break. You reviewed the declaration when</b></p> <p>22 <b>preparing your second declaration, correct?</b></p> <p>23 A. Yes.</p> <p>24 <b>Q. And you respond to Dr. Bagherzadeh's</b></p> <p>25 <b>opinions in your second declaration, right?</b></p>                                                                                                                                                  |
| <p style="text-align: right;">Page 189</p> <p>1 A. Okay.</p> <p>2 <b>Q. Do you see the header D, "'052 Patent</b></p> <p>3 <b>Terms"?</b></p> <p>4 A. Yes.</p> <p>5 <b>Q. And underneath that there's a subheader</b></p> <p>6 <b>1, "interconnect means." Do you see that?</b></p> <p>7 A. Yes.</p> <p>8 <b>Q. In this section of your claim</b></p> <p>9 <b>construction declaration, you discuss the term</b></p> <p>10 <b>"interconnect means," correct?</b></p> <p>11 A. Yes.</p> <p>12 <b>Q. All right. And I want -- I would like</b></p> <p>13 <b>to direct your attention to paragraph 86. This is</b></p> <p>14 <b>on PDF page 41. Let me know when you're there.</b></p> <p>15 A. I see it.</p> <p>16 <b>Q. In paragraph 86, you testified, (quote</b></p> <p>17 <b>as read):</b></p> <p>18 Therefore, putting all these</p> <p>19 disclosures together, but excluding</p> <p>20 the network interface NI because it</p> <p>21 is separately claimed in claim 6,</p> <p>22 the structures broadly disclosed</p> <p>23 that are clearly linked to</p> <p>24 performing the function of</p> <p>25 "coupling said plurality of</p>                                                                                                                                                     | <p style="text-align: right;">Page 191</p> <p>1 A. To some of them, yes.</p> <p>2 <b>Q. Sure. In the first sentence of</b></p> <p>3 <b>paragraph 103, he wrote, (quote as read):</b></p> <p>4 <b>The term "interconnect means" as</b></p> <p>5 <b>used in the '052 Patent would be</b></p> <p>6 <b>understood by a POSITA to have a</b></p> <p>7 <b>sufficiently definite meaning as</b></p> <p>8 <b>the name for structure.</b></p> <p>9 <b>Do you see that?</b></p> <p>10 A. Yes.</p> <p>11 <b>Q. Would you agree that the term</b></p> <p>12 <b>"interconnect means" would be understood as having a</b></p> <p>13 <b>sufficiently definite meaning as the name for</b></p> <p>14 <b>structure?</b></p> <p>15 A. I'm not sure exactly what he means by</p> <p>16 that, but I -- in my declaration, I have discussed</p> <p>17 what the specification discusses as far as</p> <p>18 interconnect and interconnect means are. So to the</p> <p>19 extent that that statement follows my analysis of</p> <p>20 what interconnect and interconnect means are in the</p> <p>21 specification, then I would agree with it. But</p> <p>22 that's -- that's the extent of my understanding of</p> <p>23 this statement.</p> <p>24 <b>Q. Do you see the third sentence in</b></p> <p>25 <b>paragraph 103, "A POSITA would understand that a</b></p> |

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| <p style="text-align: right;">Page 192</p> <p>1 'network' is a structure"?<br/>2 Do you see that?<br/>3 A. I do.<br/>4 Q. Do you agree with that statement?<br/>5 A. Yes.<br/>6 Q. Let's look at paragraph 11 of your<br/>7 second declaration. This is -- I'll help you find<br/>8 it. PDF page 7. And my question is going to be at<br/>9 the top of PDF page 8. Let me know when you're<br/>10 there.<br/>11 A. I'm there.<br/>12 Q. All right. And the first full sentence<br/>13 at the top of page 8 -- again, for the record this<br/>14 is paragraph 11 of your second declaration -- you<br/>15 wrote, (quote as read):<br/>16 The specification, however, does<br/>17 not distinguish an "interconnect"<br/>18 from a direct bus. The<br/>19 specification distinguishes a<br/>20 "network" or "NoC" from a direct<br/>21 bus.<br/>22 Do you see that?<br/>23 A. Yes.<br/>24 Q. You would agree that the specification<br/>25 does distinguish between an NoC and a direct bus,</p>                                                                                                                                                       | <p style="text-align: right;">Page 194</p> <p>1 interconnect -- sorry. It distinguishes from direct<br/>2 interconnect -- interconnects such as buses or<br/>3 switches.<br/>4 Q. I'd like to turn us now to the '052<br/>5 Patent, Exhibit 1001. I'm not sure if you've had<br/>6 that opened up yet. If not, can you open that up<br/>7 and turn to column 3 for me.<br/>8 (Whereupon, Exhibit 1001 was<br/>9 marked for identification.)<br/>10 THE WITNESS: Okay. I'm at column 3.<br/>11 BY MR. CHRISTOPHER:<br/>12 Q. All right. My question starts at<br/>13 line 3 of column 3. The specification states,<br/>14 (quote as read):<br/>15 It is therefore an object of the<br/>16 invention to improve the<br/>17 integration of standard processing<br/>18 nodules into a network on chip.<br/>19 Do you see that?<br/>20 A. I do.<br/>21 Q. You would agree that a stated object of<br/>22 the inventions in the '052 Patent is to integrate<br/>23 standard processing modules into a network-on-chip,<br/>24 correct?<br/>25 A. Yes.</p>                                                                        |
| <p style="text-align: right;">Page 193</p> <p>1 correct?<br/>2 A. Between an NoC and a direct bus, yes.<br/>3 Q. Okay. And you see following that<br/>4 sentence you've cited some portions of the '052<br/>5 Patent specification?<br/>6 A. Yes.<br/>7 Q. Okay. And the first one you cited was<br/>8 column 1, lines 48 through 54, and you have the<br/>9 quote after that? Do you see that?<br/>10 A. Yes.<br/>11 Q. This portion of the specification that<br/>12 you cite, column 1, lines 48 through 54, is<br/>13 distinguishing an NoC from existing on-chip<br/>14 interconnects, e.g., buses, switches, or<br/>15 point-to-point wires, correct?<br/>16 A. Where the communicating modules are<br/>17 directly connected. So that's -- that's the full<br/>18 disclosure, so yes.<br/>19 Q. Understood. I want to just keep going<br/>20 through these citations. The next citation is<br/>21 column 2, lines 31 through 34 of the '052 Patent.<br/>22 You would agree that this sentence distinguishes a<br/>23 network from direct interconnects such as buses or<br/>24 switches, correct?<br/>25 A. It distinguishes from direct</p> | <p style="text-align: right;">Page 195</p> <p>1 Q. You would also agree that the '052<br/>2 Patent does not purport to improve the integration<br/>3 of standard processing modules into a direct<br/>4 interconnect, correct?<br/>5 A. That statement makes no sense. A<br/>6 network-on-chip is a structure that includes many<br/>7 elements. The -- a direct connection, you cannot<br/>8 integrate anything into a direct connection, so I<br/>9 don't know how to answer that question. It's -- it<br/>10 makes no sense to me.<br/>11 Q. Understood. I think that actually<br/>12 answered my question. I appreciate that.<br/>13 If you could turn to column 6, line 8.<br/>14 A. Yes.<br/>15 Q. Starting at line 8, the specification<br/>16 states, (quote as read):<br/>17 By offering these transactions the<br/>18 transaction model is similar to<br/>19 existing bus protocols, to ease<br/>20 migration of IP from current<br/>21 interconnects to NoCs.<br/>22 Do you see that?<br/>23 A. Yes.<br/>24 Q. In this sentence, the '052 Patent is<br/>25 distinguishing between current interconnects and</p> |

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| <p style="text-align: right;">Page 196</p> <p>1 <b>NoCs, correct?</b></p> <p>2 A. That's not quite what it says. It</p> <p>3 talks about migration of IP from current</p> <p>4 interconnects to NoCs, so the IPs exist in both and</p> <p>5 it's merely a migration step or a migration</p> <p>6 disclosure here.</p> <p>7 <b>Q. You would agree that this sentence is</b></p> <p>8 <b>informing a person of skill in the art that current</b></p> <p>9 <b>interconnects are different than NoCs, correct?</b></p> <p>10 MR. VANDENBURGH: Objection. Form.</p> <p>11 THE WITNESS: Well, the current</p> <p>12 interconnects -- again, it's -- it's a -- it's a</p> <p>13 general term, and it -- it could include forms of</p> <p>14 network-on-chips, but again, the statement is</p> <p>15 general in that it's a migration of IP from current</p> <p>16 interconnects to NoCs. I don't know how else to</p> <p>17 answer that. I don't necessarily need to read any</p> <p>18 more in it than what it says.</p> <p>19 BY MR. CHRISTOPHER:</p> <p>20 <b>Q. Well, would you agree that the term</b></p> <p>21 <b>"current interconnects" in that sentence refers to</b></p> <p>22 <b>the direct interconnects that are discussed in the</b></p> <p>23 <b>background section of the specification?</b></p> <p>24 A. Not necessarily direct interconnects.</p> <p>25 I mean, it -- it -- it -- the word "interconnect"</p> | <p style="text-align: right;">Page 198</p> <p>1 is a network-on-chip.</p> <p>2 <b>Q. And that statement we just read does</b></p> <p>3 <b>not state that the interconnect in the preferred</b></p> <p>4 <b>embodiment is embodied by something other than a</b></p> <p>5 <b>network-on-chip, correct?</b></p> <p>6 A. As you read it, it is an embodiment,</p> <p>7 and this particular embodiment is a network-on-chip.</p> <p>8 It doesn't tell me what it's not.</p> <p>9 <b>Q. Let's turn back to paragraph 9 of your</b></p> <p>10 <b>second declaration. Exhibit 1030. This is on PDF</b></p> <p>11 <b>page 6 and it bridges on to page 7. My question is</b></p> <p>12 <b>actually at the top of page 7.</b></p> <p>13 A. Okay.</p> <p>14 <b>Q. You've cited here in paragraph 11, that</b></p> <p>15 <b>first sentence at the top of page 7, an IEEE</b></p> <p>16 <b>Dictionary of 2002 [sic]. Do you see that?</b></p> <p>17 A. I'm sorry. What paragraph am I on?</p> <p>18 <b>Q. 9.</b></p> <p>19 A. Paragraph 9.</p> <p>20 <b>Q. And this is at the top of page 7.</b></p> <p>21 A. Okay. Under "Claim Construction"?</p> <p>22 <b>Q. Correct.</b></p> <p>23 A. Okay.</p> <p>24 <b>Q. Do you see the sentence that says, For</b></p> <p>25 <b>example, the IEEE Dictionary of 2002 [sic]?</b></p> |
| <p style="text-align: right;">Page 197</p> <p>1 includes generally direct or indirect. Again, the</p> <p>2 term "interconnect" covers so much more than just</p> <p>3 direct. So it's not really from direct to NoCs, but</p> <p>4 from current status of interconnects to a very</p> <p>5 particular network-on-chip architecture that the</p> <p>6 patent is talking about.</p> <p>7 <b>Q. So column 4, starting around, say,</b></p> <p>8 <b>line 40.</b></p> <p>9 A. I'm there.</p> <p>10 <b>Q. All right. Do you see the header in</b></p> <p>11 <b>all caps "Description Of The Preferred Embodiments"?</b></p> <p>12 A. Yes.</p> <p>13 <b>Q. All right. And then this would be</b></p> <p>14 <b>line -- in that section line 46, (quote as read):</b></p> <p>15 <b>The interconnect is embodied as a</b></p> <p>16 <b>network on chip NoC, allowing</b></p> <p>17 <b>communication between all</b></p> <p>18 <b>aforementioned models.</b></p> <p>19 <b>Do you see that?</b></p> <p>20 A. Yes.</p> <p>21 <b>Q. You would agree that the '052 Patent</b></p> <p>22 <b>discloses that in the preferred embodiment, the</b></p> <p>23 <b>interconnect is embodied as a network-on-chip, NoC,</b></p> <p>24 <b>correct?</b></p> <p>25 A. An embodiment is -- of the interconnect</p>                                                                                                                                   | <p style="text-align: right;">Page 199</p> <p>1 A. Yes.</p> <p>2 <b>Q. All right. And then you cite</b></p> <p>3 <b>Exhibit 1052 at the end of that sentence. Do you</b></p> <p>4 <b>see that?</b></p> <p>5 A. Yes.</p> <p>6 <b>Q. I'd like to take a look at that</b></p> <p>7 <b>definition, so I've put a copy of Exhibit 1052 in</b></p> <p>8 <b>our Zoom chat.</b></p> <p>9 (Whereupon, Exhibit 1052 was</p> <p>10 marked for identification.)</p> <p>11 BY MR. CHRISTOPHER:</p> <p>12 <b>Q. Let me know when you have that open.</b></p> <p>13 <b>And when you do, I'll direct you to page 4.</b></p> <p>14 A. I'm there.</p> <p>15 <b>Q. All right. Do you see at the top of</b></p> <p>16 <b>the right-hand column, there's a definition for</b></p> <p>17 <b>"interconnect"?</b></p> <p>18 A. Yes.</p> <p>19 <b>Q. And you've opined in paragraph --</b></p> <p>20 <b>excuse me. You've opined in paragraph 9 of your</b></p> <p>21 <b>second declaration that this dictionary definition</b></p> <p>22 <b>for "interconnect" is consistent with how a person</b></p> <p>23 <b>of skill in the art would understand the term</b></p> <p>24 <b>"interconnect" in the claims of the '052 Patent,</b></p> <p>25 <b>correct?</b></p>                                                                      |

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| <p style="text-align: right;">Page 200</p> <p>1 A. I -- what I -- what I used as an<br/>2 example is the statement we read which is a<br/>3 collective term, and I'm not going to read the whole<br/>4 statement, but it's the sentence I put in there.<br/>5 <b>Q. Understood. The definition refers to,</b><br/>6 <b>as you just pointed out, a collective term for</b><br/>7 <b>structures plural. The definition of "interconnect"</b><br/>8 <b>in the dictionary -- strike that.</b><br/>9 <b>Would you agree that this definition of</b><br/>10 <b>"interconnect" requires multiple structures?</b><br/>11 A. Yes. I mean, that could be multiple<br/>12 wires is multiple structures.<br/>13 <b>Q. I want to focus on the second part of</b><br/>14 <b>that first sentence of the definition. Do you see</b><br/>15 <b>where it says "propagate a signal between the pins</b><br/>16 <b>of cell instances with as little change as</b><br/>17 <b>possible"?</b><br/>18 A. Yes.<br/>19 <b>Q. What do "cell instances" refer to in</b><br/>20 <b>this definition?</b><br/>21 A. So it -- it's a general term that can<br/>22 mean cells of wires, segments, cells that include<br/>23 vias, fuses, et cetera.<br/>24 <b>Q. You can probably guess my next</b><br/>25 <b>question, which is, what does the phrase "with as</b></p> | <p style="text-align: right;">Page 202</p> <p>1 <b>are you referring to a network node?</b><br/>2 A. As I discuss later on in this<br/>3 paragraph -- well, it might not be in this<br/>4 paragraph, but a node can be a network node or it<br/>5 can be just -- just a node.<br/>6 <b>Q. What would be the difference between a</b><br/>7 <b>network node and something that's just a node?</b><br/>8 A. So a node, if it's not part of a<br/>9 network, then it's not a network node. If it's part<br/>10 of a network, then it happens to be a network node.<br/>11 <b>Q. Okay. You also referred to the term</b><br/>12 <b>"communication link" in that first sentence of</b><br/>13 <b>paragraph 18. Do you see that?</b><br/>14 A. Yes.<br/>15 <b>Q. You would agree that the communication</b><br/>16 <b>link would be inside the network, correct?</b><br/>17 A. What network are we talking about now?<br/>18 <b>Q. Well, perhaps we can go to some</b><br/>19 <b>examples in a minute, but I just -- well, actually</b><br/>20 <b>back up and just ask you one more question about</b><br/>21 <b>node.</b><br/>22 <b>When you referred to node in paragraph</b><br/>23 <b>18 in that first sentence, you're referring</b><br/>24 <b>to -- strike that.</b><br/>25 <b>The node that you reference in</b></p> |
| <p style="text-align: right;">Page 201</p> <p>1 <b>little change as possible" in the definition mean to</b><br/>2 <b>a person of skill in the art?</b><br/>3 A. So what it's -- the definition is the<br/>4 goal of the interconnect is you have something<br/>5 coming in and you have something coming out at the<br/>6 other end, you're trying to connect them so that at<br/>7 the end of the day you're trying to change it as<br/>8 little as possible, changing the information,<br/>9 changing the data, but you're trying to make as<br/>10 little change as possible.<br/>11 <b>Q. I appreciate that explanation. Let's</b><br/>12 <b>turn back to paragraph 18 of your second</b><br/>13 <b>declaration, Exhibit 1030.</b><br/>14 A. Okay.<br/>15 <b>Q. This is PDF page 13 if you need it.</b><br/>16 A. I'm there.<br/>17 <b>Q. Great. In the first sentence of</b><br/>18 <b>paragraph 18, you wrote, (quote as read):</b><br/>19 <b>From the general understanding in</b><br/>20 <b>the art, a POSA would understand</b><br/>21 <b>that a "hop" is a communication</b><br/>22 <b>link with a node on each end.</b><br/>23 <b>Do you see that?</b><br/>24 A. Yes.<br/>25 <b>Q. When you say "node" in this sentence,</b></p>                                                                                            | <p style="text-align: right;">Page 203</p> <p>1 <b>paragraph 18 can be inside or outside of the</b><br/>2 <b>network, correct?</b><br/>3 A. Yes.<br/>4 <b>Q. Okay. And so I have the same question</b><br/>5 <b>with respect to the communication that you</b><br/>6 <b>referenced in the first sentence of paragraph 18.</b><br/>7 <b>Can the communication link be outside the network</b><br/>8 <b>under your definition?</b><br/>9 A. Again, the same -- the same question,<br/>10 you know, what network are you -- are we talking<br/>11 about?<br/>12 <b>Q. Let's -- we'll go to some examples.</b><br/>13 <b>Perhaps we can explore this a little bit more.</b><br/>14 <b>Before we do that, at the end of that first sentence</b><br/>15 <b>you cite -- excuse me. Second sentence of paragraph</b><br/>16 <b>18 you cite Webster's Telecom Dictionary of 2008.</b><br/>17 <b>Do you see that?</b><br/>18 A. Yes.<br/>19 <b>Q. And this is a definition of the term</b><br/>20 <b>"hop," right?</b><br/>21 A. Yes.<br/>22 <b>Q. Okay. And the definition that you've</b><br/>23 <b>quoted here is, (quote as read):</b><br/>24 <b>In networks, the journey a signal</b><br/>25 <b>makes across a transmission link</b></p>                                                                                   |

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| <p style="text-align: right;">Page 204</p> <p>1 between two devices such as</p> <p>2 bridges, hubs, switches, or</p> <p>3 routers.</p> <p>4 Did I read that correctly?</p> <p>5 A. Yes.</p> <p>6 Q. Is that dictionary definition in your</p> <p>7 view consistent with how a person of skill in the</p> <p>8 art would understand the term "hop" in the context</p> <p>9 of the '052 Patent?</p> <p>10 A. Yes. Because it's generically talking</p> <p>11 about a transmission link between two devices and</p> <p>12 then it gives some examples of such devices. So</p> <p>13 yes, it's generally, you know, the way hop is -- is</p> <p>14 understood out there. I mean, there are multiple</p> <p>15 ways to understand or to look at what a hop is, you</p> <p>16 know, whether from one medium to another or, you</p> <p>17 know, from node to node, but I believe this</p> <p>18 definition is consistent with the '052 Patent and a</p> <p>19 POSITA's understanding.</p> <p>20 Q. The devices that are referenced in this</p> <p>21 definition, bridges, hubs, switches, or routers, all</p> <p>22 of those are an example of a network node, correct?</p> <p>23 A. They -- they could be. Yes. They</p> <p>24 don't have to be. But I don't believe -- I am</p> <p>25 sorry. I don't believe the definition is meant to</p> | <p style="text-align: right;">Page 206</p> <p>1 Q. Is this definition of "node" consistent</p> <p>2 with how a person of skill in the art would</p> <p>3 understand the term "node" in the context of the</p> <p>4 '052 Patent?</p> <p>5 A. It -- yes, it includes that.</p> <p>6 Q. Let's put Exhibit 1051 aside.</p> <p>7 Back to paragraph 18 of your second</p> <p>8 declaration, Exhibit 1030.</p> <p>9 A. I'm there.</p> <p>10 Q. I want to ask you about, there's a</p> <p>11 sentence third line from the bottom. It reads,</p> <p>12 (quote as read):</p> <p>13 If there are zero nodes between a</p> <p>14 master and a slave, i.e. the master</p> <p>15 and slave are directly connected,</p> <p>16 there is a single hop.</p> <p>17 Do you see that?</p> <p>18 A. Yes.</p> <p>19 Q. Your opinion is that a direct</p> <p>20 connection between a master module and a slave</p> <p>21 module with zero nodes between them would include</p> <p>22 one hop; is that correct?</p> <p>23 A. Yes. As -- as I explained before,</p> <p>24 there's different ways a hop can be interpreted, and</p> <p>25 I believe this definition is the right one for the</p>                                              |
| <p style="text-align: right;">Page 205</p> <p>1 be limiting. It's actually meant to be more broad.</p> <p>2 Q. I think you make a fair point. If we</p> <p>3 assume that the bridges, hubs, switches, or routers</p> <p>4 are inside the network, you would agree that they</p> <p>5 would be considered network nodes, correct?</p> <p>6 A. Yes, they could be considered a network</p> <p>7 node.</p> <p>8 Q. Okay. I'm going to put a copy of</p> <p>9 Exhibit 1051 in our Zoom chat.</p> <p>10 (Whereupon, Exhibit 1051 was</p> <p>11 marked for identification.)</p> <p>12 BY MR. CHRISTOPHER:</p> <p>13 Q. If you could open that up and turn to</p> <p>14 page 12 for me.</p> <p>15 A. I see it.</p> <p>16 Q. Do you see on page 12, in the middle of</p> <p>17 the page next to the finger that you can see on the</p> <p>18 left-hand side, there's a definition for a node?</p> <p>19 A. Yes.</p> <p>20 Q. All right. And that definition, the</p> <p>21 first definition for "node" is "A junction point at</p> <p>22 which two or more circuits interconnect in a data</p> <p>23 network."</p> <p>24 Do you see that?</p> <p>25 A. Yes.</p>                                                                                                                                                                                | <p style="text-align: right;">Page 207</p> <p>1 oh five -- and is consistent with the '052 Patent.</p> <p>2 Q. In that example you gave, the master</p> <p>3 module and the slave module are not network nodes,</p> <p>4 correct?</p> <p>5 A. Well, they -- they could be either, but</p> <p>6 regardless, it doesn't matter. The hop is between</p> <p>7 two nodes and those nodes are one is a master and</p> <p>8 one is a slave.</p> <p>9 Q. When you said "either," were you</p> <p>10 referring to a network node as -- or a -- just a --</p> <p>11 just a node?</p> <p>12 A. Yes.</p> <p>13 Q. Okay. And then I want to ask you, at</p> <p>14 the very last sentence in this paragraph 18 -- this</p> <p>15 is at the top of PDF page 14. I'll give you a</p> <p>16 second to get there. Do you see the sentence "Two</p> <p>17 nodes between master and slave creates three hops</p> <p>18 and so forth"?</p> <p>19 A. Yes.</p> <p>20 Q. All right. I want to make sure I</p> <p>21 understand where the three hops are in this example.</p> <p>22 The first hop would be between the master and the</p> <p>23 first node, correct?</p> <p>24 A. Yes.</p> <p>25 Q. The second hop would be between the</p> |

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| <p style="text-align: right;">Page 208</p> <p>1 first node and the second node, correct?</p> <p>2 A. Yes.</p> <p>3 Q. And then of course the third hop would</p> <p>4 be between the second node and the slave, right?</p> <p>5 A. Correct.</p> <p>6 Q. Okay. Let's turn to Figure 1 of the</p> <p>7 '052 Patent. Let me know when you're there. This</p> <p>8 is actually page 3 of the PDF and Exhibit 1001 if</p> <p>9 that helps you.</p> <p>10 A. I'm there.</p> <p>11 Q. All right. I know we talked about</p> <p>12 Figure 1 during your first deposition, but I'd like</p> <p>13 to spend a little time with you going over what</p> <p>14 everything represents just to make sure we're on the</p> <p>15 same page. The two "M" blocks on the left-hand side</p> <p>16 represent masters, correct?</p> <p>17 A. Yes.</p> <p>18 Q. And then on the far right-hand side</p> <p>19 there's a "S" block and that is a slave, correct?</p> <p>20 A. Yes.</p> <p>21 Q. All right. And I'm going to just keep</p> <p>22 marching through what these boxes are. There are</p> <p>23 three boxes with an "A" in them. Those are adapter</p> <p>24 units, correct?</p> <p>25 A. Yes.</p> | <p style="text-align: right;">Page 210</p> <p>1 network interfaces, one on the left-hand side and</p> <p>2 one on the right-hand side, correct?</p> <p>3 A. Correct.</p> <p>4 Q. And you agree that Figure 1 shows</p> <p>5 multiple hops under your definition of "hop,"</p> <p>6 correct?</p> <p>7 A. Yes.</p> <p>8 Q. All right. Do you see between the</p> <p>9 left-hand network interface and the left-hand</p> <p>10 router, there's an arrow going from left to right.</p> <p>11 Do you see that?</p> <p>12 A. Yes.</p> <p>13 Q. That arrow represents a hop between the</p> <p>14 network interface and the router, correct?</p> <p>15 A. At least a hop to the extent it's a</p> <p>16 direct connection.</p> <p>17 Q. Sure. So for the next couple of</p> <p>18 questions, I'm going to -- I'm going to ask you</p> <p>19 about those arrows inside of the network "N." I</p> <p>20 want you to assume, for purposes of these questions</p> <p>21 so that we're clear, that they are direct</p> <p>22 connections. Does that make sense?</p> <p>23 A. Okay. I will assume they are direct</p> <p>24 connections.</p> <p>25 Q. Right. And so we also have an arrow</p>                                      |
| <p style="text-align: right;">Page 209</p> <p>1 Q. Okay. And in the middle of Figure 1,</p> <p>2 we see kind of a -- almost cloud-shaped object in</p> <p>3 the center that's labeled with "N." That is a</p> <p>4 network, correct?</p> <p>5 A. That is a network. "N" stands for</p> <p>6 network, yes.</p> <p>7 Q. Right. And then the "NI" boxes on</p> <p>8 either end of the network are network interfaces,</p> <p>9 right?</p> <p>10 A. Yes.</p> <p>11 Q. And the two "Rs" inside of "N" are</p> <p>12 routers, correct?</p> <p>13 A. I think yes.</p> <p>14 Q. Okay. Now that we have our common</p> <p>15 understanding of the terminology, you would agree</p> <p>16 then in this example of Figure 1, the masters and</p> <p>17 the slave are outside of the network "N," correct?</p> <p>18 A. They are outside of the network "N,"</p> <p>19 that's correct.</p> <p>20 Q. Right. And likewise, the adapter units</p> <p>21 "A" are outside of the network "N," correct?</p> <p>22 A. In this particular embodiment, they are</p> <p>23 outside, but there are other embodiments that have</p> <p>24 them inside.</p> <p>25 Q. Right. And in this example we have two</p>  | <p style="text-align: right;">Page 211</p> <p>1 going from left to right between the two routers in</p> <p>2 the center of network "N." Do you see that?</p> <p>3 A. Yes.</p> <p>4 Q. The two routers are network nodes,</p> <p>5 right?</p> <p>6 A. Yes.</p> <p>7 Q. And that arrow, again assuming it's a</p> <p>8 direct connection going from left to right,</p> <p>9 represents a hop between the two routers in</p> <p>10 Figure 1, correct?</p> <p>11 A. The middle arrow from left to right</p> <p>12 between the left router and the right router, yes.</p> <p>13 Q. Yes. Thank you. And then finally, the</p> <p>14 arrow going from left to right from the right-hand</p> <p>15 router to the right-hand network interface, that</p> <p>16 would also be a hop, correct?</p> <p>17 A. That is correct.</p> <p>18 Q. Okay. Let's go to Figure 4 of the '052</p> <p>19 Patent. And again, I know we talked about this, but</p> <p>20 I do need to spend a couple questions just making</p> <p>21 sure we're on the same page of what everything is on</p> <p>22 Figure 4. Let me know when you're there.</p> <p>23 A. I'm there.</p> <p>24 Q. All right. So same deal, "M" is</p> <p>25 master, correct?</p> |

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| <p style="text-align: right;">Page 212</p> <p>1 A. Yes.</p> <p>2 Q. "S1" and "S2," those are slaves, right?</p> <p>3 A. Yes.</p> <p>4 Q. "N" is network, and "NI" is network</p> <p>5 interface. Agreed?</p> <p>6 A. Yes.</p> <p>7 Q. Okay. Do you see that there is a solid</p> <p>8 line between the left-hand network interface and the</p> <p>9 upper-right network interface in Figure 4?</p> <p>10 A. Yes.</p> <p>11 Q. All right. I want you to assume that</p> <p>12 that line represents a direct connection between</p> <p>13 those two network interfaces. Are you with me?</p> <p>14 A. Sure.</p> <p>15 Q. Would that line represent a hop between</p> <p>16 the left-hand network interface and the upper</p> <p>17 right-hand network interface in Figure 4?</p> <p>18 A. Yes.</p> <p>19 Q. Okay. And so in that example, again</p> <p>20 assuming that the line is showing a direct</p> <p>21 connection, there would be only one hop inside the</p> <p>22 network between "M" and "S1," correct?</p> <p>23 A. Well, so this is an important figure</p> <p>24 since it's an embodiment of the mapping, at least</p> <p>25 the mapping means, so we have -- I just want to make</p>                                                                                                                                                                                                                                                                                     | <p style="text-align: right;">Page 214</p> <p>1 correct?</p> <p>2 A. It's -- it's outside of "N" in this</p> <p>3 example but -- as drawn, yes. But the claim</p> <p>4 doesn't -- as I've stated, is about the interconnect</p> <p>5 means between the two modules.</p> <p>6 Q. While we have Exhibit 1001 in front of</p> <p>7 us, can you turn to column 8, line 47?</p> <p>8 A. I'm there.</p> <p>9 Q. Great. So starting at line 47, the</p> <p>10 specification reads, (quote as read):</p> <p>11 Summarizing it can be said, that</p> <p>12 the above-described mapping is</p> <p>13 relevant for communication</p> <p>14 protocols which do not include the</p> <p>15 notion of connection, but are</p> <p>16 implemented with an interconnect</p> <p>17 supporting connections (e.g.,</p> <p>18 AEtheral network on chip).</p> <p>19 Do you see that?</p> <p>20 A. Yes.</p> <p>21 Q. You would agree that the NoC in the</p> <p>22 '052 Patent is not limited to the ethereal NoC</p> <p>23 mentioned in that sentence, correct?</p> <p>24 A. I agree.</p> <p>25 Q. Okay. If you turn to paragraph 23 of</p> |
| <p style="text-align: right;">Page 213</p> <p>1 sure my testimony is very clear.</p> <p>2 So what this figure is showing from</p> <p>3 master to slave, interconnect means that -- show</p> <p>4 three hops. From master to "NI" on the left side,</p> <p>5 from "NI" to "NI" in the -- in the middle, and then</p> <p>6 from "NI" to "S1" on the right-hand side.</p> <p>7 So that's what -- that's as it relates</p> <p>8 to the claim, that's what Figure 4 represents.</p> <p>9 Inside -- to answer your question, inside of the box</p> <p>10 that happens to be labeled "N," it is showing a --</p> <p>11 if I assume "NI" to "NI" is a direct link, then it's</p> <p>12 showing one hop under the definition of the '052,</p> <p>13 the more appropriate definition for a hop in the</p> <p>14 context of the '052.</p> <p>15 Q. And you mentioned the link between, for</p> <p>16 example, "M" and the network interface on the</p> <p>17 left-hand side. In your view, that link between "M"</p> <p>18 and "NI" is part of the interconnect means?</p> <p>19 A. Yes. If you read the claim, it is --</p> <p>20 the interconnect means is between the master -- or I</p> <p>21 should say it's between a first processing module</p> <p>22 and a second processing module and, therefore, that</p> <p>23 interconnect mean -- means covers that first hop.</p> <p>24 Q. But you agree that that link is outside</p> <p>25 of the network "N" in this example in Figure 4,</p> | <p style="text-align: right;">Page 215</p> <p>1 your second declaration, this is PDF page 17.</p> <p>2 A. I'm there.</p> <p>3 Q. All right. In the first sentence you</p> <p>4 wrote, (quote as read):</p> <p>5 Claim 6 only requires that requests</p> <p>6 be "based on" a communication</p> <p>7 service identification that is</p> <p>8 either an address range or thread.</p> <p>9 Do you see that?</p> <p>10 A. Yes.</p> <p>11 Q. And then in the second sentence</p> <p>12 underneath that quote you wrote, (quote as read):</p> <p>13 Dr. Bagherzadeh appears to</p> <p>14 interpret "based on" as contains</p> <p>15 (i.e. "included in the request</p> <p>16 issues" or "communicated in a</p> <p>17 request").</p> <p>18 Do you see that?</p> <p>19 A. Yes.</p> <p>20 Q. You haven't offered any claim</p> <p>21 construction opinions on the meaning of the phrase</p> <p>22 "based on" in your first declaration, correct?</p> <p>23 A. I have not offered any claim</p> <p>24 construction views, no.</p> <p>25 Q. Likewise, you haven't offered any claim</p>                                         |

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| <div>Page 216</div> <div><p>1 construction views on the phrase "based on" in your</p><p>2 second declaration, correct?</p><p>3 MR. VANDENBURGH: Objection. Form.</p><p>4 THE WITNESS: I have not offered any</p><p>5 claim construction opinions. I am merely using the</p><p>6 plain and ordinary meaning of what "based on" means.</p><p>7 BY MR. CHRISTOPHER:</p><p>8 Q. Okay. You have a -- your paragraph,</p><p>9 very helpful, you have the text of claim 6. Do you</p><p>10 see that?</p><p>11 A. Yes.</p><p>12 Q. All right. Would you agree that the</p><p>13 claimed communication service identification must</p><p>14 include at least one communication thread or at</p><p>15 least one address range?</p><p>16 A. Okay. Ask me the question slowly.</p><p>17 Q. Sure. Would you agree that the claimed</p><p>18 communication service identification has to include</p><p>19 either, one, at least one communication thread, or</p><p>20 two, at least one address range?</p><p>21 A. Yes.</p><p>22 Q. Okay. What does the phrase "based</p><p>23 on" -- strike that.</p><p>24 What would a person of skill in the art</p><p>25 understand the plain and ordinary meaning of the</p></div>            | <div>Page 218</div> <div><p>1 second declaration. This is PDF page 24. At least</p><p>2 it starts on that page.</p><p>3 A. PDF page 24?</p><p>4 Q. No, I misspoke. 20.</p><p>5 A. Okay. Paragraph 26.</p><p>6 Q. In paragraph 26 of your second</p><p>7 declaration you discuss the '052 Patent and its</p><p>8 discussion of address ranges, correct?</p><p>9 A. Yes.</p><p>10 Q. You would agree that in the '052</p><p>11 Patent, the address ranges are stored within the</p><p>12 network interface, correct?</p><p>13 A. Yes, that's my understanding of the</p><p>14 embodiment.</p><p>15 Q. You would agree that in the embodiments</p><p>16 disclosed in the '052 Patent, the address ranges are</p><p>17 not stored in the master "M," correct?</p><p>18 A. The -- I can tell you where it is</p><p>19 disclosed that it's stored and that's in the network</p><p>20 interfaces. Whether it is stored in the master or</p><p>21 not is -- is not part of the disclosure.</p><p>22 Q. Do you have an opinion as to whether a</p><p>23 person skilled in the art would understand that the</p><p>24 address range is stored in the master?</p><p>25 A. It depends on the architecture. There</p></div>  |
| <div>Page 217</div> <div><p>1 phrase "based on" to be?</p><p>2 A. Well, we've got to be careful. The way</p><p>3 I'm going to answer it is in the context -- in the</p><p>4 context that it's being used. So in this particular</p><p>5 discussing -- discussing -- discussion we're having,</p><p>6 it -- the claim says, and I quote, (quote as read):</p><p>7 Wherein at least one first of said</p><p>8 processing modules (M) requests at</p><p>9 least one communication service to</p><p>10 at least one processing module (S)</p><p>11 based on specific communication</p><p>12 properties and at least one</p><p>13 communication service identifier,</p><p>14 wherein said at least one</p><p>15 communication service</p><p>16 identification comprises at least</p><p>17 one communication thread or at</p><p>18 least one address range.</p><p>19 So in this example, the "based on"</p><p>20 communication service identification means that the</p><p>21 communication -- too many words here --</p><p>22 communication service identification, it needs to</p><p>23 consider at least a communication thread or one</p><p>24 address range.</p><p>25 Q. Let's turn to paragraph 26 of your</p></div> | <div>Page 219</div> <div><p>1 doesn't need to be stored in the master but it could</p><p>2 be stored in the master as well, so it depends on</p><p>3 the architecture of the system.</p><p>4 Q. Let's turn to -- back to the '052</p><p>5 Patent. Figure 4. This is PDF page 5.</p><p>6 A. Okay.</p><p>7 Q. All right. We talked earlier about the</p><p>8 link between the master "M" and the network</p><p>9 interface "NI" on the left side of the network. Do</p><p>10 you recall that?</p><p>11 A. Yes.</p><p>12 Q. Okay. The '052 Patent does not</p><p>13 expressly disclose the contents of the requests from</p><p>14 the master "M" to the "NI" over that link, correct?</p><p>15 A. That is correct. In this embodiment,</p><p>16 it does not.</p><p>17 Q. Okay. The '052 Patent then does not</p><p>18 expressly disclose that the request from the master</p><p>19 "M" to the "NI" does not include an address range,</p><p>20 correct?</p><p>21 A. In this embodiment it doesn't. As we</p><p>22 discussed, it does not include or explain what is</p><p>23 the content of the request there. It merely states</p><p>24 or shows that the address range is stored in the</p><p>25 "NI."</p></div> |

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| <p style="text-align: right;">Page 220</p> <p>1 Q. Would you agree that a person skilled<br/>2 in the art would understand that the address range<br/>3 could be included in the request from the master "M"<br/>4 to the "NI" in the Figure 4 embodiment?<br/>5 A. Yes, it could be included, but also one<br/>6 of ordinary skill in the art would understand that<br/>7 it doesn't need to be included.<br/>8 Q. We talked about this a couple minutes<br/>9 ago. The communication service identification in<br/>10 the claim can include at least one communication<br/>11 thread, correct? Feel free to refer back to the<br/>12 claim if you need to.<br/>13 A. Thank you. Can you ask me the question<br/>14 again, please?<br/>15 Q. Sure. The claimed communication<br/>16 service identification can include at least one<br/>17 communication thread, correct?<br/>18 A. Correct.<br/>19 Q. In the '052 Patent, the at least one<br/>20 communication thread would be included in the<br/>21 request from the master "M" to the network<br/>22 interface, correct?<br/>23 A. Again, in this particular embodiment,<br/>24 you don't -- it doesn't have to be, no.<br/>25 Q. Turn to column 8 of the '052 Patent.</p> | <p style="text-align: right;">Page 222</p> <p>1 could send it in the request or -- or not depending<br/>2 on the architecture.<br/>3 Q. I'm at a transition point if we want to<br/>4 take a short break. I think we've been going over<br/>5 an hour.<br/>6 A. Okay.<br/>7 MR. VANDENBURGH: That sounds good.<br/>8 (Recess taken from 11:30 to<br/>9 11:40.)<br/>10 BY MR. CHRISTOPHER:<br/>11 Q. Welcome back, Dr. Hassoun. Did you<br/>12 discuss your testimony with anyone during our break?<br/>13 A. (Indiscernible).<br/>14 (Reporter requested<br/>15 clarification.)<br/>16 THE WITNESS: No.<br/>17 BY MR. CHRISTOPHER:<br/>18 Q. Okay. Let's turn to paragraph 51 of<br/>19 your second declaration. Exhibit 1030.<br/>20 A. Which paragraph? Sorry.<br/>21 Q. 51, please. This is PDF page 45.<br/>22 A. Okay.<br/>23 Q. I'll ask you about the second sentence<br/>24 in paragraph 51. You wrote, "In my opinion,<br/>25 sub-system 102 alone is sufficient to anticipate</p>                                                                                    |
| <p style="text-align: right;">Page 221</p> <p>1 Line 21.<br/>2 A. Yes, I see it.<br/>3 Q. All right. There the specification<br/>4 states, (quote as read):<br/>5 Hence, protocols where there are no<br/>6 communication threads (e.g., DTL,<br/>7 MTL), address ranges can be mapped<br/>8 to specific connections.<br/>9 Do you see that?<br/>10 A. Yes.<br/>11 Q. When it says that there are "protocols<br/>12 where there are no communication threads," that<br/>13 would imply to a POSITA that there are protocols<br/>14 where there are communication threads, correct?<br/>15 A. Correct.<br/>16 Q. And the protocols that are discussed in<br/>17 this sentence refer to the protocols that would be<br/>18 used by the master "M," correct?<br/>19 A. Fair, yes.<br/>20 Q. So doesn't this sentence at column 8,<br/>21 line 21 imply to a person of skill in the art that<br/>22 the master "M" can send the communication thread to<br/>23 the network interface as part of the request?<br/>24 A. As my answer before said, it -- one of<br/>25 ordinary skill in the art would understand that you</p>                                                                                                         | <p style="text-align: right;">Page 223</p> <p>1 claims 1 through 7."<br/>2 Do you see that?<br/>3 A. Yes.<br/>4 Q. Is it your opinion that Weber<br/>5 sub-system 102 alone anticipates claims 1 through 7<br/>6 even under Patent Owner's claim construction for<br/>7 interconnect means?<br/>8 A. Yes.<br/>9 Q. Okay. You did not opine in your first<br/>10 declaration that Weber sub-system 102 alone<br/>11 satisfies the interconnect means limitation under<br/>12 Patent Owner's claim construction, correct?<br/>13 A. I'll have to go check that.<br/>14 Q. Well, you cite here in paragraph 51 of<br/>15 your second declaration paragraphs 185, 190, 194 to<br/>16 195, 199 to 201, 209 to 210, and 219. Do you see<br/>17 that?<br/>18 A. I do.<br/>19 Q. All right. Let's turn to Exhibit 1003,<br/>20 your first declaration.<br/>21 A. But just for the record, I do cite the<br/>22 entire Section X.C. And as an example, I cited<br/>23 those specific paragraphs.<br/>24 Q. Sure. Let's turn to page -- this is<br/>25 PDF page 134 of Exhibit 1003.</p> |

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| <p style="text-align: right;">Page 224</p> <p>1 A. I'm there.</p> <p>2 <b>Q. All right. Towards the bottom of that</b></p> <p>3 <b>page above paragraph 199, do you see there's a</b></p> <p>4 <b>header 6.a "coupling said plurality of processing</b></p> <p>5 <b>modules (M,S) by interconnect means (N)"? Do you</b></p> <p>6 <b>see that? Sorry. I didn't hear your answer or if</b></p> <p>7 <b>that was --</b></p> <p>8 A. Yes. I'm sorry. I didn't change</p> <p>9 anything here.</p> <p>10 <b>Q. You sound okay now.</b></p> <p>11 A. Okay. I'll speak louder.</p> <p>12 <b>Q. And then underneath paragraph 199 you</b></p> <p>13 <b>have a claim chart. Do you see that?</b></p> <p>14 A. A table, yes.</p> <p>15 <b>Q. Table, sure. And then if you turn --</b></p> <p>16 <b>this is PDF page 136. Within that table at the very</b></p> <p>17 <b>top of that page, there's a sentence that starts</b></p> <p>18 <b>with "Weber also teaches." Do you see that?</b></p> <p>19 A. Yes.</p> <p>20 <b>Q. You said, (quote as read):</b></p> <p>21 <b>Weber also teaches this element</b></p> <p>22 <b>under Patent Owner's proposed</b></p> <p>23 <b>construction of this term in the</b></p> <p>24 <b>district court litigation.</b></p> <p>25 <b>Do you see that?</b></p>                        | <p style="text-align: right;">Page 226</p> <p>1 slave for which the message is -- is going to. So</p> <p>2 within network nodes, you have masters and slaves as</p> <p>3 well.</p> <p>4 <b>Q. In the text above your annotated</b></p> <p>5 <b>version of Figure 1, you didn't opine that</b></p> <p>6 <b>functional block F would be understood as a slave,</b></p> <p>7 <b>correct?</b></p> <p>8 A. I didn't explicitly say that, but I did</p> <p>9 highlight that connection, that multi-hop</p> <p>10 interconnect means between A and F.</p> <p>11 <b>Q. In Figure 1 of Weber, you would agree</b></p> <p>12 <b>that the sub-system 102 and the FPGA 110 as depicted</b></p> <p>13 <b>in Figure 1 are on separate integrated circuits,</b></p> <p>14 <b>correct?</b></p> <p>15 A. It's actually described in more than</p> <p>16 one way, so it is described at -- as they're all on</p> <p>17 a -- on a single chip and it's also described in</p> <p>18 other embodiment where they are on separate chips.</p> <p>19 <b>Q. Understood. But my question is about</b></p> <p>20 <b>what's shown in Figure 1. You would agree that in</b></p> <p>21 <b>the depiction in Figure 1, sub-system 102 and FPGA</b></p> <p>22 <b>110 are on separate integrated circuits, correct?</b></p> <p>23 A. Same answer as before. If you read the</p> <p>24 entire description, there's a description of</p> <p>25 Figure 1 where they're on two separate chips and</p> |
| <p style="text-align: right;">Page 225</p> <p>1 A. Yes.</p> <p>2 <b>Q. And then below that you annotated</b></p> <p>3 <b>Figure 1 of Weber showing a interconnect between</b></p> <p>4 <b>sub-system A in block 102 and sub-system -- strike</b></p> <p>5 <b>that. Not subsystems, they're functional blocks.</b></p> <p>6 <b>In your annotated version of Figure 1</b></p> <p>7 <b>of Weber on page 136 of your first declaration, you</b></p> <p>8 <b>identified an interconnect between functional block</b></p> <p>9 <b>A in sub-system 102 and functional block A in FPGA</b></p> <p>10 <b>110, correct?</b></p> <p>11 A. Yes.</p> <p>12 <b>Q. Okay. And in this table, you haven't</b></p> <p>13 <b>annotated an interconnect between functional block A</b></p> <p>14 <b>and functional block C in sub-system 102 in Figure 1</b></p> <p>15 <b>of Weber, correct?</b></p> <p>16 A. Not between A and C, but I did annotate</p> <p>17 for example between A and F. That's annotated in</p> <p>18 there.</p> <p>19 <b>Q. F, functional block F is a bridge,</b></p> <p>20 <b>correct?</b></p> <p>21 A. Yes. That's my understanding. It</p> <p>22 could be a bridge.</p> <p>23 <b>Q. And a bridge is a network node,</b></p> <p>24 <b>correct?</b></p> <p>25 A. A network node. It could be also a</p> | <p style="text-align: right;">Page 227</p> <p>1 then there's a reference to the same figure where it</p> <p>2 says they're all on a single integrated circuits.</p> <p>3 Some or all of them on a single integrated circuit.</p> <p>4 So the depiction is for both.</p> <p>5 <b>Q. Again, that's not my question. In</b></p> <p>6 <b>Figure 1, sub-system 102 is shown as a rectangular</b></p> <p>7 <b>box, correct?</b></p> <p>8 A. Yes.</p> <p>9 <b>Q. And that box represents an integrated</b></p> <p>10 <b>circuit, correct?</b></p> <p>11 A. It could represent an integrated</p> <p>12 circuit or it could represent a sub-system within</p> <p>13 the larger 100 integrated circuit.</p> <p>14 <b>Q. Okay. And FPGA 110, again, it's got</b></p> <p>15 <b>the square around it, which indicates that FPGA 110</b></p> <p>16 <b>in this example in Figure 1 is an integrated</b></p> <p>17 <b>circuit, correct?</b></p> <p>18 A. As I answered for block 102, Figure 1</p> <p>19 depicts in one embodiment FPGA 110 being a</p> <p>20 sub-system of integrated circuit -- an integrated</p> <p>21 circuit 100 or a FPGA 110 being an integrated</p> <p>22 circuit itself.</p> <p>23 <b>Q. Earlier I had put a copy of Weber</b></p> <p>24 <b>Exhibit 1007 in the Zoom chat. Do you mind opening</b></p> <p>25 <b>that up for me?</b></p>                                                                                                                |

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| <p style="text-align: right;">Page 228</p> <p>1 (Whereupon, Exhibit 1007 was<br/>2 marked for identification.)<br/>3 THE WITNESS: It's open.<br/>4 BY MR. CHRISTOPHER:<br/>5 Q. Can you turn to Figure 4 of Weber?<br/>6 A. Okay.<br/>7 Q. In Figure 4 do you see an element 1012<br/>8 in the middle, kind of a double-sided arrow?<br/>9 A. Yes.<br/>10 Q. 1012 is a shared communication bus,<br/>11 correct?<br/>12 A. Yes.<br/>13 Q. All right. In Figure 4, the shared<br/>14 communication bus is between initiator interface<br/>15 module 1004 and target interface module 1006,<br/>16 correct?<br/>17 A. Yes. Figure 4 is exemplary to show the<br/>18 positioning of the buses.<br/>19 Q. Okay. If we assume that shared<br/>20 communication bus 1012 is a direct connection, there<br/>21 would only be one hop between initiator interface<br/>22 module 1004 and target interface module 1006,<br/>23 correct?<br/>24 A. You want me to assume that 1012 is a<br/>25 direct connection?</p>                                                                                       | <p style="text-align: right;">Page 230</p> <p>1 A. I'm there.<br/>2 Q. Now I want to ask you about the last<br/>3 sentence in that paragraph 35. (quote as read):<br/>4 In another embodiment, the<br/>5 communications protocol may be used<br/>6 to allow multiple functional blocks<br/>7 on different semiconductor devices<br/>8 to communicate to each other<br/>9 through a shared off-chip<br/>10 communications resource, such as a<br/>11 bus.<br/>12 Do you see that?<br/>13 A. Yes.<br/>14 Q. You don't dispute that this sentence is<br/>15 referring to an embodiment in which the functional<br/>16 blocks that are communicating are not located on the<br/>17 same integrated circuit, correct?<br/>18 A. That's correct.<br/>19 Q. Let's go to paragraph 55 of your second<br/>20 declaration. This is PDF page 47.<br/>21 A. PDF page 47?<br/>22 Q. Correct.<br/>23 A. Okay. I'm there.<br/>24 Q. All right. In paragraph 55 you wrote,<br/>25 (quote as read):</p>                                                                            |
| <p style="text-align: right;">Page 229</p> <p>1 Q. Yes.<br/>2 A. Okay. So between the initiator and the<br/>3 target, there's at least three hops shown here in<br/>4 this figure.<br/>5 Q. Understood. And with that assumption<br/>6 in mind, there's only one hop between 1004 and 1006,<br/>7 correct?<br/>8 A. If we assume 1012 is a direct bus or a<br/>9 direct connection, it is one hop between 1004 and<br/>10 1006.<br/>11 Q. Let's turn to paragraph 50 of Weber.<br/>12 This is PDF page 21. Let me know when you're there.<br/>13 A. Paragraph 50? Yes, I'm there.<br/>14 Q. Paragraph 50 is describing the shared<br/>15 communication bus 1012 that we just discussed in<br/>16 Figure 4, correct?<br/>17 A. Yes.<br/>18 Q. Paragraph 50 doesn't mention<br/>19 sub-systems 102, 104, 106, 108, and 110 from<br/>20 Figure 1 expressly, correct?<br/>21 A. The paragraph itself, the text in it, I<br/>22 don't see those numbers in there.<br/>23 Q. If we go to paragraph 35 of Weber, this<br/>24 is on PDF page 19 right under the header "Detailed<br/>25 Description."</p> | <p style="text-align: right;">Page 231</p> <p>1 None of this suggests that Weber<br/>2 does not disclose all of the system<br/>3 100 on a single IC. Integrating<br/>4 components together always involves<br/>5 tradeoffs, particularly with regard<br/>6 to cost, size, performance, and<br/>7 thermal management.<br/>8 Do you see that?<br/>9 A. Yes.<br/>10 Q. You agree that integrating all of the<br/>11 sub-systems shown in Figure 1 of Weber onto a single<br/>12 IC would involve tradeoffs, correct?<br/>13 A. Yes.<br/>14 Q. You can refer to Figure 1 of Weber if<br/>15 you need to, but one of the sub-systems in Weber is<br/>16 something called DRAM. D-R-A-M, correct?<br/>17 A. Correct.<br/>18 Q. DRAM stands for dynamic random access<br/>19 memory, correct?<br/>20 A. Yes. And it's also referred to as<br/>21 direct random access memory in smaller -- smaller<br/>22 circles.<br/>23 Q. What do you mean by "smaller circles"?<br/>24 A. You can find it in one or two<br/>25 references where it was. I found it in one or two</p> |

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| <p style="text-align: right;">Page 232</p> <p>1 references at that time.</p> <p>2 <b>Q. And there's no difference between</b></p> <p>3 <b>dynamic random access memory and direct random</b></p> <p>4 <b>access memory?</b></p> <p>5 A. Not in the context that I -- that I</p> <p>6 saw. I did not see a difference, no. They were</p> <p>7 both referring to dynamic random access memory.</p> <p>8 <b>Q. Let's turn to paragraph 55 of your</b></p> <p>9 <b>second declaration. This is again page 47. If you</b></p> <p>10 <b>didn't turn the page, you should already be there.</b></p> <p>11 A. I'm there.</p> <p>12 <b>Q. This is actually -- this is the top of</b></p> <p>13 <b>page 48. You see you cited Exhibit 1053?</b></p> <p>14 A. So yes.</p> <p>15 <b>Q. All right. Did you review Exhibit 1053</b></p> <p>16 <b>in its entirety in the course of preparing your</b></p> <p>17 <b>second declaration?</b></p> <p>18 A. I did look at it, yes.</p> <p>19 <b>Q. All right. I placed a copy in our Zoom</b></p> <p>20 <b>chat. Let me know when you have that open.</b></p> <p>21 (Whereupon, Exhibit 1053 was</p> <p>22 marked for identification.)</p> <p>23 THE WITNESS: Okay.</p> <p>24 BY MR. CHRISTOPHER:</p> <p>25 <b>Q. All right. We're looking at</b></p> | <p style="text-align: right;">Page 234</p> <p>1 <b>Q. Understood. Let's turn to page 10 of</b></p> <p>2 <b>Exhibit 1000 --</b></p> <p>3 A. I just want to point out the rest of</p> <p>4 that paragraph. If you can continue reading the</p> <p>5 paragraph, it talks about -- it talks about</p> <p>6 "However, any kind of high-performance processor can</p> <p>7 send requests to embedded RAM at a very high rate."</p> <p>8 So it's talking about scenarios where</p> <p>9 that's doable. And then at the end, it discussed</p> <p>10 "The rest of this section describes two ways to</p> <p>11 address this problem: adding more DRAM banks, and</p> <p>12 making a hierarchical multi-bank RAM."</p> <p>13 So this paper not only discusses the</p> <p>14 problem, but it discusses architectures where this</p> <p>15 is solved with an integrated DRAM. So I just want</p> <p>16 to make sure we have the entire disclosure of 1053.</p> <p>17 <b>Q. Can you turn to paragraph -- sorry,</b></p> <p>18 <b>page 14 of Exhibit 1053?</b></p> <p>19 A. Okay.</p> <p>20 <b>Q. You see there's a Table 2 at the top?</b></p> <p>21 A. Yes.</p> <p>22 <b>Q. All right. First full paragraph under</b></p> <p>23 <b>the Table 2 heading. It says, (quote as read):</b></p> <p>24 <b>These results show that the long</b></p> <p>25 <b>cycle time of the embedded DRAM can</b></p> |
| <p style="text-align: right;">Page 233</p> <p>1 <b>Exhibit 1053, correct?</b></p> <p>2 A. Yes.</p> <p>3 <b>Q. Okay. Let's go to page 6.</b></p> <p>4 A. Okay.</p> <p>5 <b>Q. Do you see the header 3: "A problem -</b></p> <p>6 <b>too much accesses at once"?</b></p> <p>7 A. Yes.</p> <p>8 <b>Q. So the first sentence in that paragraph</b></p> <p>9 <b>reads, (quote as read):</b></p> <p>10 A critical problem inherent in</p> <p>11 embedded DRAM lies in its inability</p> <p>12 to handle the large number of</p> <p>13 memory accesses that a</p> <p>14 high-performance processor can</p> <p>15 generate.</p> <p>16 Do you see that?</p> <p>17 A. Yes, I do.</p> <p>18 <b>Q. You would agree that Exhibit 1053</b></p> <p>19 <b>teaches that embedded DRAM cannot handle the large</b></p> <p>20 <b>number of memory accesses that a high-performance</b></p> <p>21 <b>processor can generate, correct?</b></p> <p>22 A. That's what that says.</p> <p>23 <b>Q. Right.</b></p> <p>24 A. It does not preclude its integration on</p> <p>25 the same integrated circuit.</p>                                                                                                                                                                                               | <p style="text-align: right;">Page 235</p> <p>1 <b>significantly restrict the</b></p> <p>2 <b>performance when a high-performance</b></p> <p>3 <b>processor such as a single-chip</b></p> <p>4 <b>multiprocessor is integrated on the</b></p> <p>5 <b>same die and executes applications</b></p> <p>6 <b>which have large reference data</b></p> <p>7 <b>sets.</b></p> <p>8 <b>Do you see that?</b></p> <p>9 A. I do.</p> <p>10 <b>Q. And so Exhibit 1053 is teaching that</b></p> <p>11 <b>embedded DRAM, at least in the case of a</b></p> <p>12 <b>high-performance processor, can restrict the</b></p> <p>13 <b>performance, correct?</b></p> <p>14 A. That's what it says, but also what the</p> <p>15 paper is teaching is architectures on how to solve</p> <p>16 and deal with that problem.</p> <p>17 <b>Q. The architectures that are described in</b></p> <p>18 <b>Exhibit 1053 but address that problem are not</b></p> <p>19 <b>disclosed in the Weber reference, correct?</b></p> <p>20 A. The Weber reference indicates that the</p> <p>21 sub-systems in Figure 1 could be integrated on --</p> <p>22 could be on a single integrated circuit. Whether</p> <p>23 it's all of them or subsets of them together, this</p> <p>24 paper I present here to show that that was a known</p> <p>25 thing in the art, to integrate DRAM with a</p>                            |

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| <p style="text-align: right;">Page 236</p> <p>1 microprocessor.</p> <p>2       Additionally, this paper resolves -- or</p> <p>3 proposes architecture to solve the problems involved</p> <p>4 with this -- with putting a DRAM on a -- on a single</p> <p>5 integrated circuit with a processor, whether high</p> <p>6 performance or not, but it is definitely a thing</p> <p>7 that is done, or was done at the time of the '052</p> <p>8 Patent.</p> <p>9       <b>Q. I appreciate the explanation. That</b></p> <p>10 <b>wasn't my question. The question was the</b></p> <p>11 <b>architectures that are taught in Exhibit 1053 that</b></p> <p>12 <b>address the problems of embedding DRAM are not</b></p> <p>13 <b>expressly discussed in the Weber reference, correct?</b></p> <p>14       A. No. It did not discuss those, nor did</p> <p>15 it disclose what type of DRAM is integrated on</p> <p>16 there.</p> <p>17       <b>Q. Let's bounce back to paragraph 58 of</b></p> <p>18 <b>your second declaration. This is PDF page 50.</b></p> <p>19       A. I'm there.</p> <p>20       <b>Q. All right. In paragraph 58 you cite to</b></p> <p>21 <b>Exhibit 1055. Do you see that?</b></p> <p>22       A. Yes.</p> <p>23       <b>Q. Once it finishes loading, I'm sure you</b></p> <p>24 <b>can guess what's about to pop up in the Zoom chat.</b></p> <p>25 <b>Let me know when you have a copy of Exhibit 1055.</b></p> | <p style="text-align: right;">Page 238</p> <p>1 one in there, one of the reasons is</p> <p>2 Dr. Bagherzadeh's assertion that integrating would</p> <p>3 increase the footprint, and this one is clearly</p> <p>4 stating that the circuit board space is reduced.</p> <p>5       So again, Dr. Bagherzadeh's -- the</p> <p>6 claims are disputed by products that are -- that are</p> <p>7 out there in the industry or were out there in the</p> <p>8 industry at the time.</p> <p>9       <b>Q. But you agree the sentence we just read</b></p> <p>10 <b>is not talking about embedded memory, correct?</b></p> <p>11       A. It's not talking -- that sentence is</p> <p>12 about an external SDRAM to this system, but the</p> <p>13 disclosure is integrating -- does integrate memory</p> <p>14 on the same chip, the TMS320.</p> <p>15       <b>Q. And then if we can turn to page 12 of</b></p> <p>16 <b>Exhibit 1055.</b></p> <p>17       A. Yes.</p> <p>18       <b>Q. Let me know when you're there.</b></p> <p>19       A. I'm there.</p> <p>20       <b>Q. Feel free to refer back to paragraph 58</b></p> <p>21 <b>if you need to. The sentence starting with "When</b></p> <p>22 <b>memory and peripherals" on page 12, that's the</b></p> <p>23 <b>sentence you cited in your declaration, correct?</b></p> <p>24       A. This is on page 12?</p> <p>25       <b>Q. 12 of Exhibit 1055.</b></p> |
| <p style="text-align: right;">Page 237</p> <p>1       (Whereupon, Exhibit 1055 was</p> <p>2 marked for identification.)</p> <p>3 BY MR. CHRISTOPHER:</p> <p>4       <b>Q. It's a little bit of a large file.</b></p> <p>5       A. Okay. It's open.</p> <p>6       <b>Q. All right. If you could turn to</b></p> <p>7 <b>page 57 for me, please.</b></p> <p>8       A. I'm there.</p> <p>9       <b>Q. All right. Do you see the header 3.3</b></p> <p>10 <b>"External Memory Interface (EMIF)"?</b></p> <p>11       A. No. Perhaps I'm on the wrong page.</p> <p>12       <b>Q. Page 47 of the PDF. It's 47 out of 92.</b></p> <p>13       A. I was at 57. Okay. I see it.</p> <p>14       <b>Q. You see it. Okay. And then the first</b></p> <p>15 <b>sentence under that header, it says, (quote as</b></p> <p>16 <b>read):</b></p> <p>17       The external memory interface</p> <p>18 (EMIF) connects the CPU and</p> <p>19 external memory, such as</p> <p>20 synchronous dynamic RAM (SDRAM).</p> <p>21 Do you see that?</p> <p>22       A. I do.</p> <p>23       <b>Q. And so this section is describing SDRAM</b></p> <p>24 <b>as external memory, correct?</b></p> <p>25       A. Yes, it does. The reason I put this</p>                                                                                                                                                                                                     | <p style="text-align: right;">Page 239</p> <p>1       A. And where am I looking?</p> <p>2       <b>Q. In your second declaration, paragraph</b></p> <p>3 <b>58 which is on page 50.</b></p> <p>4       A. Yes.</p> <p>5       <b>Q. All right. That sentence in -- on</b></p> <p>6 <b>page 12, "When memory and peripherals are integrated</b></p> <p>7 <b>with a CPU into one chip," it doesn't expressly say</b></p> <p>8 <b>that the memory is DRAM, correct?</b></p> <p>9       A. It does not, but it says "memory" in</p> <p>10 general which includes DRAM.</p> <p>11       <b>Q. All right. But it doesn't expressly</b></p> <p>12 <b>say DRAM in that sentence, correct?</b></p> <p>13       A. It does not.</p> <p>14       <b>Q. All right. If you have paragraph 58</b></p> <p>15 <b>available in front of you still, you also cite</b></p> <p>16 <b>Exhibit 1056 and Exhibit 1058. Excuse me. Let me</b></p> <p>17 <b>start over.</b></p> <p>18       In paragraph 58 of your second</p> <p>19 declaration, you cite Exhibit 1056 and Exhibit 1057.</p> <p>20 Do you see that?</p> <p>21       A. Yes.</p> <p>22       <b>Q. Exhibit 1 -- Exhibit 1056 does not</b></p> <p>23 <b>expressly disclose DRAM embedded in a single</b></p> <p>24 <b>integrated circuit with a processor, correct?</b></p> <p>25       A. No, it's not talking about DRAM. It's</p>                                         |

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| <p style="text-align: right;">Page 240</p> <p>1 talking about replacing many chips, integrating them<br/>2 together, result in reduce in size and power<br/>3 consumption of the circuit, so it's showing the<br/>4 advantages of doing that.</p> <p>5 <b>Q. Understood. And likewise, Exhibit 1057</b><br/>6 <b>doesn't mention DRAM, correct?</b></p> <p>7 A. No, it's -- it's -- again, it doesn't<br/>8 explicitly mention DRAM, but again, it's talking<br/>9 about system-on-chips and integrating multiple<br/>10 memories -- sorry, multiple modules on -- that used<br/>11 to occupy one or more board on a single chip is<br/>12 advantageous.</p> <p>13 <b>Q. I put a copy of Exhibit 1058 in your</b><br/>14 <b>Zoom chat. If you can open that up. Let me know</b><br/>15 <b>when you have it.</b></p> <p>16 (Whereupon, Exhibit 1058 was<br/>17 marked for identification.)</p> <p>18 THE WITNESS: I have it.</p> <p>19 BY MR. CHRISTOPHER:</p> <p>20 <b>Q. All right. And if you can turn to</b><br/>21 <b>page -- this is page 11, Figure 8.</b></p> <p>22 A. Yes.</p> <p>23 <b>Q. All right. Figure 8 is showing -- can</b><br/>24 <b>you see there's kind of a gray shaded square. Do</b><br/>25 <b>you see that?</b></p> | <p style="text-align: right;">Page 242</p> <p>1 <b>Q. The interfaces in Weber you're</b><br/>2 <b>referring to are the interface modules, correct?</b></p> <p>3 A. What exhibit was Weber, please?</p> <p>4 <b>Q. It's Exhibit 1007.</b></p> <p>5 A. I just want to look at Figure 1. Can<br/>6 you repeat the question, please?</p> <p>7 <b>Q. In paragraph 88 you said -- this is</b><br/>8 <b>your second declaration -- "Weber's interfaces are</b><br/>9 <b>network interfaces," correct?</b></p> <p>10 A. Yes.</p> <p>11 <b>Q. Okay. And so referring to Figure 1 of</b><br/>12 <b>Weber, your opinion is that each of the interface</b><br/>13 <b>modules 120 through 128 are network interfaces,</b><br/>14 <b>correct?</b></p> <p>15 A. They are -- yes, they are interface<br/>16 modules. Now, I would want to look at each one of<br/>17 them for a second.</p> <p>18 <b>Q. If you could please go ahead and do</b><br/>19 <b>that and confirm for me that each of the interface</b><br/>20 <b>modules 120 through 128 are network interfaces in</b><br/>21 <b>your opinion.</b></p> <p>22 A. Yes, they could -- they are all<br/>23 interface module, and they could be network<br/>24 interfaces, yes.</p> <p>25 <b>Q. In paragraph 88 of your second</b></p>                  |
| <p style="text-align: right;">Page 241</p> <p>1 A. Yes.</p> <p>2 <b>Q. There's a number of components inside</b><br/>3 <b>that, right?</b></p> <p>4 A. Yes.</p> <p>5 <b>Q. And one of those components -- or</b><br/>6 <b>rather two of those components are called "DRAM</b><br/>7 <b>controller" on the right-hand side. Do you see</b><br/>8 <b>those?</b></p> <p>9 A. I do.</p> <p>10 <b>Q. The DRAM controller is not DRAM itself,</b><br/>11 <b>correct?</b></p> <p>12 A. That is correct.</p> <p>13 <b>Q. You can put that aside. Go to</b><br/>14 <b>paragraph 88 of your second declaration. Page 76 of</b><br/>15 <b>the PDF.</b></p> <p>16 A. Okay.</p> <p>17 <b>Q. In the first sentence you wrote -- this</b><br/>18 <b>is paragraph 88, (quote as read):</b></p> <p>19 <b>Weber's interfaces are network</b><br/>20 <b>interfaces for the simple reason</b><br/>21 <b>that Weber discloses a network as</b><br/>22 <b>discussed above and the interfaces</b><br/>23 <b>are for that network.</b></p> <p>24 <b>Do you see that?</b></p> <p>25 A. Yes.</p>                                                                                                                                                                      | <p style="text-align: right;">Page 243</p> <p>1 <b>declaration you said that they are network</b><br/>2 <b>interfaces, correct?</b></p> <p>3 A. Yeah.</p> <p>4 <b>Q. Okay. I want to discuss your</b><br/>5 <b>annotations of Weber Figure 1. This is in paragraph</b><br/>6 <b>72 of your second declaration on PDF page 61.</b></p> <p>7 A. Okay.</p> <p>8 <b>Q. In this annotated figure on page 61 of</b><br/>9 <b>the PDF internal page number 57, you've shown an</b><br/>10 <b>interconnect means between functional block A and</b><br/>11 <b>functional block C on sub-system 102, correct?</b></p> <p>12 A. Yes.</p> <p>13 <b>Q. Okay. And I want to focus on the red</b><br/>14 <b>line you drew between interface module 120 and</b><br/>15 <b>interface module 122. Do you see that?</b></p> <p>16 A. Yes.</p> <p>17 <b>Q. In this example, there are no nodes</b><br/>18 <b>between interface module 120 and interface module</b><br/>19 <b>122, correct?</b></p> <p>20 A. In this example, there are no nodes<br/>21 shown between those two blocks, but again, the<br/>22 interconnect means is from A to C, so you can -- you<br/>23 go from A to 120, 120 through -- to 122, and then<br/>24 from 122 to C.</p> <p>25 <b>Q. Right. And I'm just focused on between</b></p> |

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| <p style="text-align: right;">Page 244</p> <p>1 120 and 122. If there are no nodes between 120 and</p> <p>2 122, there's only one hop between 120 and 122,</p> <p>3 correct?</p> <p>4 A. If -- yes, that would be one hop.</p> <p>5 Q. Just one more question on this before</p> <p>6 we move on. The communication link in this example</p> <p>7 between interface module 120 and interface module</p> <p>8 122 is over the shared communication bus 114,</p> <p>9 correct?</p> <p>10 A. That is correct.</p> <p>11 Q. Okay. Now, if you could turn to the</p> <p>12 next page, this is still for the record in paragraph</p> <p>13 72 of your second declaration on PDF page 62,</p> <p>14 internal page number 58 for the record. You have</p> <p>15 another version, annotated version of Figure 1 of</p> <p>16 Weber. Do you see that?</p> <p>17 A. Yes.</p> <p>18 Q. Okay. In this example, the functional</p> <p>19 block F that you've highlighted in yellow would be a</p> <p>20 bridge, correct?</p> <p>21 A. I explained it could be a bridge based</p> <p>22 on the disclosure of Weber, yes.</p> <p>23 Q. Right. And the interface module 124</p> <p>24 that you've highlighted in yellow is associated with</p> <p>25 the bridge F, correct?</p>                               | <p style="text-align: right;">Page 246</p> <p>1 F, right?</p> <p>2 A. Correct.</p> <p>3 Q. And we don't see an interface module on</p> <p>4 the right-hand side downstream of functional block</p> <p>5 F, correct?</p> <p>6 A. Correct.</p> <p>7 Q. Okay. How would functional block F</p> <p>8 communicate with the shared communication bus 112</p> <p>9 without an interface module between F and bus 112?</p> <p>10 A. How does it do it? Clearly in Weber,</p> <p>11 it doesn't need an interface module because F in</p> <p>12 this case is -- speaks the language of one -- shared</p> <p>13 bus 112, so it's directly connected to that bus as</p> <p>14 shown over here.</p> <p>15 Similarly, block D if you look inside</p> <p>16 of 102, it's also directly connected to the shared</p> <p>17 bus 114 without an interface.</p> <p>18 Q. All right. Let me see if I understand</p> <p>19 you. Block F needs the interface module 124 because</p> <p>20 it doesn't speak the language of bus 114, correct?</p> <p>21 A. That's an example, yes.</p> <p>22 Q. And it doesn't need an interface module</p> <p>23 for bus 112 because it speaks the language of bus</p> <p>24 112. Is that the explanation?</p> <p>25 A. That is correct.</p>            |
| <p style="text-align: right;">Page 245</p> <p>1 A. Yeah. Yes, it is.</p> <p>2 Q. So if functional block F is implemented</p> <p>3 as a bridge, why would the bridge need to use</p> <p>4 network interface 124 to communicate with the shared</p> <p>5 bus 114?</p> <p>6 A. You're asking -- I'm sorry. Ask the</p> <p>7 question again.</p> <p>8 Q. Well, you would agree that the</p> <p>9 interface modules in Weber are used to allow the</p> <p>10 functional blocks to communicate with the shared</p> <p>11 bus, correct?</p> <p>12 A. Yes.</p> <p>13 Q. Okay. And so interface module 124,</p> <p>14 assuming F is a bridge, would its purpose still be</p> <p>15 to allow the bridge to communicate with the shared</p> <p>16 communication bus 114?</p> <p>17 A. Yes. Through interface -- in this case</p> <p>18 through interface module 124. Bus 115 is a</p> <p>19 point-to-point bus, so F has a point-to-point bus on</p> <p>20 one side and a shared bus on the other side, shared</p> <p>21 bus 112, and therefore 124 provides an interface</p> <p>22 between point-to-point bus 115 and the shared bus in</p> <p>23 this particular architecture.</p> <p>24 Q. Well, the interface module 124 in this</p> <p>25 example is on the left-hand side of functional block</p> | <p style="text-align: right;">Page 247</p> <p>1 Q. Okay. So in this example, you've shown</p> <p>2 an interconnect means between functional block A and</p> <p>3 sub-system 102 and functional block A and FPGA 110,</p> <p>4 correct?</p> <p>5 A. Yes.</p> <p>6 Q. Weber doesn't ever expressly disclose</p> <p>7 communicating between those two functional blocks,</p> <p>8 correct?</p> <p>9 A. It -- it does in Figure 1. Am I</p> <p>10 following the question? Figure 1 is a diagram</p> <p>11 showing buses between these blocks.</p> <p>12 Q. Well, the red arrows, you drew those,</p> <p>13 right?</p> <p>14 A. Correct.</p> <p>15 Q. Okay. But Weber doesn't expressly say</p> <p>16 that information is transmitted from functional</p> <p>17 block A in sub-system 102 to functional block A in</p> <p>18 FPGA 110 in the text, correct?</p> <p>19 A. Weber discusses these bus systems used</p> <p>20 to communicate between sub-systems and to</p> <p>21 communicate between even separate chips and this is</p> <p>22 an example of such communication system. So Weber's</p> <p>23 disclosure and this being an embodiment is talking</p> <p>24 about communication between these different</p> <p>25 sub-systems that are in this figure.</p> |

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1 Q. Is it your view that based on the  
2 figure, any one of the functional blocks in Figure 1  
3 can communicate with any other one of the functional  
4 blocks shown in Figure 1?  
5 A. I believe that's the disclosure.  
6 That's what Weber is trying -- is disclosing over  
7 here. The actual implementation of this is up to  
8 one of ordinary skill in the art that's putting this  
9 system together.  
10 MR. CHRISTOPHER: I'm at another  
11 transition point if we want to take our lunch now.  
12 MR. VANDENBURGH: That sounds good.  
13 (Recess taken from 12:31 to  
14 1:20.)  
15 BY MR. CHRISTOPHER:  
16 Q. Dr. Hassoun, welcome back. Did you  
17 discuss the substance of your testimony with anyone  
18 during our lunch break?  
19 A. No, I did not.  
20 Q. Let's turn now to paragraph 75 of your  
21 second declaration, Exhibit 1030.  
22 A. I'm there.  
23 Q. Great. And the sentence I want to ask  
24 you about is actually at the top of PDF page 64.  
25 There's a sentence that reads "The IEEE dictionary

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1 also suggests that packets are not required for all  
2 networks."  
3 Do you see that?  
4 A. Yes.  
5 Q. You would agree that in a  
6 network-on-chip, packets are transmitted over the  
7 network, correct?  
8 A. They -- they could be.  
9 Q. What do you mean by "they could be"?  
10 A. That's not necessarily the only  
11 architecture.  
12 Q. You refer to architecture. You're  
13 referring to a network-on-chip?  
14 A. Yes.  
15 Q. And so your testimony is that a  
16 network-on-chip does not necessarily transmit  
17 packets over the network?  
18 A. That's right.  
19 Q. Okay. You agree, though, that the  
20 network-on-chip disclosed in the '052 Patent  
21 transmits packets over a network, correct?  
22 A. I'll have to look if that's the only  
23 embodiment.  
24 Q. Well, can you turn to Figure 1 of  
25 Exhibit 1001, the '052 Patent?

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1 A. Sure.  
2 Q. Are you there?  
3 A. I'm here.  
4 Q. Okay. Here in Figure 1, there's kind  
5 of a bracket that says "flit"?  
6 A. Give me one second. Sorry. Okay.  
7 Figure 1?  
8 Q. Yep. And do you see underneath the  
9 network "N" there's a bracket that says "flit"?  
10 A. Yes.  
11 Q. Person skilled in the art would  
12 understand that refers to a flit, correct?  
13 A. Correct.  
14 Q. And a flit is a packet, correct?  
15 A. Yes.  
16 Q. Go to paragraph 76 of your second  
17 declaration.  
18 A. Which paragraph? I'm sorry.  
19 Q. 76, please.  
20 A. Yes.  
21 Q. This is page 64 of your PDF.  
22 A. I'm there.  
23 Q. Great. In the first sentence you  
24 wrote, "Even if packets were required, Weber  
25 discloses packets."

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1 Do you see that?  
2 A. Yes.  
3 Q. Weber does not disclose transmitting  
4 packets over a shared bus, correct?  
5 A. Weber -- let me -- let me read, please,  
6 what I've written about that, but I -- I'm -- I'm  
7 going to read. Yes, it does.  
8 Q. Weber does disclose transmitting  
9 packets over a shared bus?  
10 A. Yes.  
11 Q. You recall you were deposed earlier in  
12 this IPR, correct?  
13 A. Yes.  
14 Q. And your testimony in your prior  
15 deposition was under oath just like today, right?  
16 A. Yes.  
17 Q. Did you have an opportunity to review a  
18 copy of the transcript of your first deposition in  
19 this IPR?  
20 A. Yes.  
21 Q. And you didn't submit an errata,  
22 correct?  
23 A. Correct.  
24 Q. Include in our Zoom chat a copy of  
25 Exhibit 2068.

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| <p style="text-align: right;">Page 252</p> <p>1 (Whereupon, Exhibit 2068 was<br/>2 marked for identification.)<br/>3 BY MR. CHRISTOPHER:<br/>4 Q. Which I will represent to you is a copy<br/>5 of the transcript of your first deposition. And let<br/>6 me know when you have that open first of all.<br/>7 A. I have it open.<br/>8 Q. All right. And if you could turn to --<br/>9 let me get you the PDF page first. This is PDF<br/>10 page 113. And when you're there, I want to direct<br/>11 you to page 116 which is in the lower right corner.<br/>12 A. What PDF page is it? Because it's 65<br/>13 pages total.<br/>14 Q. Oh. I'm looking at the wrong number.<br/>15 Thanks for correcting that. It's page 30.<br/>16 A. Okay.<br/>17 Q. And you see in the lower right corner<br/>18 page 116?<br/>19 A. Yes.<br/>20 Q. All right. Starting at line 18, I'm<br/>21 going to read the transcript to you.<br/>22 "Question: Weber does not<br/>23 disclose transmitting packets<br/>24 over a shared bus, correct?<br/>25 "Answer: No, it does not."</p>                                                                   | <p style="text-align: right;">Page 254</p> <p>1 respect to whether it discloses<br/>2 packets, you would still agree,<br/>3 wouldn't you, that Weber does not<br/>4 expressly disclose packets,<br/>5 correct?<br/>6 "Answer: Yes, it doesn't use the<br/>7 word 'packet' in there."<br/>8 That was your testimony, correct?<br/>9 A. Read the testimony very carefully. It<br/>10 does not use the word "packet." That's -- that's<br/>11 what you're asking me is the word "packet" itself.<br/>12 But if you look at my answers before, it is -- my<br/>13 opinion is it does disclose transmitting packets.<br/>14 Q. Okay. My question was, that was your<br/>15 testimony, correct?<br/>16 A. That it doesn't use the word "packet,"<br/>17 yes, that's my testimony.<br/>18 Q. And the question I asked you on<br/>19 page 145 between lines 8 and 10 of the transcript<br/>20 was:<br/>21 "So with respect to whether Weber<br/>22 discloses packets, you would still agree, wouldn't<br/>23 you, that Weber does not expressly disclose<br/>24 packets."<br/>25 That was the question, correct?</p> |
| <p style="text-align: right;">Page 253</p> <p>1 That was your testimony, correct?<br/>2 A. I've corrected that later in the<br/>3 transcript. It's in the -- in -- later in the<br/>4 transcript I testified that it does.<br/>5 Q. I'm sorry. Are you referring to when<br/>6 counsel for Petitioner redirected you? Is that the<br/>7 portion of the transcript you're referring to?<br/>8 A. Yes.<br/>9 Q. Okay. So your testimony is that this<br/>10 testimony I just read you on page 116, line 18<br/>11 through 20, was incorrect?<br/>12 A. I wasn't accurate, no.<br/>13 Q. Okay. Well, you recall, Dr. Hassoun,<br/>14 that I asked you follow-up questions after the<br/>15 redirect, correct?<br/>16 A. Yes.<br/>17 Q. Okay. Let's look at -- I'll get you<br/>18 the PDF number. This is PDF page 38. I'm going to<br/>19 direct you to page 145 in the upper left corner.<br/>20 A. Yes.<br/>21 Q. All right. I'm going to read you the<br/>22 transcript starting at line 8. And before I do<br/>23 that, I'll represent to you that this is my recross.<br/>24 Starting at line 8:<br/>25 "Question: Okay. So with</p> | <p style="text-align: right;">Page 255</p> <p>1 A. That is the question. And the answer<br/>2 is quite clear. My answer is quite clear. It does<br/>3 not use the word "packet" in there.<br/>4 Q. You said "yes" at line 11, correct?<br/>5 A. And I qualified my answer what I meant<br/>6 by the "yes."<br/>7 Q. Back to paragraph 76 of your second<br/>8 declaration.<br/>9 A. Yes.<br/>10 Q. You know what? Before we do that,<br/>11 let's go back to the -- let's go back to<br/>12 Exhibit 2068. And I'll direct your attention --<br/>13 this is PDF page 37.<br/>14 A. Okay.<br/>15 Q. And on page 141, do you see the<br/>16 questioning starting at line 16?<br/>17 A. Yes.<br/>18 Q. All right. Please read the testimony<br/>19 at page 141, line 16 through page 142, line 15. And<br/>20 let me know when you're done.<br/>21 A. Yes, I -- up to line 14 you said,<br/>22 right?<br/>23 Q. 15.<br/>24 A. 50.<br/>25 Q. 15. One, five.</p>                                                                                                                                                   |

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| <p style="text-align: right;">Page 256</p> <p>1 A. Yeah, I read it.</p> <p>2 Q. So you testified in this portion of the</p> <p>3 transcript that Weber suggests the use of packets,</p> <p>4 correct?</p> <p>5 A. Yes.</p> <p>6 Q. You never said here that Weber</p> <p>7 expressly discloses packets, correct?</p> <p>8 A. I did not say that word, no.</p> <p>9 Q. Okay. Now we can go back to your</p> <p>10 second declaration in Exhibit 1030, paragraph 76.</p> <p>11 This is PDF page 64.</p> <p>12 A. I'm there.</p> <p>13 Q. Okay. You cite in paragraph 76</p> <p>14 Exhibit 1052. Do you see that?</p> <p>15 A. Yes.</p> <p>16 Q. And Exhibit 1052, just to move things</p> <p>17 along, I'll represent to you is the IEEE dictionary.</p> <p>18 Are you relying on a definition of "packet" from the</p> <p>19 IEEE dictionary in paragraph 76?</p> <p>20 A. I don't see page 787 in the exhibit.</p> <p>21 Is it misplaced? Not in there?</p> <p>22 Q. That was my question for you. Are you</p> <p>23 relying on any of the definitions that are in that</p> <p>24 copy of 1052?</p> <p>25 A. There's 787. There's -- there's -- I</p> | <p style="text-align: right;">Page 258</p> <p>1 figure in your declaration, do you see it says, "The</p> <p>2 textbook describes"? Do you see that?</p> <p>3 A. No, I'm not seeing those words. The</p> <p>4 textbook continues -- oh, yes, I do. I do. I'm</p> <p>5 sorry. I do see it.</p> <p>6 Q. No problem. All right. And the quote</p> <p>7 you have here, this is from page 261 of</p> <p>8 Exhibit 2010, (quote as read):</p> <p>9 Figure 13.16 also shows that there</p> <p>10 are two routes between LAN A and</p> <p>11 LAN E. If station 1 transmits a</p> <p>12 frame on LAN A intended for station</p> <p>13 5 on LAN E, then either bridge 101</p> <p>14 or bridge 107 could forward the</p> <p>15 frame. If frame travels through</p> <p>16 bridge 101, it must suffer two</p> <p>17 hops.</p> <p>18 Did I read all of that correctly?</p> <p>19 A. Yes.</p> <p>20 Q. All right. The textbook states that</p> <p>21 this example in Figure 13.16 includes two hops,</p> <p>22 correct?</p> <p>23 A. That's what it says, yes.</p> <p>24 Q. And so if we look at the figure, I want</p> <p>25 to ask about the path between station 1 in the top</p>                                                   |
| <p style="text-align: right;">Page 257</p> <p>1 recall there was more that I was relying on, so yes,</p> <p>2 but I don't -- I don't -- I don't see page 787.</p> <p>3 Q. Okay. I just wanted to understand if a</p> <p>4 page was missing or the content is all there, so I</p> <p>5 appreciate that.</p> <p>6 MR. VANDENBURGH: Counsel, can we take</p> <p>7 a look at this? I think we may have -- there may be</p> <p>8 a page missing.</p> <p>9 MR. CHRISTOPHER: That appears to be</p> <p>10 the case. So we can follow up on that.</p> <p>11 BY MR. CHRISTOPHER:</p> <p>12 Q. All right. Dr. Hassoun, if you could</p> <p>13 turn for me to paragraph 83 of your second</p> <p>14 declaration.</p> <p>15 A. Okay. I'm there.</p> <p>16 Q. All right. And this next question is</p> <p>17 actually on PDF page 71.</p> <p>18 A. Okay.</p> <p>19 Q. Do you see where you cite Exhibit -- a</p> <p>20 figure from Exhibit 2010?</p> <p>21 A. Yes.</p> <p>22 Q. And you state here that this example</p> <p>23 from Exhibit 2010 has multiple hops, correct?</p> <p>24 A. Yes.</p> <p>25 Q. All right. And then underneath the</p>                 | <p style="text-align: right;">Page 259</p> <p>1 left corner and LAN E. Do you see those two in the</p> <p>2 figure?</p> <p>3 A. Repeat what you said, please.</p> <p>4 Q. Sure. I was just -- I was just -- to</p> <p>5 orientate you, I want to ask you about data being</p> <p>6 transmitted between station 1 and LAN E. Do you see</p> <p>7 those two elements?</p> <p>8 A. Did you say station 1 and LAN E?</p> <p>9 Q. Correct. That's what I said.</p> <p>10 A. Okay.</p> <p>11 Q. Do you see those two?</p> <p>12 A. Yes.</p> <p>13 Q. And as we just discussed, the textbook</p> <p>14 says that there are two hops between those elements,</p> <p>15 correct?</p> <p>16 A. Well, it said if station 1 transmits a</p> <p>17 frame on LAN A intended for station 5 on LAN E.</p> <p>18 That's what -- that's what we're talking about,</p> <p>19 correct? I mean, I -- that's what I'm talking</p> <p>20 about. You're going to ask me about that.</p> <p>21 Q. Yes. And I may have inartfully framed</p> <p>22 it. Yes, station 5 is involved with this as well.</p> <p>23 So -- okay. We agree that the textbook states</p> <p>24 between station 1 and station 5, there's two hops,</p> <p>25 correct?</p> |

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| <p style="text-align: right;">Page 260</p> <p>1 A. "If frame travels through bridge 101,<br/>2 it must suffer two hops."<br/>3 Q. Right. And I want to understand where<br/>4 the two hops are in this figure. When the data is<br/>5 transmitted from LAN A to LAN B via bridge 101, that<br/>6 would be one hop, correct?<br/>7 A. Yes.<br/>8 Q. And then as the data is transmitted<br/>9 from LAN B to LAN E via bridge 102, that would be<br/>10 the second hop, correct?<br/>11 A. In the context of the description --<br/>12 the hops here, the answer is yes.<br/>13 Q. Okay. Let's go -- scroll up in<br/>14 paragraph 83 of your declaration. Do you see the<br/>15 reproduced figure from Exhibit 2073, page 15?<br/>16 A. Yes.<br/>17 Q. In this example, the colored boxes<br/>18 represent functional blocks, correct?<br/>19 A. That's my understanding.<br/>20 Q. And it is also your understanding that<br/>21 the white arrows are buses, correct?<br/>22 A. Yes.<br/>23 Q. Let's scroll up now to paragraph 61 of<br/>24 your second declaration. This is PDF page 52.<br/>25 A. I'm there.</p> | <p style="text-align: right;">Page 262</p> <p>1 correct?<br/>2 A. Could be.<br/>3 Q. You would agree that a buffer is a<br/>4 structure, correct?<br/>5 A. Yes.<br/>6 Q. Likewise, you would agree that a person<br/>7 of skill in the art would understand that the<br/>8 desequentializing unit in the '052 Patent could be a<br/>9 buffer, correct?<br/>10 A. Yes, it could be made up of a buffer.<br/>11 Q. All right. Can you turn to paragraph<br/>12 65 of your second declaration. This is on PDF<br/>13 page 57.<br/>14 A. I'm there.<br/>15 Q. All right. In paragraph 65 you wrote,<br/>16 (quote as read):<br/>17 Dr. Bagherzadeh criticizes my<br/>18 reliance on FIG. 3 of Weber because<br/>19 FIG. 3 discloses a target interface<br/>20 module.<br/>21 Do you see that?<br/>22 A. Yes.<br/>23 Q. All right. Next sentence, (quote as<br/>24 read):<br/>25 This criticism appears to be based</p>                                                                                           |
| <p style="text-align: right;">Page 261</p> <p>1 Q. In the second sentence you wrote,<br/>2 (quote as read):<br/>3 Dr. Bagherzadeh, however, asserted<br/>4 that both a sequentializing unit<br/>5 and a desequentializing unit are<br/>6 required.<br/>7 Do you see that?<br/>8 A. Yes.<br/>9 Q. You would agree that the mapping means<br/>10 in claims 1 and 7 of the '052 Patent does require a<br/>11 sequentializing unit and a desequentializing unit,<br/>12 correct?<br/>13 A. Yes.<br/>14 Q. Six lines down at about -- actually six<br/>15 lines down in paragraph 61, you wrote, (quote as<br/>16 read):<br/>17 The '052 illustrates black boxes<br/>18 for both of these units and then<br/>19 proceeds to describe the functions<br/>20 performed by those black boxes.<br/>21 Do you see that?<br/>22 A. Yes.<br/>23 Q. You would agree that a person of skill<br/>24 in the art would understand that the sequentializing<br/>25 unit disclosed in the '052 Patent could be a buffer,</p>                                                                                                            | <p style="text-align: right;">Page 263</p> <p>1 on Dr. Bagherzadeh's mistaken<br/>2 opinion that the address range must<br/>3 be sent from the initiator.<br/>4 Do you see that?<br/>5 A. Yes.<br/>6 Q. And then in the very last sentence of<br/>7 paragraph 65 you wrote, (quote as read):<br/>8 FIG. 3 discloses the request being<br/>9 "based on" an address range as<br/>10 discussed in my first declaration.<br/>11 Do you see that?<br/>12 A. Yes.<br/>13 Q. You would agree that Figure 1 -- strike<br/>14 that.<br/>15 You would agree that Figure 3 of Weber<br/>16 does not disclose that the initiator sends an<br/>17 address range, correct?<br/>18 A. I'm going to look up Exhibit 1003,<br/>19 paragraph 193.<br/>20 Q. Are you still reviewing paragraph 193?<br/>21 A. Yes. Yes, I am. Sorry.<br/>22 Q. Let me know when you're done.<br/>23 A. So ask me the question again.<br/>24 Q. You would agree that Figure 3 of Weber<br/>25 does not disclose that the request sent by the</p> |

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| <p>Page 264</p> <p>1 initiator includes an address range, correct?</p> <p>2 A. Not Figure 3, but the description does</p> <p>3 talk about an address range in the request.</p> <p>4 Q. And you're referring to the request</p> <p>5 from the initiator module?</p> <p>6 A. Can you tell me what exhibit Weber is,</p> <p>7 please?</p> <p>8 Q. It's Exhibit 1007.</p> <p>9 A. Ask me the question again. I can</p> <p>10 answer it.</p> <p>11 Q. Sure. I'm just trying to confirm</p> <p>12 whether Weber discloses that any requests sent by an</p> <p>13 initiator model includes an address range.</p> <p>14 A. Yes.</p> <p>15 Q. It does, okay. Thank you.</p> <p>16 All right. I'd like to turn now to the</p> <p>17 Radulescu2004 reference, Exhibit 1005. Do you have</p> <p>18 a copy of that or do I need to put that in the Zoom</p> <p>19 chat?</p> <p>20 (Whereupon, Exhibit 1005 was</p> <p>21 marked for identification.)</p> <p>22 MR. VANDENBURGH: He gave us that in</p> <p>23 the beginning, didn't he?</p> <p>24 THE WITNESS: I see it, yes.</p> <p>25</p>                                                                 | <p>Page 266</p> <p>1 message is supplied or consumed.</p> <p>2 Do you see that?</p> <p>3 A. Yes.</p> <p>4 Q. Radulescu discloses that a ConnId</p> <p>5 signal is used to select a connection, correct?</p> <p>6 A. That's what it's disclosed, yes.</p> <p>7 Q. And if you could to turn to Figure 1 of</p> <p>8 Radulescu which is on the same page, actually. Just</p> <p>9 scroll up.</p> <p>10 A. Okay.</p> <p>11 Q. I know we had gone through some of this</p> <p>12 in the first deposition, but bear with me. I just</p> <p>13 want to walk through what some of these things are</p> <p>14 with you so we're on the same page. Figure 1 is</p> <p>15 showing a network interface, "NI," correct?</p> <p>16 A. Yes.</p> <p>17 Q. Okay. And do you see in the upper left</p> <p>18 there's a double-sided arrow "DTL"?</p> <p>19 A. Yes.</p> <p>20 Q. That's referring -- strike that.</p> <p>21 That is representing communication</p> <p>22 between the network interface and a module, correct?</p> <p>23 A. Yes.</p> <p>24 Q. All right. And in this particular</p> <p>25 example that we're looking at, it's using the DTL</p> |
| <p>Page 265</p> <p>1 BY MR. CHRISTOPHER:</p> <p>2 Q. Great. When you have that open, if you</p> <p>3 could turn for me to page 3, please.</p> <p>4 A. All right. You might have to upload it</p> <p>5 again. It says something went wrong. Can't open</p> <p>6 the file.</p> <p>7 Q. Just a second.</p> <p>8 A. Or maybe I have too many PDFs open.</p> <p>9 Q. That tends to happen with these. All</p> <p>10 right. It should be available to download. Let me</p> <p>11 know if you have any issues with that.</p> <p>12 A. Okay. It's open.</p> <p>13 Q. Great. If you could turn for me to</p> <p>14 page 3, I'll direct your attention to Section 4.1.</p> <p>15 Let me know when you're there.</p> <p>16 A. I'm there.</p> <p>17 Q. All right. The second full paragraph</p> <p>18 under 4.1, "NI Kernel Architecture." I want to</p> <p>19 focus on the second sentence. Radulescu states,</p> <p>20 (quote as read):</p> <p>21 A port can have multiple</p> <p>22 connections to allow differentiated</p> <p>23 traffic classes, in which case</p> <p>24 there are also ConnId signals to</p> <p>25 select on which connection a</p> | <p>Page 267</p> <p>1 protocol, right?</p> <p>2 A. Yes.</p> <p>3 Q. All right. And so the first place that</p> <p>4 that request goes inside the network interface,</p> <p>5 again assuming we're using the DTL protocol, would</p> <p>6 be the DTL adapter, right?</p> <p>7 A. Yes.</p> <p>8 Q. And from there it could either go to</p> <p>9 the multicast module or the narrowcast module,</p> <p>10 correct?</p> <p>11 A. Yes.</p> <p>12 Q. Let's take a look at Figure 5. It's on</p> <p>13 the next page. Let me know when you're there.</p> <p>14 A. I'm there.</p> <p>15 Q. Okay. Figure 5 shows a master shell,</p> <p>16 correct?</p> <p>17 A. Yes.</p> <p>18 Q. The master shell in Figure 5</p> <p>19 corresponds to the DTL adapter in Figure 1, correct?</p> <p>20 A. That's not entirely true.</p> <p>21 Q. Can you elaborate?</p> <p>22 A. Sorry?</p> <p>23 Q. I said can you elaborate?</p> <p>24 A. Yes. So if you look at the description</p> <p>25 of Figure 5, if you look on page 5 of the PDF, top</p>                                                                                                                |

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| <p style="text-align: right;">Page 268</p> <p>1 left, it's a description of Figure 5 and it says,<br/>2 (quote as read):<br/>3 In Figure 5 and 6, we show a master<br/>4 and slave shells that implement a<br/>5 simplified version of a protocol<br/>6 such as AXI.<br/>7 So that what -- that's what Figures 5<br/>8 and 6 depict. It's a simple -- simplified version<br/>9 of a protocol and an example it gives is AXI. So<br/>10 it's not necessarily a complete depiction of what<br/>11 the DTL adapter in Figure 1 would be.<br/>12 <b>Q. Understood. Let's go back to Figure 5.</b><br/>13 <b>Let me know when you're there.</b><br/>14 A. I'm there.<br/>15 <b>Q. All right. On the -- well, you see in</b><br/>16 <b>the middle there's a block "Seq," right?</b><br/>17 A. Yes.<br/>18 <b>Q. That's sequentializer, correct?</b><br/>19 A. Yes.<br/>20 <b>Q. And we see we have three arrows going</b><br/>21 <b>from left to right towards the sequentializer. Do</b><br/>22 <b>you see those?</b><br/>23 A. Yes.<br/>24 <b>Q. And those include read/write data,</b><br/>25 <b>command and flags, and address signals, correct?</b></p>                                         | <p style="text-align: right;">Page 270</p> <p>1 talking about different examples of shells and<br/>2 whether it's narrowcast or -- or master shell.<br/>3 <b>Q. In Figure 3, you would agree that the</b><br/>4 <b>"msg_req" comes from a master shell, correct?</b><br/>5 A. It could, yes.<br/>6 <b>Q. A person skilled in the art would</b><br/>7 <b>understand that the "msg_req" doesn't come directly</b><br/>8 <b>from the initiator module, correct?</b><br/>9 A. I believe adapters -- it depends on<br/>10 whether the adapters are optional or required.<br/>11 <b>Q. Which adapter are you referring to in</b><br/>12 <b>that answer?</b><br/>13 A. For example, the DTL adapter.<br/>14 <b>Q. A person skilled in the art would</b><br/>15 <b>understand that if the initiator module uses the DTL</b><br/>16 <b>protocol, the DTL adapter would be required,</b><br/>17 <b>correct?</b><br/>18 A. Yes.<br/>19 <b>Q. Okay. So if we assume that the</b><br/>20 <b>initiator module uses DTL protocol and we have the</b><br/>21 <b>DTL adapter, in Figure 3 the "msg_req" would be</b><br/>22 <b>received from the sequentializer, correct?</b><br/>23 A. Yes. In this example.<br/>24 <b>Q. Okay. Thank you. Now, in Figure 3,</b><br/>25 <b>there's also a arrow going from left to right</b></p>                            |
| <p style="text-align: right;">Page 269</p> <p>1 A. Yes.<br/>2 <b>Q. Those signals come from the initiating</b><br/>3 <b>module, correct?</b><br/>4 A. Yes.<br/>5 <b>Q. And the sequentializer receives those</b><br/>6 <b>signals as an input and its output is a message,</b><br/>7 <b>correct?</b><br/>8 A. Correct.<br/>9 <b>Q. All right. Let's go to Figure 3 which</b><br/>10 <b>is right above it. Do you see that?</b><br/>11 A. Yes.<br/>12 <b>Q. All right. And in the upper left</b><br/>13 <b>corner of Figure 3, do you see "msg_req"?</b><br/>14 A. Yes.<br/>15 <b>Q. That would correspond to the message</b><br/>16 <b>generated by the sequentializer in the master shell,</b><br/>17 <b>correct?</b><br/>18 A. So if you're -- so these are general --<br/>19 this -- these are different depictions, and they<br/>20 don't necessarily fit with each other. For example,<br/>21 for Figure 5, it's a simplified adapter, okay? For<br/>22 Figure 3 is an example -- it's yet another example<br/>23 of a narrowcast shell. So if the two blocks are --<br/>24 represent the same -- the same architecture, then<br/>25 the signals would align. Otherwise, the paper is</p> | <p style="text-align: right;">Page 271</p> <p>1 labeled "ConnId." Do you see that?<br/>2 A. I do.<br/>3 <b>Q. You would agree that the "ConnId" is</b><br/>4 <b>separate from the "msg_req," correct?</b><br/>5 A. It is.<br/>6 <b>Q. Okay. And if we scroll back down to</b><br/>7 <b>Figure 5, the master shell, ConnId is not one of the</b><br/>8 <b>outputs of the master shell, correct?</b><br/>9 A. Again, as I explained, Figure 5 is not<br/>10 a DTL adapter that's in Figure 1. It discloses that<br/>11 Figure 5 is a simplified shell and it gives an<br/>12 example. For example, for AXIs. So the fact that<br/>13 it doesn't have ConnId coming from it, I don't want<br/>14 to answer a question implying that that shell is the<br/>15 one that's implemented in Figure 1 or that's<br/>16 implemented before the narrowcast shell of Figure 3.<br/>17 That's not what Radulescu is disclosing.<br/>18 <b>Q. Would a person skilled in the art</b><br/>19 <b>understand that the ConnId is contained in the</b><br/>20 <b>request from the initiator module?</b><br/>21 A. One of ordinary skill in the art can<br/>22 understand the ConnId can be in the message request<br/>23 or can be a separate signal.<br/>24 <b>Q. In the case of a separate signal, can</b><br/>25 <b>it come from the -- strike that.</b></p> |

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| <p style="text-align: right;">Page 272</p> <p>1 If the ConnId is a separate signal,<br/>2 would a person skilled in the art understand that it<br/>3 could have been contained in the request from the<br/>4 initiator module?<br/>5 A. I'm not following the question.<br/>6 Q. Let me ask it this way. Where does the<br/>7 ConnId signal come from?<br/>8 A. The way this is depicted, it doesn't<br/>9 necessarily say where it's coming from exactly. But<br/>10 if -- if that narrowcast shell is the one that is in<br/>11 Figure 1, it could come from the DTL adapter or it<br/>12 could come straight from the initiator, but more<br/>13 likely from the DTL adapter. But there's nothing<br/>14 that says it can't be one of the signals that's<br/>15 coming from the initiator.<br/>16 Q. Figure 3 -- strike that.<br/>17 Weber discloses -- Weber. Strike that<br/>18 again.<br/>19 Radulescu2004 discloses that address<br/>20 ranges are stored in the narrowcast module, correct?<br/>21 A. Yes, in the narrowcast module.<br/>22 Q. If you turn to paragraph 30 of your<br/>23 second declaration.<br/>24 A. Paragraph three zero.<br/>25 Q. Three zero. I'm going to get you the</p> | <p style="text-align: right;">Page 274</p> <p>1 Q. Specifically in the narrowcast module,<br/>2 correct?<br/>3 A. It doesn't have to be in the narrowcast<br/>4 module.<br/>5 Q. If you turn back for me to Radulescu,<br/>6 Figure 1. Let me know when you're there.<br/>7 A. What exhibit is it? I'm going to have<br/>8 to close some of these windows.<br/>9 Q. Understood. And I know we had a lot.<br/>10 It's Exhibit 1005.<br/>11 A. Okay. Which figure?<br/>12 Q. Figure 1. Are you there? It's page 3.<br/>13 A. Yes.<br/>14 Q. All right. This is the network<br/>15 interface, correct?<br/>16 A. Correct.<br/>17 Q. Okay. Where would the mapping step be<br/>18 performed in Figure 1?<br/>19 A. Sorry. I lost the question. What was<br/>20 the question?<br/>21 Q. Sure. We talked about a couple minutes<br/>22 ago you've opined that Radulescu performs the<br/>23 mapping step in the claims of the '052 Patent,<br/>24 right?<br/>25 A. Yes.</p>                                                                                                                                                                                                                               |
| <p style="text-align: right;">Page 273</p> <p>1 page. It's a long one. Page -- my question is<br/>2 going to be directed to something on page 27 of the<br/>3 PDF.<br/>4 A. Okay. I'm there.<br/>5 Q. All right. And this is about<br/>6 three-quarters of the way down the page. Do you see<br/>7 the sentence that starts with "As I explained in my<br/>8 First Declaration"?<br/>9 A. Yes.<br/>10 Q. All right. My question is going to be<br/>11 about the prior sentence. At least a portion of it.<br/>12 Do you see where you wrote, (quote as read):<br/>13 Radulescu2004 is mapping to<br/>14 specific connections based on<br/>15 connection properties and is doing<br/>16 it "according to" the service<br/>17 identification of an address range.<br/>18 Do you see that?<br/>19 A. Yes.<br/>20 Q. Because the address range is stored in<br/>21 the narrowcast module, you would agree that the<br/>22 mapping in Radulescu is performed in the narrowcast<br/>23 module, correct?<br/>24 A. It's performed in the network<br/>25 interface.</p>                                                                                                                                          | <p style="text-align: right;">Page 275</p> <p>1 Q. And I believe you testified a minute<br/>2 ago that the mapping step would occur in the network<br/>3 interface in Radulescu, correct?<br/>4 A. Yes.<br/>5 Q. Okay. Using Figure 1 to illustrate,<br/>6 specifically where would the mapping step be<br/>7 performed in the network interface in Radulescu?<br/>8 A. I'm going to look up what I said about<br/>9 that in my report. So it would be in the narrowcast<br/>10 shell in Radulescu.<br/>11 MR. CHRISTOPHER: We have been going<br/>12 about an hour, and I am nearing the end. Why don't<br/>13 we go off the record and take a break.<br/>14 MR. VANDENBURGH: Sounds good. Give us<br/>15 ten minutes if you would.<br/>16 MR. CHRISTOPHER: Sure. We'll see you<br/>17 in ten.<br/>18 (Recess taken from 2:17 to 2:34.)<br/>19 THE WITNESS: Mr. Christopher, I'd like<br/>20 to correct an answer or add to an answer I gave you<br/>21 right before we finished regarding the narrowcast<br/>22 shell and the mapping step.<br/>23 In Radulescu, as I discuss in my<br/>24 report, the mapping step happens in the adapter unit<br/>25 which is -- has the sequentializer and</p> |

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| <p style="text-align: right;">Page 276</p> <p>1 desequentializer in it, and then in conjunction with<br/>2 the narrowcast shell provides the entire mapping<br/>3 step. So I just wanted to make that clear that that<br/>4 adapter unit is included in the mapping.<br/>5 BY MR. CHRISTOPHER:<br/>6 <b>Q. Did you discuss your testimony with</b><br/>7 <b>anyone during our last break?</b><br/>8 A. I did not.<br/>9 <b>Q. And since we're near the end of the</b><br/>10 <b>day, did you discuss your testimony with anyone</b><br/>11 <b>during any of the breaks we've taken today?</b><br/>12 A. I did not. I just continued reading<br/>13 the section that I was reading before we -- we went<br/>14 on break.<br/>15 <b>Q. Fair enough. What section were you</b><br/>16 <b>reviewing?</b><br/>17 A. So if you look, it was the -- on<br/>18 page 75 of my first declaration, so PDF page 78, and<br/>19 in particular paragraph 140.<br/>20 <b>Q. Is there a particular section in the</b><br/>21 <b>chart?</b><br/>22 A. Yes. So if you look on page 81, the<br/>23 bottom half of it where I talk about Radulescu2004,<br/>24 further describes adapter shells providing the<br/>25 functionality described below, and it goes on to the</p> | <p style="text-align: right;">Page 278</p> <p>1 <b>Q. When you say "the shell as a whole,"</b><br/>2 <b>are you saying it's the combination of the DTL</b><br/>3 <b>adapter and the narrowcast module?</b><br/>4 A. Again, my analysis, the structure for<br/>5 the mapping between the '052 and Radulescu2004 are<br/>6 virtually identical which is the<br/>7 sequentializer/desequentializer. So I -- as I<br/>8 explained in -- in paragraph -- let me pull it up<br/>9 again -- paragraph 145, where you have the same<br/>10 exact structures between the '052 Patent and<br/>11 Radulescu2004, so the structures are equivalent and<br/>12 the functionality is equivalent when it comes to the<br/>13 mapping step.<br/>14 <b>Q. I understand. I don't think that</b><br/>15 <b>answered my previous question. In your prior</b><br/>16 <b>answer, you said the shell as a whole provides the</b><br/>17 <b>mapping, and I'm trying to understand, what do you</b><br/>18 <b>mean by "the shell as a whole"?</b><br/>19 A. So it's the sequentializer and<br/>20 desequentializer that -- well, the sequentializer<br/>21 that sequentializes the messages. It takes in<br/>22 the -- for example, the write data, the commands<br/>23 required, and the flags and it takes an address in<br/>24 this case, and based on that it provides the<br/>25 message. And that -- that -- that is the same</p> |
| <p style="text-align: right;">Page 277</p> <p>1 end until paragraph 142.<br/>2 I also reviewed mapping means for claim<br/>3 1, so paragraph 145 on PDF page 86 where I show a<br/>4 table with the same structure for mapping means, and<br/>5 I continue describing it in -- in paragraph 146 and<br/>6 147.<br/>7 <b>Q. If you go to Exhibit 1005,</b><br/>8 <b>Radulescu2004, Figure 1. Make sure I understand</b><br/>9 <b>what you're saying. Let me know when you're there.</b><br/>10 A. I'm there.<br/>11 <b>Q. So when you said the mapping occurs in</b><br/>12 <b>the adapter, in this example would that include the</b><br/>13 <b>DTL adapter?</b><br/>14 A. In this example, it would, yes.<br/>15 <b>Q. Okay. And you talked about earlier the</b><br/>16 <b>address range in Radulescu is stored at the</b><br/>17 <b>narrowcast module?</b><br/>18 A. That is correct.<br/>19 <b>Q. The address range is not stored in the</b><br/>20 <b>DTL adapter, correct?</b><br/>21 A. That is correct. But the<br/>22 sequentializing step happens in the adapter. So the<br/>23 structure there then in addition to the narrowcast<br/>24 shell, so the shell as a whole, provides the<br/>25 mapping.</p>                                      | <p style="text-align: right;">Page 279</p> <p>1 structure as in the '052 Patent. And then the<br/>2 narrowcast shell provides further functionality in<br/>3 order to complete the mapping.<br/>4 <b>Q. Do you agree that in Radulescu2004 the</b><br/>5 <b>mapping does not occur until we reach the narrowcast</b><br/>6 <b>shell, correct?</b><br/>7 A. The ultimate -- the selection is<br/>8 happening in the combination of the adapter and the<br/>9 narrowcast shell, but the adapter -- the<br/>10 sequelent -- sequentializer of that adapter is part<br/>11 of the process.<br/>12 <b>Q. You would agree that in Radulescu2004,</b><br/>13 <b>the DTL adapter and the narrowcast shell are</b><br/>14 <b>separate structures, correct?</b><br/>15 A. They -- they -- they -- they can be.<br/>16 In Figure 1 they are shown as such, but that's<br/>17 exactly the same as the '052 describes it. It's in<br/>18 Figure 3. And again, I show both -- both figures,<br/>19 both structures. Whether it's the NI, the network<br/>20 interface, or the -- internally the master shell and<br/>21 slave shells.<br/>22 <b>Q. All right. If you could turn to</b><br/>23 <b>paragraph 38 of your second declaration. I just</b><br/>24 <b>want to orientate us for a new topic. Let me know</b><br/>25 <b>when you're there. This is PDF page 35 by the way.</b></p>                                    |

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| <p style="text-align: right;">Page 280</p> <p>1 A. What page? Sorry. I had to reopen the<br/>2 file.<br/>3 <b>Q. No problem. It's paragraph 38 which is<br/>4 on page 35 of the PDF.</b><br/>5 A. Okay. I'm there.<br/>6 <b>Q. All right. And again, I just kind of<br/>7 want to orientate ourselves for this discussion.<br/>8 You've offered opinions regarding the MAddrSpace<br/>9 signal in OCP, correct?</b><br/>10 A. Yes.<br/>11 <b>Q. Okay. Just to make it a little bit<br/>12 easier for the transcript, is it okay if we call<br/>13 that the "M Address Space" signal?</b><br/>14 A. Yes.<br/>15 <b>Q. Turn to paragraph -- this is in<br/>16 paragraph 39, page 36 of the PDF. At the bottom of<br/>17 that. Let me know when you're there.</b><br/>18 A. I'm there.<br/>19 <b>Q. All right. So here in paragraph 39,<br/>20 your second declaration, you wrote, (quote as read):<br/>21 This is because some architectures<br/>22 take advantage of the MAddrSpace<br/>23 signals to identify the "address<br/>24 region of a transfer" such as "the<br/>25 register space versus the regular</b></p>                                                                                                                                                 | <p style="text-align: right;">Page 282</p> <p>1 backward compatibility to such protocols. As such,<br/>2 it is talking about the signals that are included in<br/>3 an OCP interface, including the MAddrSpace signal.<br/>4 BY MR. CHRISTOPHER:<br/>5 <b>Q. I understand all that, but that's not<br/>6 my question. My question is, Radulescu does not<br/>7 expressly disclose that the initiator module sends<br/>8 the OCP MAddrSpace signal, correct?</b><br/>9 MR. VANDENBURGH: Objection. Form.<br/>10 THE WITNESS: One of ordinary skill in<br/>11 the art would understand that it would have to if it<br/>12 was to be backward compatible with OCP<br/>13 architectures.<br/>14 BY MR. CHRISTOPHER:<br/>15 <b>Q. So is it your opinion that<br/>16 Radulescu2004 inherently discloses the use of the<br/>17 OCP MAddrSpace signal?</b><br/>18 MR. VANDENBURGH: Objection. Form.<br/>19 THE WITNESS: My opinion is, in<br/>20 combination with OCP it would have been obvious to<br/>21 include it.<br/>22 BY MR. CHRISTOPHER:<br/>23 <b>Q. Right. Your opinion isn't that<br/>24 Radulescu2004 expressly discloses the OCP<br/>25 MAddrSpace -- MAddrSpace signal, correct?</b></p> |
| <p style="text-align: right;">Page 281</p> <p>1 <b>memory space."</b><br/>2 <b>Do you see that?</b><br/>3 A. Yes.<br/>4 <b>Q. You've opined that some architectures<br/>5 take advantage of the MAddrSpace signals, correct?</b><br/>6 A. Yes. As -- as I explained in my<br/>7 declaration, my first declaration as well, is the<br/>8 architecture -- the architect can -- there are some<br/>9 architectures, if they have the MAddrSpace, if there<br/>10 are architectures as such, then they would require<br/>11 the MAddrSpace as part of the signaling.<br/>12 <b>Q. So conversely, you would agree that<br/>13 there are some architectures that do not take<br/>14 advantage of the MAddrSpace signals, correct?</b><br/>15 A. There are, yes.<br/>16 <b>Q. Okay. Radulescu2004 does not expressly<br/>17 disclose an OCP MAddrSpace signal, correct?</b><br/>18 A. I'm sorry. Repeat that question.<br/>19 <b>Q. Radulescu2004 does not expressly<br/>20 disclose that the initiator module sends an OCP<br/>21 MAddrSpace signal, correct?</b><br/>22 MR. VANDENBURGH: Objection. Form.<br/>23 THE WITNESS: The -- the Radulescu2004<br/>24 absolutely described -- describes interfacing to an<br/>25 OCP module, and it does explicitly talk about</p> | <p style="text-align: right;">Page 283</p> <p>1 MR. VANDENBURGH: Objection. Form.<br/>2 And asked and answered.<br/>3 THE WITNESS: The same -- same answer.<br/>4 BY MR. CHRISTOPHER:<br/>5 <b>Q. Can you answer the question?</b><br/>6 MR. VANDENBURGH: Objection. Same.<br/>7 THE WITNESS: So what Radulescu<br/>8 expressly discloses is backward compatibility to<br/>9 an -- OCP architectures and that includes all the<br/>10 signals that are part of the OCP architecture. And<br/>11 it would have been obvious for one of ordinary skill<br/>12 in the art to use those signals in the interface.<br/>13 BY MR. CHRISTOPHER:<br/>14 <b>Q. Can we agree that Radulescu2004 does<br/>15 not expressly use the term "MAddrSpace"? Can we<br/>16 agree on that?</b><br/>17 MR. VANDENBURGH: Objection. Form.<br/>18 THE WITNESS: The word "MAddrSpace"<br/>19 does not show up in Radulescu.<br/>20 BY MR. CHRISTOPHER:<br/>21 <b>Q. Thank you. All right. If you could<br/>22 turn to paragraph 43 of your second declaration.<br/>23 Let me know when you're there. This is PDF page 39.</b><br/>24 A. I'm there.<br/>25 <b>Q. All right. Roughly a third of the way</b></p>          |

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| <p style="text-align: right;">Page 284</p> <p>1 down in that paragraph you wrote, (quote as read):</p> <p>2 First, Dr. Bagherzadeh appears to</p> <p>3 misunderstand what is meant by</p> <p>4 "optional" signals in OCP.</p> <p>5 Do you see that?</p> <p>6 A. Yes.</p> <p>7 Q. You would agree that the MAddrSpace</p> <p>8 signal is described as an optional signal in the OCP</p> <p>9 document, correct?</p> <p>10 MR. VANDENBURGH: Counsel, did you mean</p> <p>11 to say MAddrSpace? Because this is -- we're talking</p> <p>12 about MThreads in this paragraph.</p> <p>13 MR. CHRISTOPHER: I did.</p> <p>14 MR. VANDENBURGH: Okay. I'm sorry.</p> <p>15 And I wasn't meaning to speak. I just thought that</p> <p>16 was -- anyway, objection.</p> <p>17 THE WITNESS: Sorry. What's the</p> <p>18 question again?</p> <p>19 BY MR. CHRISTOPHER:</p> <p>20 Q. You would agree that the MAddrSpace</p> <p>21 signal is described in the OCP document as an</p> <p>22 optional signal, correct?</p> <p>23 A. The signal on its own is not described</p> <p>24 as optional. It's a group of signals that together</p> <p>25 have to exist in architectures that use the</p>                                 | <p style="text-align: right;">Page 286</p> <p>1 Q. And do you see it's a dashed red line</p> <p>2 underneath that?</p> <p>3 A. Yes.</p> <p>4 Q. And then in the bottom left corner do</p> <p>5 you see the legend where the dashed red line is</p> <p>6 labeled "Optional"?</p> <p>7 A. Yes.</p> <p>8 Q. Okay. So in this example, the</p> <p>9 MAddrSpace signal is literally labeled as</p> <p>10 "Optional," correct?</p> <p>11 A. I -- I want to be very clear again.</p> <p>12 The request must have all those signals. The ones</p> <p>13 in blue under "Request" and the ones in red need to</p> <p>14 all exist in a system that uses this functionality.</p> <p>15 You don't have the option not to use them in that</p> <p>16 system.</p> <p>17 Q. So is it your testimony that any system</p> <p>18 that uses the OT -- OCP protocol will necessarily</p> <p>19 have the MAddrSpace signal?</p> <p>20 A. Ones that are architect with this</p> <p>21 extension, yes.</p> <p>22 Q. And you agree that there are instances</p> <p>23 of a system that uses OCP that are architected in</p> <p>24 such a way in which MAddrSpace is not required,</p> <p>25 right?</p>                                                                                                                                      |
| <p style="text-align: right;">Page 285</p> <p>1 extensions, the OCP extensions. So -- and my</p> <p>2 explanation here in this paragraph and previously is</p> <p>3 it's not optional that you can choose to use it or</p> <p>4 not choose to use it when you're sending a request,</p> <p>5 but rather, the system must have it if the system is</p> <p>6 architected as such. And not only is it just that</p> <p>7 signal, it has to have that group of signals that</p> <p>8 have to exist together in OCP.</p> <p>9 Q. Let's look at Exhibit 1006. I'm going</p> <p>10 to put it in the Zoom chat in case it wasn't there</p> <p>11 earlier. Let me know when you have that open.</p> <p>12 (Whereupon, Exhibit 1006 was</p> <p>13 marked for identification.)</p> <p>14 THE WITNESS: I have it open.</p> <p>15 BY MR. CHRISTOPHER:</p> <p>16 Q. If you could turn to page -- this is 36</p> <p>17 of the PDF.</p> <p>18 A. Okay.</p> <p>19 Q. It's -- the internal page number for</p> <p>20 the record is 24, but the PDF is 36. All right. Do</p> <p>21 you see Figure 2?</p> <p>22 A. Yeah. Yes.</p> <p>23 Q. Okay. And four down from the top, do</p> <p>24 you see "MAddrSpace"?</p> <p>25 A. Yes.</p> | <p style="text-align: right;">Page 287</p> <p>1 A. Again, the entire system then doesn't</p> <p>2 have that -- those extensions, but those extensions</p> <p>3 go together. In an architecture that utilizes this</p> <p>4 functionality, it must exist. And when it</p> <p>5 interfaces to a Radulescu system, it must be taken</p> <p>6 into account and that's where the combination comes</p> <p>7 in place. It's a natural combination for</p> <p>8 Radulescu2004, given its declaration of OCP and</p> <p>9 backward compatibility to OCP, that it -- it -- one</p> <p>10 of ordinary skill in the art would know it's</p> <p>11 backward compatible to architectures that include</p> <p>12 the optional extension.</p> <p>13 Q. Is it your opinion that a person</p> <p>14 skilled in the art would know that Radulescu2004 is</p> <p>15 backward compatible to every possible OCP</p> <p>16 architecture?</p> <p>17 A. That's what it's teaching, yes.</p> <p>18 Q. And so in your view it would be obvious</p> <p>19 to a person of skill in the art -- strike that.</p> <p>20 Let me just go back quickly to Figure 2</p> <p>21 of OCP, Exhibit 1006. Seven down from the top, do</p> <p>22 you see "MThreadID"?</p> <p>23 A. Yes.</p> <p>24 Q. Likewise, it is labeled as -- strike</p> <p>25 that.</p> |

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| <p style="text-align: right;">Page 288</p> <p>1 MThreadID is associated with a dashed</p> <p>2 red line, right?</p> <p>3 A. Yes.</p> <p>4 Q. And the legend in the lower corner of</p> <p>5 Figure 2 refers to dashed red lines as "Optional,"</p> <p>6 right?</p> <p>7 A. The label on it is option. The</p> <p>8 explanation of that is the same exact explanation I</p> <p>9 gave for MAddrSpace.</p> <p>10 Q. That was actually my next question.</p> <p>11 Your analysis with respect to the MAddrSpace would</p> <p>12 apply equally for the MThreadID with respect to it</p> <p>13 being optional, correct?</p> <p>14 A. That is correct.</p> <p>15 Q. Okay. Let me put Exhibit 1006 aside.</p> <p>16 Let's turn back to your second declaration,</p> <p>17 paragraph 47.</p> <p>18 A. I'm there.</p> <p>19 Q. Yeah, PDF page 42. All right. In the</p> <p>20 first sentence of paragraph 47 you wrote, (quote as</p> <p>21 read):</p> <p>22 Dr. Bagherzadeh argues that a POSA</p> <p>23 would "understand that the</p> <p>24 'connection' described in the '052</p> <p>25 Patent in Radulescu2004 is</p> | <p style="text-align: right;">Page 290</p> <p>1 Declaration, Radulescu2004 maps to</p> <p>2 "a particular one of these</p> <p>3 point-to-point connections based on</p> <p>4 the address."</p> <p>5 Do you see that?</p> <p>6 A. I do.</p> <p>7 Q. The phrase, "a particular one of these</p> <p>8 point-to-point connections based on the address" is</p> <p>9 in quotation marks. Do you see that?</p> <p>10 A. Yes.</p> <p>11 Q. Are the quotation marks meant to</p> <p>12 indicate this is a direct quote from Exhibit 1003,</p> <p>13 paragraph 140?</p> <p>14 A. 1003 is my declaration, right?</p> <p>15 Q. Yes, I'll represent to you Exhibit 1003</p> <p>16 is your first declaration.</p> <p>17 A. Okay.</p> <p>18 Q. If we could turn to Exhibit 1003,</p> <p>19 paragraph 140. I'll get you a PDF number if you</p> <p>20 bear with me. It's PDF page 79. Let me know when</p> <p>21 you're there.</p> <p>22 A. I am there. I am looking for the</p> <p>23 quote.</p> <p>24 Q. That was my question. The quote "a</p> <p>25 particular one of these point-to-point connections</p>                                                                                                                                                                                                   |
| <p style="text-align: right;">Page 289</p> <p>1 different than the connection</p> <p>2 described by OCP."</p> <p>3 Do you see that?</p> <p>4 A. Yes.</p> <p>5 Q. On the next sentence you wrote, (quote</p> <p>6 as read):</p> <p>7 I do not rely on OCP's connections</p> <p>8 being the same as the '052 Patent</p> <p>9 connections.</p> <p>10 Do you see that?</p> <p>11 A. Yes.</p> <p>12 Q. You would agree that OCP's connections</p> <p>13 are not the same as the '052 Patent's connections,</p> <p>14 correct?</p> <p>15 A. I don't disagree. They can be the</p> <p>16 same. But as I say here, they're -- I don't rely on</p> <p>17 that so it's irrelevant to the analysis.</p> <p>18 Q. All right. Can you turn to paragraph</p> <p>19 37 of your second declaration. My question is</p> <p>20 actually about a sentence on page 35 of the PDF.</p> <p>21 Let me know when you're there.</p> <p>22 A. Okay. I'm there.</p> <p>23 Q. All right. Do you see the sentence,</p> <p>24 (quote as read):</p> <p>25 However, as described in my First</p>                                                  | <p style="text-align: right;">Page 291</p> <p>1 based on the address" is not contained in paragraph</p> <p>2 140, correct?</p> <p>3 A. I'm still looking. I don't see it in</p> <p>4 paragraph 140, no. I don't see that quote. My</p> <p>5 opinion is without the quote, it's -- it's -- it's</p> <p>6 an accurate description of -- of what's described in</p> <p>7 paragraph 140. But I cannot find the quote.</p> <p>8 Q. Sure. Sitting here today, do you know</p> <p>9 where that quote in paragraph 37 of your second</p> <p>10 declaration came from?</p> <p>11 A. I don't. But as I say, the text of it</p> <p>12 is an accurate description of paragraph 140 and my</p> <p>13 opinion.</p> <p>14 Q. Understood. You have reviewed the IPR</p> <p>15 petition filed by Qualcomm in this case, correct?</p> <p>16 A. Is that in my second report? Is it in</p> <p>17 my report?</p> <p>18 Q. I'm just asking have you ever reviewed</p> <p>19 the IPR petition filed by Qualcomm in connection</p> <p>20 with your assignment on this IPR?</p> <p>21 A. I'm sure I have.</p> <p>22 Q. There's a copy of the petition in the</p> <p>23 Zoom chat. This is Paper 3 in the proceeding for</p> <p>24 the record. Do you mind opening that up?</p> <p>25 A. Three. Did you just put it in?</p> |

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| <p style="text-align: right;">Page 292</p> <p>1 Q. It's the -- at least if yours looks<br/>2 like mine, it's the second from the bottom. It was<br/>3 actually sent by Peter at 2:29. Do you see it?<br/>4 A. Yes.<br/>5 Q. And I'll represent to you this is Paper<br/>6 3, the IPR petition filed by Petitioner Qualcomm.<br/>7 I'll direct you first to page 30 of the PDF. Let me<br/>8 know when you're there.<br/>9 A. Okay. I'm there.<br/>10 Q. Do you see the header section VIII,<br/>11 "Round One, Radulescu Participates Phase 1 through 2<br/>12 and 5 through 7"?<br/>13 A. Yes.<br/>14 Q. All right. And then if we scroll down<br/>15 to page 25, the internal page 25, 35 if you're<br/>16 looking at the PDF.<br/>17 A. Okay. I'm there.<br/>18 Q. The paragraph at the top of that page<br/>19 reads (quote as read):<br/>20 Thus, the requests for<br/>21 communication services (read/write<br/>22 operations) made by the master IP<br/>23 module include a communication<br/>24 service identification<br/>25 corresponding to at least one</p> | <p style="text-align: right;">Page 294</p> <p>1 requests include a communication service<br/>2 identification, correct?<br/>3 MR. VANDENBURGH: Same objection. And<br/>4 objection asked and answered.<br/>5 THE WITNESS: And again, I can't answer<br/>6 that without looking at the entirety of this. I'm<br/>7 not prepared to answer questions on this petition<br/>8 today.<br/>9 BY MR. CHRISTOPHER:<br/>10 Q. You can't answer what this sentence<br/>11 says without reviewing the entire petition?<br/>12 A. This is a legal proceeding. I want to<br/>13 be as accurate as possible. This is a document that<br/>14 I didn't rely on so I -- or this is a document that<br/>15 I wasn't prepared to answer questions on today.<br/>16 Q. Can you tell me whether that sentence<br/>17 is consistent with the opinions in your declaration?<br/>18 A. Again, I can't just read a sentence out<br/>19 of context -- you know, it could be out of context<br/>20 with the whole description, so I can't answer a<br/>21 question on this.<br/>22 Q. Fair enough. Let's go to paragraph 16<br/>23 of your second declaration. It says page 10 of the<br/>24 PDF.<br/>25 A. Give me a second. I lost my second</p> |
| <p style="text-align: right;">Page 293</p> <p>1 address range that identifies one<br/>2 or more second processing modules<br/>3 (S) or a memory region within said<br/>4 one or more second processing<br/>5 modules (S).<br/>6 Do you see that?<br/>7 A. Yes.<br/>8 Q. And then do you see it cites paragraphs<br/>9 124 through 127 of your first declaration,<br/>10 Exhibit 1003?<br/>11 A. Yes.<br/>12 Q. In that sentence the petition is<br/>13 arguing that the requests for communication services<br/>14 made by the master IP module include a communication<br/>15 service identification, correct?<br/>16 MR. VANDENBURGH: Objection. Outside<br/>17 the scope of redirect.<br/>18 BY MR. CHRISTOPHER:<br/>19 Q. Can you answer the question?<br/>20 A. So I don't recall reading this<br/>21 petition. I definitely didn't read it for -- for my<br/>22 deposition today. So I really can't answer that<br/>23 without reading this document.<br/>24 Q. You would agree, though, that the<br/>25 sentence I just read, page 25, says that the</p>         | <p style="text-align: right;">Page 295</p> <p>1 declaration somewhere.<br/>2 Q. Understood. I know we're flipping<br/>3 between a bunch of different stuff.<br/>4 A. Okay. I think I got it open again.<br/>5 Yes, I have it.<br/>6 Q. All right. So paragraph 16, you wrote,<br/>7 (quote as read):<br/>8 Moreover, Dr. Bagherzadeh did not<br/>9 know that the specification<br/>10 described bus, switch, and<br/>11 point-to-point wires as examples of<br/>12 an interconnect.<br/>13 Do you see that?<br/>14 A. Yes.<br/>15 Q. And then below that you reproduce some<br/>16 deposition testimony. Do you see this?<br/>17 A. Yes.<br/>18 Q. Can you point to me where in that<br/>19 deposition testimony Dr. Bagherzadeh said he did not<br/>20 know the specification described bus, switch, and<br/>21 point-to-point wires as an example of an<br/>22 interconnect?<br/>23 A. Yes. So for example, if you go to top<br/>24 of page 8 of PDF page 12 -- I'm sorry. It starts<br/>25 before on line 14, so the page before, on line 14.</p>                                                                                                                                                                    |

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| <p style="text-align: right;">Page 296</p> <p>1 And if you read from line 14 there to the end of the</p> <p>2 next page, line 24, he did not know that</p> <p>3 interconnect includes buses, switches, or</p> <p>4 point-to-point wires.</p> <p>5 <b>Q. Okay. So tell me specifically where he</b></p> <p>6 <b>said that. Which line? What lines?</b></p> <p>7 MR. VANDENBURGH: Objection. Asked and</p> <p>8 answered.</p> <p>9 THE WITNESS: Lines 14 -- read line --</p> <p>10 I'm happy to read you line 14 from PDF page 11 all</p> <p>11 the way down to line 24 of PDF page 12. I can read</p> <p>12 those.</p> <p>13 BY MR. CHRISTOPHER:</p> <p>14 <b>Q. Okay. That's just your interpretation</b></p> <p>15 <b>of his testimony, though. He didn't actually say he</b></p> <p>16 <b>didn't know that the specification described bus,</b></p> <p>17 <b>switch, and point-to-point wires is an example of an</b></p> <p>18 <b>interconnect, correct?</b></p> <p>19 MR. VANDENBURGH: Objection. Form.</p> <p>20 THE WITNESS: That's what he's saying</p> <p>21 in lines 14 through lines 24.</p> <p>22 BY MR. CHRISTOPHER:</p> <p>23 <b>Q. Why do you think that's relevant to</b></p> <p>24 <b>your opinions?</b></p> <p>25 A. Because he was conflating interconnect</p>                        | <p style="text-align: right;">Page 298</p> <p>1 let's go back off the record.</p> <p>2 THE WITNESS: Thank you.</p> <p>3 (Recess taken from 3:22 to 3:53.)</p> <p>4 EXAMINATION</p> <p>5 BY MR. VANDENBURGH:</p> <p>6 <b>Q. Dr. Hassoun, I have three different</b></p> <p>7 <b>areas I want to ask some brief questions about.</b></p> <p>8 <b>First, could you go back to Exhibit 2083 which is</b></p> <p>9 <b>your -- a declaration of yours from the district</b></p> <p>10 <b>court case and specifically paragraph 86.</b></p> <p>11 A. I have to find it again. 2083. Okay.</p> <p>12 I'm there.</p> <p>13 <b>Q. Okay. In that paragraph 86, are you</b></p> <p>14 <b>saying --</b></p> <p>15 A. Let me get to it. I'm sorry. Okay.</p> <p>16 <b>Q. So in that paragraph 86, are you saying</b></p> <p>17 <b>that in the alternative where the interconnect means</b></p> <p>18 <b>is a network, that the network interface can't be</b></p> <p>19 <b>part of the network?</b></p> <p>20 MR. CHRISTOPHER: Objection. Form.</p> <p>21 Leading.</p> <p>22 THE WITNESS: No, that's not what I'm</p> <p>23 saying here.</p> <p>24 BY MR. VANDENBURGH:</p> <p>25 <b>Q. What are you saying in that paragraph</b></p>                                                                                                                                                                       |
| <p style="text-align: right;">Page 297</p> <p>1 and interconnect means.</p> <p>2 <b>Q. How is that relevant to your opinions?</b></p> <p>3 A. Well, it's described in my -- my</p> <p>4 opinions, but I'm rebutting his definition of</p> <p>5 interconnect means being a network, a network only.</p> <p>6 And, therefore, when the claim itself says</p> <p>7 interconnect means, so this discussion has to be</p> <p>8 about interconnect, and it's relevant just me</p> <p>9 showing he didn't even know that interconnects,</p> <p>10 which is part of interconnect means language,</p> <p>11 included interconnect, included the structures that</p> <p>12 we were talking about. So that's the relevance of</p> <p>13 this.</p> <p>14 <b>Q. Okay.</b></p> <p>15 MR. CHRISTOPHER: Let's go off the</p> <p>16 record for about five minutes so we can check our</p> <p>17 notes and wrap up.</p> <p>18 MR. VANDENBURGH: Sounds good.</p> <p>19 THE WITNESS: Thank you.</p> <p>20 (Recess taken from 3:14 to 3:22.)</p> <p>21 MR. CHRISTOPHER: Dr. Hassoun, I want</p> <p>22 to thank you very much for your time today, your</p> <p>23 attention in answering my questions. Subject to any</p> <p>24 recross, I have no further questions for you.</p> <p>25 MR. VANDENBURGH: All right. Well,</p> | <p style="text-align: right;">Page 299</p> <p>1 <b>relative to the network interface?</b></p> <p>2 A. What I'm saying here is a network</p> <p>3 interface on its own is not a network in the context</p> <p>4 of the '052 Patent. And I'm going to read what it</p> <p>5 says. "But excluding the network interface NI</p> <p>6 because it is separately claimed in claim 6."</p> <p>7 <b>Q. Is there any question in your mind that</b></p> <p>8 <b>the '052 Patent discloses the network interfaces as</b></p> <p>9 <b>being part of the disclosed networks?</b></p> <p>10 A. No. I have no doubt.</p> <p>11 <b>Q. And what tells you that in the '052</b></p> <p>12 <b>Patent?</b></p> <p>13 MR. CHRISTOPHER: Same objection.</p> <p>14 THE WITNESS: There's -- there's --</p> <p>15 there's many disclosure -- disclosures, including at</p> <p>16 least the figures, that include the network</p> <p>17 interfaces in -- when it's labeled as "N," but</p> <p>18 additionally, it discusses network --</p> <p>19 networks-on-chip and a person of ordinary skill in</p> <p>20 the art would know networks-on-chip include network</p> <p>21 interfaces.</p> <p>22 BY MR. VANDENBURGH:</p> <p>23 <b>Q. Last question on this topic, looking at</b></p> <p>24 <b>the claims, in particular claim 6, if we consider</b></p> <p>25 <b>the option where the interconnect means is a</b></p> |

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1 network, do the claims preclude the network  
2 interface from being part of that network?  
3 A. No. It does not.  
4 Q. Okay. All right. That's enough for  
5 that topic.  
6 I want to ask you next about -- you  
7 were asked I think maybe just one question about the  
8 term "flit" in the '052 Patent. Can you tell me  
9 what a flit is in the context of the '052 Patent?  
10 A. I need to open the patent. So the  
11 flits in the context of the '052 Patent as described  
12 in column 5, line -- I'll start at line 28, and I  
13 quote, (quote as read):  
14 The routers are transport packets  
15 of data from one network interface  
16 NI to another. Such a packet  
17 consists of one or more flits,  
18 where a flit is the minimal  
19 transmission unit.  
20 So that's what a flit is in the context  
21 of the '052 Patent.  
22 Q. If you have a packet with, say, five  
23 flits, would it be appropriate to call each flit a  
24 packet?  
25 MR. CHRISTOPHER: Objection. Scope.

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1 THE WITNESS: No, it's -- it's a packet  
2 that's made up of five flits, but it is -- it is one  
3 packet.  
4 BY MR. VANDENBURGH:  
5 Q. And then lastly, I think as we  
6 mentioned, we I think discovered that Exhibit 1052  
7 is missing a page 787, so hopefully, Aaron, you can  
8 put in the chat a -- what has been labeled  
9 Exhibit 1052 (Corrected). If you could open that  
10 up, please, Dr. Hassoun.  
11 (Whereupon, Exhibit 1052  
12 (Corrected) was marked for  
13 identification.)  
14 MR. CHRISTOPHER: Counsel, just for the  
15 record, we object to this. If you want to submit a  
16 corrected version, you need to ask Lee from the  
17 board to do so.  
18 MR. VANDENBURGH: I recognize that, but  
19 I think it -- just to give you an opportunity to ask  
20 questions, I want to put this in this deposition  
21 transcript as well.  
22 MR. CHRISTOPHER: Sure. I just want to  
23 make that objection clear on the record, and we are  
24 not going to be submitting it with the transcript.  
25

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1 BY MR. VANDENBURGH:  
2 Q. Do you have Exhibit 1052 (Corrected) up  
3 on your screen, Mr. Hassoun?  
4 A. I do.  
5 Q. Can you confirm that that is a copy of  
6 the same exhibit that was originally submitted as  
7 Exhibit 1052 but includes the page 787 that is cited  
8 in your reply declaration?  
9 A. I've got to close some windows. I'm  
10 sorry. I'm looking at two things that are the same.  
11 Yes, it's -- they are the same except for PDF page 7  
12 now that is -- I don't see the page number on here,  
13 but it's previous to page 788.  
14 MR. VANDENBURGH: All right. Thank  
15 you. I have no further questions.  
16 MR. CHRISTOPHER: I will have some  
17 recross. Can we go off the record and -- for a few  
18 minutes?  
19 MR. VANDENBURGH: Yep.  
20 MR. CHRISTOPHER: I will try to be as  
21 brief as possible, but probably need about ten  
22 minutes.  
23 (Recess taken from 4:03 to 4:17.)  
24 FURTHER EXAMINATION  
25

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1 BY MR. CHRISTOPHER:  
2 Q. Dr. Hassoun, did you discuss your  
3 testimony today during the break between my  
4 cross-examination and Mr. Vandenburg's redirect?  
5 A. Yes.  
6 Q. What did you discuss?  
7 A. I was asked several questions, and I  
8 responded to that and I was read part of my  
9 testimony.  
10 Q. Let's take this in pieces. You were  
11 asked several questions. What questions did counsel  
12 ask during the break?  
13 A. The three or four questions that he  
14 asked me on the record.  
15 Q. Did he ask any questions other than  
16 those questions that were asked on the record?  
17 A. Not that I recall, no.  
18 Q. And you stated you provided answers to  
19 those questions, correct?  
20 A. I did.  
21 Q. Okay. Were those the same answers you  
22 provided on the record?  
23 A. Yes.  
24 Q. You mentioned that you were read  
25 certain portions of your testimony. What portions

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1 of your testimony were read to you?

2 A. The portions related to the testimony

3 regarding the declaration and the testimony

4 regarding flits. I'm forgetting what the third

5 question was about now. But it's the testimony on

6 whatever that third question was.

7 Q. What questions did counsel ask you

8 about the claim construction declaration during the

9 break?

10 A. To my recollection, the same ones he --

11 he asked me during the redirect.

12 Q. Okay. Did you give the same answers as

13 the ones you gave on the record to those questions

14 about the claim construction declaration from the

15 district court?

16 A. Yes.

17 Q. Okay. Did you have any discussions

18 with counsel about your answers to those questions

19 about the claim construction declaration?

20 A. Yes.

21 Q. Okay. What did you discuss about the

22 answers?

23 A. I explained the logic, why that was my

24 conclusion.

25 Q. Did you discuss anything else about

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1 your answers to those questions about the claim

2 construction declaration?

3 A. Not that I can recall, no.

4 Q. All right. You discussed during the

5 break questions that were given to you during

6 redirect. You discussed the answers that you gave

7 during redirect and portions of your testimony. Did

8 you discuss anything else with counsel during the

9 break as it relates to your testimony?

10 MR. VANDENBURGH: Objection. Form.

11 THE WITNESS: Not that I recall, no.

12 MR. CHRISTOPHER: Okay. Give me two

13 minutes. I may be able to wrap up for the day.

14 Let's go off for two minutes.

15 (Recess taken from 4:21 to 4:24.)

16 MR. CHRISTOPHER: Well, before we

17 conclude today, I just want to make one note for the

18 record in case it's not clear from the final

19 transcript, but that break between my

20 cross-examination and the redirect was approximately

21 31 minutes.

22 With that, Dr. Hassoun, again, thank

23 you very much for your time. I have no further

24 questions for you.

25 MR. VANDENBURGH: And I have no

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1 additional questions.

2 THE WITNESS: Thank you very much.

3 MR. CHRISTOPHER: Thank you. We would

4 like a rough.

5 (Whereupon, signature was not

6 specified and the witness was

7 excused at 4:24 p.m.)

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1 CERTIFICATE OF REPORTER

2 I, RENEE QUINBY, Certified Shorthand

3 Reporter, hereby certify that the witness in the

4 foregoing deposition was by me duly sworn to tell

5 the truth, the whole truth, and nothing but the

6 truth in the within-entitled cause;

7 That said deposition was taken in

8 shorthand by me, a disinterested person, at the time

9 and place therein stated, and that the testimony of

10 the said witness was thereafter reduced to

11 typewriting under my direction and supervision;

12 That before completion of the

13 deposition, review of the transcript was not

14 specified. If requested, any changes made by the

15 deponent (and provided to the reporter) during the

16 period allowed are appended hereto. I further

17 certify that I am not of counsel or attorney for

18 either or any of the parties to the said deposition,

19 nor in any way interested in the event of this

20 cause, and that I am not related to any of the

21 parties thereto.

22 Dated: 2/27/2025

23 

24 Renee Quinby, RDR, CRR, CA CSR #11867,

25 TX CSR #12184, MO CCR #1291, IL CSR #084-004867

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1                   DECLARATION UNDER PENALTY OF PERJURY

2   Case Name: Qualcomm

                  vs. Network System Technologies

3   Date of Deposition: 02/18/2025

4   Job No.: 10158454

5

6                   I, MARWAN HASSOUN, PH.D., MS, hereby certify

7   under penalty of perjury under the laws of the State of

8   \_\_\_\_\_ that the foregoing is true and correct.

9                   Executed this \_\_\_\_\_ day of

10 \_\_\_\_\_, 2025, at \_\_\_\_\_.

11

12

13 \_\_\_\_\_

14                   MARWAN HASSOUN, PH.D., MS

15

16 NOTARIZATION (If Required)

17 State of \_\_\_\_\_

18 County of \_\_\_\_\_

19 Subscribed and sworn to (or affirmed) before me on

20 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_,

21 by \_\_\_\_\_, proved to me on the

22 basis of satisfactory evidence to be the person

23 who appeared before me.

24 Signature: \_\_\_\_\_ (Seal)

25

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1   DEPOSITION ERRATA SHEET

2   Page \_\_\_\_\_ Line \_\_\_\_\_ Reason \_\_\_\_\_

3   From \_\_\_\_\_ to \_\_\_\_\_

4   Page \_\_\_\_\_ Line \_\_\_\_\_ Reason \_\_\_\_\_

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20   Page \_\_\_\_\_ Line \_\_\_\_\_ Reason \_\_\_\_\_

21   From \_\_\_\_\_ to \_\_\_\_\_

22   \_\_\_\_\_ Subject to the above changes, I certify that the

                  transcript is true and correct

23   \_\_\_\_\_ No changes have been made. I certify that the

                  transcript is true and correct.

24

25                   \_\_\_\_\_

MARWAN HASSOUN, PH.D., MS

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1   DEPOSITION ERRATA SHEET

2   Case Name: Qualcomm

                  vs. Network System Technologies

3   Name of Witness: Marwan Hassoun, Ph.D., MS

4   Date of Deposition: 02/18/2025

5   Job No.: 10158454

6   Reason Codes: 1. To clarify the record.

                  2. To conform to the facts.

                  3. To correct transcription errors.

7   Page \_\_\_\_\_ Line \_\_\_\_\_ Reason \_\_\_\_\_

8   From \_\_\_\_\_ to \_\_\_\_\_

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