

1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3
4 BEFORE THE PATENT TRIAL AND APPEAL BOARD
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6

7 PELOTON INTERACTIVE, INC.,

8 Petitioner,

9 V.

10 NEC CORPORATION,

11 Patent Owner.
12 _____

13 IPR2023-01239

14 Patent No. 8,752,101
15

16 DEPOSITION OF:

17 CLIFFORD READER PH.D.

18 THURSDAY, MAY 16, 2024

19 9:15 A.M.
20
21
22
23

24 Reported by: GINA M. CLOUD

25 CSR No. 6315

Page 1

1 Deposition of CLIFFORD READER PH.D., the 2 witness, taken on behalf of the Patent Owner, on 3 Thursday, May 16, 2024, 9:15 A.M., via Virtual Zoom, 4 pursuant to NOTICE. 5 6 APPEARANCES OF COUNSEL: 7 8 FOR PETITIONER: 9 10 COVINGTON & BURLING LLP 11 BY: ANUPAM SHARMA, ESQ. 12 RAJESH PAUL, ESQ. 13 JANICE JABIDO, ESQ. 14 300 El Camino Real 15 Palo Alto Square 16 Palo Alto, California 17 (650) 632-4709 18 asharma@cov.com 19 20 FOR PATENT OWNER: 21 22 BAKER BOTTS L.L.P. 23 BY: MICHAEL E. KNIERIM, ESQ. 24 LANCE GOODMAN, ESQ. 25 30 Rockefeller Plaza New York, New York 10112-4498 (212) 408-2500 Michael.knierim@bakerbotts.com ALSO PRESENT: Curt Norris, Videographer Page 2	1 Laguna Niguel, California, Thursday, May 16, 2024 2 9:15 a.m. 3 4 THE VIDEOGRAPHER: Good morning. We are 5 going on the record at 9:15 a.m. Pacific, May 16, 09:16:01 6 2024. 7 This is Media Unit 1 of the video-recorded 8 deposition of Clifford Reader, Ph.D., taken by 9 counsel for Petitioner in the matter of Peloton 10 Interactive, Inc. versus NEC Corporation, filed 09:16:22 11 before the Patent and Trial and Appeal Board, Patent 12 Number 8,752,101. 13 This is a Zoom remote deposition. My name 14 is Curt Norris. I'm the videographer. The court 15 reporter is Gina Cloud, both from the firm Veritext. 09:16:41 16 Will all counsel please state their 17 appearances and affiliations, after which the court 18 reporter will swear in the witness. 19 MR. KNIERIM: This is Mike Knierim from 20 Baker Botts on behalf of the patent owner NEC, and 09:16:56 21 with me here today is Lance Goodman, also from Baker 22 Botts. 23 MR. SHARMA: Good morning, everyone. This 24 is Anupam Sharma from Covington & Burling on behalf 25 of Petitioner Peloton Interactive, Inc. 09:17:09 Page 4
1 I N D E X 2 WITNESS 3 CLIFFORD READER, PH.D. 4 PAGE 5 EXAMINATION BY MR. KNIERIM 5 6 EXAMINATION BY MR. SHARMA 178 7 FURTHER EXAMINATION BY MR. KNIERIM 202 8 9 EXHIBITS 10 NUMBER DESCRIPTION PAGE 11 Exhibit 1 United States Patent US 8,752,101 B2, 7 Onishi, Dated June 10, 2014, 31 pages 12 13 Exhibit 2 Declaration of Clifford Reader, Ph.D. 14 in Support of Petition for Inter Partes Review of U.S. Patent No. 8,752,101, 14 162 pages 15 Exhibit 3 Exhibit 1016 Replacement, U.S. Patent 27 No. 7,606,928, 11 pages 16 17 Exhibit 4 Revised Declaration of Clifford Reader, 27 Ph.D. in Support of Petition for Inter Partes Review of U.S. Patent No. 18 8,752,101, 162 pages 19 Exhibit 5 U.S. Patent Application Publication 82 No. US 2006/0143678, Chou et al., 20 32 pages 21 Exhibit 2013 Declaration of Dr. Kevin C. Almeroth 164 Regarding Claim Construction of U.S. 22 Patent Nos. 8,752,101, 8,909,809, and 9,769,427, 140 pages 23 24 25 Page 3	1 Also with me is Rajesh Paul, R-a-j-e-s-h, 2 also of Covington & Burling, and also Janice Jabido, 3 H-a-b-i-d-o, in-house counsel at Peloton 4 Interactive, Inc. 5 MS. JABIDO: J, you said H. 09:17:33 6 MR. SHARMA: Jabido, J-a-b-i-d-o. 7 8 CLIFFORD READER, PH.D., 9 having been first duly sworn, was 10 examined and testified as follows: 11 12 EXAMINATION 13 BY MR. KNIERIM: 14 Q. Good morning, Dr. Reader. 15 A. Good morning. 09:17:58 16 Q. Where are you located today? 17 A. In Palo Alto, California. 18 Q. You are in the offices of Covington & 19 Burling in Palo Alto; is that correct? 20 A. That is correct. 09:18:10 21 Q. And your counsel is present with you today, 22 is that also correct? 23 A. Correct. 24 Q. Would you please identify counsel that's 25 present with you today? 09:18:18 Page 5

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1 A. Yes, it is. 2 Q. What is his name? 3 A. Anupam Sharma. 4 Q. Is there anybody else in the room with you 5 right now? 09:18:29 6 A. No. 7 Q. I understand you have some paper materials 8 with you today as well; is that right? 9 A. That's correct. 10 Q. Would you please identify those materials 09:18:37 11 for the record? 12 A. Sure. 13 The first is my declaration. 14 The second is the '101 patent. 15 The third is the Chou reference. 09:18:58 16 Then the Wang reference. 17 And lastly the certified translation of -- 18 what's the name so I can pronounce is properly. 19 Nobuyoshi. 20 Q. Thank you. 09:19:58 21 Just so we get a clear record here, your 22 declaration has an exhibit number on it labeled as 23 Exhibit 1006, correct? 24 A. Yes. A Bates -- well, it's not the Bates 25 number. On the bottom right of every page is labeled 09:20:17 Page 6	1 Q. Do any of those paper copies you have with 2 you have any marks or notes on them? 3 A. No, absolutely none. 4 Q. Other than the Zoom window and the Exhibit 5 Share window, do you have any other windows or 09:21:53 6 programs open on your computer right now? 7 A. Not on the desktop that I'm using, no. 8 Q. Are you using a desktop or laptop, sir? 9 A. I'm sorry, I'm using a Mac. So a Mac has 10 what's called a desktop which is a particular window 09:22:11 11 or particular screen, so that screen has only this 12 Zoom meeting and then the exhibit window. Just those 13 open. 14 Q. Are there any other desktops that have 15 other windows on them running on your Mac as well? 09:22:36 16 A. Yes, I always have a lot of them. 17 Q. If at any time during this deposition you 18 change to another desktop, you will let me know, 19 okay? 20 A. I will not do so by mistake. 09:22:46 21 Q. Glad we can agree on that. 22 Is there any reason you cannot testify 23 truthfully and accurately to the best of your 24 ability today? 25 A. No. 09:22:58 Page 8
1 with Exhibit 1006. 2 Q. What you refer to as the '101 patent has an 3 exhibit number of 1001 on it? 4 A. Yes. 5 (The document referred to was marked as 6 Exhibit 1 for identification and is attached 7 hereto.) 8 MR. SHARMA: Can we interrupt for a second? 9 MR. KNIERIM: Sure. 10 MR. SHARMA: Quick question for Gina, Raj 09:20:41 11 Paul who is one of the attorneys for Covington would 12 like to have a RealTime link. 13 THE REPORTER: I'll put it in the chat 14 again. 15 BY MR. KNIERIM: 09:21:12 16 Q. Just so we get a clear record here, 17 Doctor, what you referred to as Chou, C-h-o-u, is 18 Exhibit 1004? 19 A. Correct. 20 Q. And what you referred to as Wang is 1016, 09:21:23 21 right? 22 A. Yes. 23 Q. And Nobuyoshi is Exhibit Number -- what is 24 the Exhibit Number? 25 A. 1014. 09:21:38 Page 7	1 While we're going through this process, may 2 I apologize in advance in case something happens. 3 I've muted my phone and my watch, but what can 4 happen, because of the Mac environment is that if 5 somebody calls me which is going to be a junk call 09:23:22 6 anyway, because we've got the volume on on the 7 computer, the Mac is going to make the sound of the 8 call coming in. I will stop it as quickly as I can, 9 but I apologize if we have at any point an 10 interruption like that. I don't think there is 09:23:44 11 anything I can do about it. 12 Q. Okay, I appreciate that. Let me ask you 13 this. If the somebody were to send you a text 14 message to your phone, would that also display on 15 your Mac? 09:23:59 16 A. You would see a notification of it. You're 17 looking at my screen -- no. Are you able to see my 18 whole screen or only just my face, head and 19 shoulders? 20 Q. Just your head and shoulders. 09:24:16 21 A. I mean the Mac is going to have an icon at 22 the bottom of the screen that would indicate that a 23 message had arrived. It would not display the 24 message. It's not going to do that. 25 Q. Thank you for that clarification. 09:24:40 Page 9

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1 Throughout the course of the deposition 2 today, if you do not understand any of my questions, 3 I would ask that you please let me know. Is that 4 fair? 5 A. That's fine, thank you. 09:24:49 6 Q. And if you don't let me know, I'm going to 7 assume that you understood the question. Is that 8 also fair? 9 A. Yes. 10 Q. Did you prepare for today's deposition? 09:24:59 11 A. Yes. 12 Q. What did you do to prepare? 13 A. I have read what I would call the key 14 documents in the matter. Basically, the ones that we 15 went through that are in the folder and in addition 09:25:17 16 to that, the Schoenfeld declaration and the 17 institution decision. 18 I met with counsel yesterday for part of the 19 day and we met a week or so ago also to review 20 everything. 09:25:49 21 Q. Just to clarify when you said the key 22 documents, you mean your declaration, Exhibit 1001, 23 1004, 10 -- sorry, 1016 and 1014? 24 A. Right, and there was one more, right? 25 Wasn't there five? We had 1006, 1001. I think maybe 09:26:11 Page 10	1 meeting? 2 A. It was mixed because Anupam was with me in 3 the room and the other two were on a well-functioning 4 virtual meeting. 5 Q. Other than those three individuals, did 09:28:23 6 anybody else join that meeting? 7 A. No. 8 Q. You also mentioned you met about a week or 9 so ago. Who was present during that meeting? 10 A. It was the same group of people. 09:28:38 11 Q. I'm sorry, I didn't mean to cut you off. 12 A. I was just trying to say the same people and 13 nobody else. 14 Q. How long did that meeting last for? 15 A. It was approximately a day. 09:28:53 16 Q. Was it in person or remote? 17 A. It was the same mix of being physically with 18 Anupam Sharma and the others joining through virtual 19 conferencing, virtual meeting. 20 Q. Are you planning to submit any additional 09:29:14 21 declaration in this IPR proceeding? 22 A. Not at the present time. 23 Q. Have you been retained by Peloton to assist 24 with -- let me take a step back. 25 You understand there is a pending district 09:29:29 Page 12
1 you left that one off the list. 1004, 16, and 14. 2 Q. Okay, thank you. You mentioned you've 3 reviewed Dr. Schoenfeld's declaration as well as the 4 institution decision. Other than those documents, 5 did you review any documents in preparing for 09:26:37 6 today's deposition? 7 A. I don't think so, no. 8 Q. Have you seen patent owner's preliminary 9 response in this case? 10 A. I would have seen those a long time ago. I 09:26:53 11 didn't look at them in the last couple of weeks. I 12 haven't looked at them in months. 13 Q. But you have seen the patent owner 14 preliminary response for this IPR proceeding? 15 A. Last year, yes, or whenever it was. 09:27:13 16 Q. You mentioned that you met with the 17 attorneys yesterday. Who was present at that 18 meeting? 19 A. The people who are on this call, so Anupam 20 Sharma and Rajesh Paul and Janice Jabido. 09:27:41 21 Q. Approximately, how long did you meet for? 22 A. Something less than all day. 23 Q. Was it more than half a day? 24 A. It was more than half a day, yes. 25 Q. That was an in person meeting or remote 09:28:01 Page 11	1 court litigation between the parties, right? 2 A. I do understand that, yes. 3 Q. Have you been retained by Peloton to assist 4 in the district court litigation? 5 A. I don't think that's being discussed so far. 09:29:42 6 Q. Have you consulted or otherwise provided 7 assistance to Peloton in that district court 8 position to date? 9 A. No, I don't think so. 10 Q. Have you seen any materials from the 09:29:59 11 district court litigation? 12 A. As you know, my declaration has passages 13 from NEC's infringement contentions in the document 14 and so to that extent, I have seen things related to 15 the district court matter. 09:30:26 16 Q. Understood, and thank you for that 17 clarification. 18 Other than the infringement contentions 19 that are cited in your declaration, have you seen 20 any other materials from that proceeding? 09:30:38 21 A. I don't think I have any other materials. 22 Q. I'm going to introduce an exhibit into 23 Exhibit Share. It's uploading right now. It may 24 take a minute, but I would ask that you refresh your 25 Exhibit Share window and let me know when you see 09:30:58 Page 13

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1 what's referred to as or labeled Exhibit 1006. 2 A. I have that yes, and I've opened it. 3 (The document referred to was marked as 4 Exhibit 2 for identification and is attached 5 hereto.) 6 BY MR. KNIERIM: 7 Q. And this is a copy of your original 8 declaration dated July 26, 2023, correct? 9 A. I'm looking at the first page and that's the 10 first page of that, yes. 09:31:25 11 Q. It has your signature there on the first 12 page next to the date July 26, 2023? 13 A. Yes, correct. 14 Q. You understand that this declaration was 15 cited and relied upon by Peloton in support of its 09:31:41 16 petition for inter partes case review of the '101 17 patent, correct? 18 A. Correct. 19 Q. Have you seen the petition itself? 20 A. I have, yes. 09:31:55 21 Q. When did you see that petition? 22 A. I would presume I saw it last year when 23 submitted in the time frame of it being submitted. 24 Q. Did you see it before or after you affixed 25 your signature to your declaration? 09:32:18 Page 14	1 Q. You don't bill your time to Peloton? 2 A. I do, but I don't have an accumulated number 3 for something that's gone on for months. 4 Q. You have records though and if you wanted 5 to, you could go back and check and see how much you 09:34:19 6 billed Peloton for this matter, right? 7 A. Yes, those records exist up to last month. 8 Q. And you don't have a sense for roughly how 9 many hours you've spent in total on this project? 10 A. No. 09:34:38 11 Q. You've also been retained by Peloton to 12 work on two other IPRs involving a separate patent; 13 isn't that right? 14 A. One, I think. 15 Q. I'm sorry. One other patent or one on IPR 09:34:51 16 proceeding? 17 A. One other IPR proceeding related to one 18 other patent. 19 Q. And that's the '427 patent? 20 A. That's correct. 09:35:03 21 Q. You were deposed in that proceeding last 22 month I believe, is that correct? 23 A. That's correct. 24 Q. Do you have a sense of how much time you've 25 spent in total on all matters for Peloton including 09:35:14 Page 16
1 A. Well, there were drafts being prepared for 2 some time before the submission date. So I think I 3 saw drafts of the petition in the time frame of 4 developing the declaration. 5 Q. When were you first retained to work on 09:32:47 6 this matter? Let me clarify what I mean by "this 7 matter" is the inter partes case review proceeding 8 for the 101 proceeding. 9 THE REPORTER: I'm not sure I'm hearing. 10 What is that word? 11 MR. KNIERIM: Interpartes 12 I-n-t-e-r-p-a-r-t-e-s. 13 THE WITNESS: I was retained a little bit 14 over a year ago. 15 BY MR. KNIERIM: 09:33:24 16 Q. So that would be roughly a little over -- a 17 little before May of 2023? 18 A. I think it was in April, yes. 19 Q. How much time did you spend in total 20 working on this matter, and again by this matter, I 09:33:42 21 mean the IPR proceeding for the '101 patent? 22 A. I don't know. 23 Q. Do you have a ballpark estimate? 24 A. No, I don't really keep track of things like 25 that. 09:33:59 Page 15	1 both the '101 patent and the '427 patent? 2 A. No, I don't keep track of it so I don't 3 know. 4 Q. You said you don't keep track. You do have 5 records, you just don't recall off the too much of 09:35:30 6 your head, is that what you're saying? 7 A. I don't know off the top of my head and as I 8 mentioned a few moments ago, I don't sort of keep a 9 running total in my thinking about how much time has 10 accumulated on any of my clients. 09:35:45 11 Q. On a qualitative level, would you say you 12 spent a significant amount of time on this 13 '101 patent? 14 MR. SHARMA: Objection, form. 15 THE WITNESS: I think over the whole period 09:36:01 16 of time, there's been a significant amount of effort 17 on my part. Significant amount of time. 18 BY MR. KNIERIM: 19 Q. If we're going to break this down a little 20 bit, I think you testified earlier that you spent 09:36:18 21 about a day plus, almost a day preparing just for 22 this deposition in this proceeding; is that right? 23 A. I testified that that was the amount of time 24 I was in meetings with counsel. 25 Q. And did you spend additional time outside 09:36:38 Page 17

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1 those meetings preparing for this deposition? 2 A. Yes. 3 Q. Roughly, how much time did you spend 4 outside those meetings preparing? 5 A. Again, I haven't sort of created an 09:36:49 6 accumulated amount of time in my head for that, but 7 I've spent the time it's taken to read all of the 8 documents and to study for the deposition. So I've 9 spent time on my own reviewing the documents and 10 considering them. So I've spent time doing that. 09:37:22 11 Q. In your declaration, you rely on three 12 prior art references for your invalidity grounds. 13 Those would be the exhibits we just discussed, 14 right? 15 A. Correct. 09:37:44 16 Q. Did you find that prior art or were you 17 given that prior art? 18 A. I think I was given all of those three 19 pieces of art. One of them is admitted prior art in 20 the '101 patent itself, right, so it came from there. 09:38:07 21 Q. Right. Well not right, but I hear you. 22 And what you're referring to there is Nobuyoshi 23 Exhibit 1014? 24 A. Yes, correct. 25 Q. Can you just take me through the process, 09:38:25 Page 18	1 Q. In coming to your conclusions that the 2 '101 patent claims were invalidated by these three 3 references, did you consider other references to use 4 instead? 5 A. I think I had done some searching on my own 09:40:50 6 last year. I recall taking a look around the yard. 7 But in addition, there was my own knowledge of the 8 subject matter in the field, because as you know, 9 I've been involved in setting standards for decades 10 in this area and so I have personal knowledge of this 09:41:31 11 subject in terms of what we were discussing. 12 And by "we," I mean the experts in my field 13 were discussing in the early '90s going forward from 14 that point in time and even then, this particular 15 subject matter was something that I was aware of 09:42:02 16 having been investigated for standardization in the 17 1980's in development of the standard. 18 But in fact, if you go look at the whole 19 history of the field, then this was something that 20 Bell Labs, AT&T were looking at beginning in the 09:42:26 21 1960s, and I think sort of the modern origins of 22 looking at this begin in the 1970s. The latter part 23 of the 1970s. 24 Q. So to get some clarity there, did you some 25 independent searching on your own to find additional 09:43:04 Page 20
1 your process when you were given these prior art 2 references, what was your process in analyzing them 3 and coming to your opinions and conclusions? 4 A. Well, of course, it began by reading the 5 documents and understanding what they were talking 09:38:43 6 about, and then the process was to look at how the 7 mapping -- because the terminology is going to be 8 different from the '101 patent and the art. 9 And there is a process of identifying within 10 the prior art what maps to the terminology as it's 09:39:13 11 used in the claims of the '101 in particular, but 12 also considering what's in the main body or the 13 detailed description of the '101 patent. 14 Q. So you were given a copy of the 15 '101 patent. You were given a copy of the three 09:39:41 16 reference and you worked from there? 17 A. Basically, yes. 18 Q. And approximately how long did you spend 19 looking at each of the prior art references? 20 A. It takes, I think, quite a long time to 09:39:56 21 really understand a patent in particular is something 22 that isn't a quick read through. So I spend a 23 substantial number of hours to really understand what 24 it is that a patent is disclosing in its entirety, as 25 a whole in its entirety. 09:40:27 Page 19	1 reference and you also brought to bear your 2 knowledge and experience in this field and yet at 3 the end of the day, you didn't find anything better, 4 you chose to go with the three references in the 5 petition; is that right? 09:43:16 6 MR. SHARMA: Objection, form. 7 THE WITNESS: In terms of evaluating this 8 art, I was doing so based upon my knowledge of the 9 state of the art in the field. In the event I find 10 this art to be very strong. 09:43:44 11 BY MR. KNIERIM: 12 Q. Just to be clear, you did do some 13 independent searching for additional art, correct? 14 A. I have a recollection that I did some 15 searching online to do that in both -- both in terms 09:43:54 16 of patent prior art and in terms of published journal 17 and conference preceding art, I think I did some 18 initial searching in those areas. 19 Q. Did you find any references that were 20 better than the three that are relied upon in the 09:44:20 21 petition? 22 A. No. 23 Q. I'm sorry, I didn't catch that last answer. 24 A. No. 25 Q. And again, just for clarity, you have, 09:44:30 Page 21

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1 according to your own testimony, significant 2 experience in this area dating back to -- sorry, 3 when did you say your experience started here? 4 A. I was attending standards meetings beginning 5 in the spring of 1990, so I was in the room, as it 09:44:44 6 were, from that point on, but even then what I was 7 testifying was that the work that we were doing 8 starting in 1990s for the unpaid one standard at that 9 point in time, I was able to take advantage of the 10 first amount of work in this area for standardization 09:45:16 11 that was performed in the late 1980s. 12 Q. Based on your experience, starting in 13 spring of 1990 and building upon work that was done 14 in the '80s, you've not identified a prior art 15 reference that's better than the three that are in 09:45:38 16 the petition, correct? 17 MR. SHARMA: Objection, form. 18 THE WITNESS: To set the context correctly, 19 and this is discussed in the art that we have. The 20 early work in this field was in support of 09:46:00 21 applications and implementations that were in 22 dedicated network environments and the art tells us 23 that that's a rather different -- that's a rather 24 different problem than when you want to address this 25 problem when the channel over which the transmission 09:46:28 Page 22	1 If, based on your experience in this area, 2 you were able to identify a better prior art 3 reference, you would have been allowed to rely on 4 that reference in your declaration, correct? 5 A. I think so. I'm just trying to do this from 09:48:37 6 recall, but going back to 13 months ago, I believe 7 that that time frame, if I had said to counsel look, 8 I've got something here that you should take a look 9 at, then we would have collectively looked at 10 something that I thought was helpful. 09:49:06 11 Q. Understood. So what you've landed on here 12 is the three references in the petition, right? 13 A. Correct, yes. 14 Q. And I forgot if I asked this so apologies, 15 but when you looked at those references, when you 09:49:23 16 analyzed the three prior art references, you had the 17 '101 patent in hand, correct? 18 A. Yes. 19 Q. Did you need to look -- withdrawn. 20 You mentioned that Bell and AT&T were 09:49:38 21 looking at this problem, I think you said in the 22 early '60s; is that right? 23 A. I think they probably started looking at it 24 in the early '60s, yes. I think you have articles 25 from the Bell Systems Technical Journal from that 09:49:59 Page 24
1 of the content is going to occur is not a dedicated 2 channel like a broadcast TV channel or a 3 dedicated -- a dedicated network such as one from a 4 telephone company. 5 BY MR. KNIERIM: 09:46:57 6 Q. So you're saying that -- when you say "this 7 problem," are you referring to the problem of the 8 '101 patent? 9 A. Yes, that's what I'm referring to. 10 Q. And that is a different problem or a 09:47:07 11 problem unique to a certain context that was not 12 present in situations where you had a dedicated 13 channel; is that right? 14 A. It's not quite as simple as that because I 15 don't want to create an impression that it's a 09:47:24 16 totally different problem. 17 In terms of the question that you're asking, 18 I would point out that the '101 patent and the 19 references that I've used, really concern a 20 combination of the original problem that we faced 09:47:52 21 decades ago and the factors that are introduced into 22 the problem if the network that is being used to 23 communicate is not reliable. 24 Q. Okay, thank you. You mentioned -- 25 withdrawn. 09:48:17 Page 23	1 time frame when they were looking at this problem. 2 Q. You're not relying on any materials from 3 Bell or AT&T as prior art in your declaration, are 4 you? 5 A. They don't appear in my declaration, no. 09:50:16 6 Q. On page 1 of Exhibit 1006, your 7 declaration, the original version that I added to 8 the Exhibit Share, there is a list of materials 9 considered. Do you see that? 10 A. Beginning on page 1, yes. 09:50:46 11 Q. And if we scroll down to page 2, you'll see 12 there is an entry there for Exhibit 1016. 13 A. Yes. 14 Q. And that is listed as U.S. patent number 15 5,867,230 to Wang, do you see that? 09:51:02 16 A. Yes. 17 Q. And that is not the Wang reference that you 18 analyzed, correct? 19 A. Can you repeat the last part of your 20 sentence? It tailed off and I didn't hear it. 09:51:17 21 Q. Sorry, let me try again. 22 The '230 patent to Wang listed here in 23 Exhibit 1016 is not the same Wang reference that you 24 analyzed for invalidity, correct? 25 A. I'm not sure. I know that we had to revise 09:51:43 Page 25

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1 the declaration. So I don't recall the patent 2 numbers between the error that was made in this 3 patent number in the first version versus the revised 4 version. 5 Q. Sure. So why don't you take a look at the 09:52:00 6 paper copy of Exhibit 101 that you have in front of 7 you and if you wouldn't mind just reading into the 8 record the patent number of that patent? 9 A. Sure, just one moment. May I point out to 10 you that looking at the revised declaration, which I 09:52:22 11 think was submitted to you, then that contains a 12 different patent number, the 1016 for one. And so 13 the 1016 that I have has the same patent number as 14 the revised declaration, and that patent number is 15 7,606,928. 09:52:55 16 Q. Okay, great. So just to level set here, in 17 your original declaration there was a mistake in 18 your list of materials considered, Exhibit 1016 19 listed the wrong patent number for Wang, correct? 20 A. I believe that's correct. 09:53:17 21 Q. So we're on the same page here, I've added 22 to the Exhibit Share Exhibit 1016 replacement, 23 U.S. Patent Number 7,606,928. Please let me know 24 when you see that. 25 A. Yes, I have it up on the screen. 09:53:46 Page 26	1 MR. KNIERIM: The wrong Wang patent. 2 THE WITNESS: As opposed to the right 3 patent. I don't know. I don't know how that 4 happened. 5 BY MR. KNIERIM: 09:55:23 6 Q. Was it your mistake? 7 A. I don't think so, but I don't recall. 8 Q. Did the lawyers change the exhibit 9 citations after you had finalized your declaration? 10 MR. SHARMA: Objection, form. 09:55:40 11 THE WITNESS: I don't know. 12 BY MR. KNIERIM: 13 Q. Did you put the exhibit numbers in 14 yourself? 15 A. Probably not. 09:55:52 16 Q. Do you know if there are any other errors 17 in your declaration that need to be corrected? 18 A. There is a couple of things I noticed in the 19 last couple of weeks while I was reviewing and I 20 didn't submit an errata because they may not be 09:56:11 21 material, but if we come to those sections, then I'll 22 point out those issues. There is just a couple of 23 little things. 24 Q. Are you sure that you've identified all the 25 errors in your declaration? 09:56:33 Page 28
1 (The document referred to was marked as 2 Exhibit 3 for identification and is attached 3 hereto.) 4 MR. KNIERIM: And I will also add to the 5 Exhibit Share, just so we all have the same 09:53:52 6 documents, the revised version of your declaration, 7 Exhibit 1006. 8 (The document referred to was marked as 9 Exhibit 4 for identification and is attached 10 hereto.) 11 THE WITNESS: I don't have a fourth 12 document in share yet. 13 BY MR. KNIERIM: 14 Q. It may be loading. I think you should have 15 that now. 09:54:28 16 A. Okay, that's appeared. 17 Q. Feel free to refer to the electronic copy 18 of the revised version of 1006 or your paper copy as 19 you see fit. 20 This revised version of Exhibit 1006 is 09:54:46 21 dated December 5, 2023, correct? 22 A. Yes. 23 Q. How did this error happen, this error of 24 citing the wrong Wang patent? 25 THE REPORTER: The wrong what? Page 27	1 A. Probably. 2 Q. How are you so sure about that? 3 A. Because as I said, I spent time to go 4 through the declaration very carefully among also 5 doing the same thing for the other exhibits that 09:56:54 6 we're discussing today. 7 Q. You did go through it carefully before you 8 signed it the first time back in July, right? 9 A. Yes. 10 Q. And you didn't catch the fact that the 09:57:05 11 wrong Wang patent was listed? 12 A. No, because that's, I think, a clerical 13 issue rather than a scientific issue. 14 Q. How do you know the lawyers didn't change 15 anything else? 09:57:24 16 A. Well, in my reviewing the last two or three 17 weeks, I didn't see anything that I was unfamiliar 18 with. 19 Q. If we take a step back and put ourselves 20 back in July of 2023, can you take me through the 09:57:42 21 process by which you finalized your declaration and 22 signed it? 23 MR. SHARMA: Objection, form. Also caution 24 the witness not to reveal any attorney-client 25 privilege communication. 09:57:55 Page 29

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1 THE WITNESS: So in terms of finalizing the 2 declaration, the process that I follow in any things 3 that I submit like this is to do a very complete 4 read through of the -- given what we were just 5 talking about with clerical issues, not literally 09:58:24 6 every character in a document, but all of the 7 substantive and scientific and material matter, I do 8 multiple passes through a document, but the very 9 last one is, before I sign, is going to be a read 10 through of all of the sections of the declaration in 09:58:57 11 which I'm not only -- I read things through 12 basically, end to end. I will even read my own bio 13 through in the final review, as well as the 14 substantive opinion passages. So I read it 15 basically all the way through. 09:59:32 16 BY MR. KNIERIM: 17 Q. Do you check that the exhibits you cite 18 actually say what they're quoted to say? 19 A. As I said, I don't go through and check 20 exhibit numbers because it doesn't seem to be -- 09:59:57 21 normally that's never a problem. So I wouldn't go 22 double-check every item that I've characterized as 23 being a clerical matter, but I was going through all 24 of what I'm calling substantive content in the 25 declaration as a final pass, one of multiple passes, 10:00:23 Page 30	1 Q. Scroll back up to 40, paragraph 98. Let me 2 know when you're there? 3 A. I'm there. 4 Q. So as part of your process of finalizing 5 this declaration before you affix your signature, 10:02:48 6 you would have read through here, you would have 7 seen a citation to Exhibit 1016, Wang. You would 8 have seen that there is a figure from that exhibit, 9 figure 3 on the next page, and you would have 10 checked to make sure that that exhibit actually had 10:03:03 11 that figure, right? 12 A. That should be the case. 13 Q. But as we know, Exhibit 1016 did not have 14 that figure in it; isn't that right? 15 A. I think I would have been looking at the 10:03:28 16 right attorney work product when I did that. 17 Q. You were looking at an exhibit, something 18 labeled Exhibit 1016 that had this figure 3 in it in 19 July? 20 A. I would have been looking at the Wang that I 10:03:42 21 had, which is the right one. So I would not have 22 picked up on the clerical problem of the exhibit list 23 having the wrong attorney work product. 24 Q. So what you did not do is you did not 25 confirm that the exhibits as numbered were the same 10:04:00 Page 32
1 but a final pass is to go read the whole thing 2 through before signing. I make that a practice. 3 Q. Your declaration has some quotes, some 4 direct quotes from the prior art, including Wang, 5 right? 10:00:43 6 A. Correct. 7 Q. As part of your finalizing your 8 declaration, did you check to make sure that the 9 direct quotes you have were actually present in the 10 attorney work product reference? 10:00:56 11 A. So I go -- so I do go cross check to make 12 sure -- I do make a check of that, yes, I do that. 13 Q. So for example, if we look at page 41 of 14 your declaration, your original declaration. 15 A. How do I switch between exhibits on this 10:01:44 16 system? I'm looking at the revised one on this 17 screen. 18 Q. I think you would hit back on your browser. 19 A. And then reopen the other one, is that how 20 it works? 10:02:04 21 Q. Right. 22 A. Is there a way to jump to the page or do you 23 have to just scroll? 24 Q. I couldn't tell you. 25 A. So 41. 10:02:37 Page 31	1 copies of the documents that you were using; is that 2 right? 3 A. I think that's right, because I would just 4 assume that that list is correct because I regard 5 that as being, as I said, a clerical issue, not a 10:04:17 6 matter of my expert opinion. 7 Q. As of July 26, 2023, you were not aware of 8 this error in the declaration, correct? 9 A. That's correct. 10 Q. You eventually became aware of the error at 10:04:38 11 some point, right? 12 A. Yes, because counsel alerted me to the 13 problem and asked me to -- asked me to submit the 14 corrected declaration and the signature we saw a few 15 minutes ago. 10:04:57 16 Q. My question is, when did you first become 17 aware that there was an error in your declaration? 18 A. The signature that we saw a few minutes ago 19 was December 5 and so it would have been shortly 20 before that time. 10:05:14 21 Q. Do you know if you became aware of this 22 error prior to October 31, 2023? 23 A. I wouldn't think so. 24 Q. Are you aware that Peloton filed a motion 25 to correct in this interpartes review proceeding? 10:05:35 Page 33

1 A. I think I know that. My recollection is I 2 know that's the process. 3 Q. Are you aware that they, in that motion, 4 asked to correct your declaration? 5 A. I don't know because I didn't get involved 10:05:58 6 in the details. 7 Q. Did they ask whether you consented to the 8 changes in your declaration before they filed that 9 motion to correct? 10 MR. SHARMA: Objection, form. Again, 10:06:12 11 caution the witness not to reveal any 12 attorney-client privilege communication. 13 THE WITNESS: I don't recall. 14 BY MR. KNIERIM: 15 Q. You can take down the old version of 1006. 10:06:27 16 And we can focus on the revised version now. And 17 you can use your paper copy if you think that's more 18 convenient. 19 A. Thank you. 20 Q. Sitting here today, does this version of 10:06:52 21 1006 dated December 5, 2023, set forth your full 22 opinion regarding the validity of the '101 patent? 23 A. It sets forth the opinions that I have at 24 this time. If there is more information made 25 available, I might add additional opinions, but this 10:07:22 Page 34	1 BY MR. KNIERIM: 2 Q. Dr. Reader, earlier I asked you which 3 attorneys you met with to prepare for your 4 deposition. I would like to ask now which attorneys 5 you worked with to prepare your original 10:19:06 6 declaration? 7 A. So there has been a change of counsel for 8 Peloton, and last year it was a different law firm 9 and different people that I was working with. 10 Q. Do you recall the identity of that law 10:19:24 11 firm? 12 A. I think that was Sheppard, I think. 13 Q. And do you remember the names of any 14 attorneys at Sheppard that you were working with? 15 A. No. 10:19:38 16 Q. Did you work with any non-lawyers at 17 Sheppard Mullin in preparing your original 18 declaration? 19 A. I don't think so. The way that I work is I 20 have a set of templates, declarations, and expert 10:20:04 21 reports, and so I start with one of them and draft -- 22 make the first draft. And then in this case 23 declaration evolves from that point. 24 Q. Right. And at some point somebody at 25 Sheppard had inserted exhibit numbers into your 10:20:29 Page 36
1 is a complete set of opinions as they exist at 2 present. 3 Q. Have any of your opinions changed since you 4 signed this declaration in December of 2023? 5 A. No, I don't think so. 10:07:40 6 Q. Are all the opinions in this report your 7 own? 8 A. Yes, they are. 9 Q. Now I think you mentioned earlier that 10 there may be a couple minor corrections that you 10:07:52 11 would make, but other than those, is there anything 12 in this declaration that you would like to change or 13 alter or supplement? 14 A. Not at this time. 15 Q. Let's take a look at paragraph -- you know 10:08:13 16 what, I know we haven't been going quite an hour, 17 but I could use a quick break if that's okay with 18 everyone. 19 THE REPORTER: Sound good to me. 20 THE WITNESS: That's fine with me. 10:08:25 21 THE VIDEOGRAPHER: Off the record at 22 10:08 a.m. 23 (Recess taken.) 24 THE VIDEOGRAPHER: We're back on the record 25 at 10:18 a.m. 10:18:50 Page 35	1 draft and made a mistake, right? 2 MR. SHARMA: Objection, form. 3 THE WITNESS: I don't necessarily do every 4 part of the clerical process myself, that's not 5 productive. 10:20:43 6 BY MR. KNIERIM: 7 Q. It's fair to say you did not catch this 8 particular mistake with Exhibit 1016, correct? 9 A. Correct. 10 Q. Which law firm informed you that there was 10:20:58 11 a mistake in your original declaration? 12 A. I don't recall. 13 Q. If you take a look back at Exhibit 1006 14 from this point on we can talk about the revised 15 version, December 5. 10:21:19 16 A. I understand. 17 Q. And turn to paragraph 62. 18 A. I am there. 19 Q. Paragraph 62 is under the header "Relevant 20 Legal Standards." Do you see that? 10:21:46 21 A. I'm sorry. Can you repeat the question, 22 please. 23 Q. Paragraph 62 is under a header called 24 "Relevant Legal Standards"? 25 A. Yes. 10:21:58 Page 37

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1 Q. You see here that, quote: "It is my 2 understanding that a claim is anticipated under 3 35 U.S.C. Section 102 if each and every element and 4 limitation of the claim is found, either expressly 5 or inherently, in a single prior art reference." 10:22:15 6 Do you see that? 7 A. I do. 8 Q. Have you taken the position in your 9 declaration that any claim of the '101 patent is 10 anticipated? 10:22:27 11 A. No, I didn't. 12 Q. You use the word "inherently" in this 13 sentence. I guess my first question to you is: In 14 your understanding, what is required for a reference 15 to inherently disclose a limitation? 10:23:19 16 MR. SHARMA: Objection to form. 17 THE WITNESS: My understanding, first of 18 all, I'm not an attorney and my understanding is 19 that there is a legal meaning to the term "inherent" 20 when it's used in a legal proceeding, so I'm not the 10:23:39 21 person to provide a precise legal description of 22 what that term means. But I have an understanding 23 of inherent that's been provided to me by counsel in 24 multiple cases, of course. 25 My understanding that something is inherent 10:24:09 Page 38	1 sublimations of the claims. And I'm not quite 2 sure how to answer your question, again, because I'm 3 not an attorney, but the art in combination with my 4 education and experience discloses what is being 5 claimed. 10:26:18 6 BY MR. KNIERIM: 7 Q. Let me make sure I got that right. You're 8 saying that in your analysis, you considered what 9 the prior art discloses in combination with your 10 education and experience? 10:26:33 11 A. In brief. 12 MR. SHARMA: Objection, form. 13 THE WITNESS: In brief, that's what I said. 14 BY MR. KNIERIM: 15 Q. And you have experience dating back to I 10:26:41 16 think you said spring of 1990? 17 A. My experience goes back much earlier than 18 that. When I said to you -- when I was referring to 19 the time frame of the spring of 1990, that's when I 20 began attending the video coding standards meetings 10:27:00 21 as an accredited expert, so that time frame is the 22 time frame in which I was literally in the room 23 participating on discussions concerning the subject 24 matter, that's what I testified. 25 Q. Understood. 10:27:33 Page 40
1 if there isn't an alternative to whatever that thing 2 is. 3 BY MR. KNIERIM: 4 Q. Are you relying on inherency in your 5 declaration in this matter? 10:24:26 6 A. Off the top of my head, I don't recall 7 whether the term is used during the various arguments 8 on the limitations of the claims. If there is 9 something you want to point me to, please do. 10 Q. I can represent to you that the term is not 10:24:47 11 used anywhere else in your declaration, aside from 12 paragraph 62, but I think my question was a little 13 bit different. 14 My question is whether you're relying on a 15 theory of inherency anywhere in your declaration? 10:24:59 16 A. I don't think that's true. 17 Q. And so the way you've approached this with 18 the three prior art references that you're relying 19 on, is your opinion that those references expressly 20 disclose each and every limitation of the claims, 10:25:15 21 correct? 22 MR. SHARMA: Objection, form. 23 THE WITNESS: I think that each of the 24 grounds in my declaration discuss that the prior art 25 renders obvious the various claims limitations or 10:25:36 Page 39	1 So by the spring of 1990, your experience 2 was already at the level of an expert, is that what 3 you're saying? 4 A. I suppose that would be true, yes. 5 Q. Let me take a step back. If you look at 10:27:50 6 page 4 of your declaration there is a chart that has 7 your -- the list of grounds. 8 A. Yes. 9 Q. And for ground 1, you have the statutory 10 basis as being 103 and the prior art listed as Chou, 10:28:04 11 C-h-o-u? 12 A. Yes. 13 Q. And you don't list any other prior art 14 there, it's just Chou? 15 A. Correct. 10:28:16 16 Q. So for ground 1, for example, are you 17 taking the position that Chou expressly discloses 18 each and every limitation of the claims you see in 19 this column here? 20 A. As I said before, I'm taking the position 10:28:34 21 that Chou, combined with my education and experience, 22 discloses every limitation of each of the listed 23 claims that's there. 24 Q. So your opinion that these claims are 25 invalidated as obvious over Chou is also based in 10:28:54 Page 41

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1 combination with your knowledge and experience? 2 A. That's correct. 3 Q. If we take a look at paragraph 65. 4 A. I'm there. 5 Q. This is also under the header "Relevant 10:29:22 6 Legal Standards." 7 A. Yes. 8 Q. It says: "To assess the differences 9 between prior art and the claimed subject matter, it 10 is my understanding that 35 U.S.C. Section 103 10:29:36 11 requires the claimed invention to be considered as a 12 whole." 13 Do you see that? 14 A. I do. 15 Q. What is your understanding of what it means 10:29:45 16 to consider the claimed invention as a whole? 17 A. I think it's multiple aspects to this. I 18 will mention one or two of the aspects here. One of 19 the key things I think about this is that if you take 20 a claim that has got multiple limitations to it and 10:30:24 21 perhaps even longer limitations effectively 22 constitute multiple sublimitations, then the claimed 23 invention must consider the claim as a whole. 24 And so in my analysis, my opinions are based 25 on the fact that I look at the claim as a whole and I 10:30:57 Page 42	1 So you take the claim as a whole and use 2 that as a map to find what is in the prior art; is 3 that what you're saying? 4 A. I think I can agree with you that that's one 5 way of tackling the problem, yes. 10:33:20 6 Q. Is that the analysis that you did in this 7 declaration? 8 A. I'm just trying to think whether I can 9 answer that question in a simple way. The way that I 10 addressed the problem, which is the way that I 10:34:05 11 address any problem like this, is to read through the 12 patent and read through the asserted claims and then 13 understand those asserted claims, including 14 understanding each limitation or sublimitation on its 15 own, yes, but considering the claim as a whole. And 10:34:35 16 then I'm going to look at a candidate piece of prior 17 art if, in fact, what you're concerned about is a 18 validity matter. 19 Then I take a look at the prior art, I read 20 it all the way through, and then I think you were 10:34:57 21 saying I perform a mapping, I think that's quite a 22 good description of what really takes place, is that 23 yes, you're mapping the disclosed technology in both 24 the claim and the patent under consideration. 25 Q. Let's take an example. Why don't we look 10:35:24 Page 44
1 look at the prior art as a whole in the context of 2 that complete claim. 3 Q. I want to make sure I follow you. You're 4 saying you take the claim of the patent, let's say 5 it's claim 1 of the '101 patent, has multiple 10:31:28 6 limitations and what you've done is looked for those 7 limitations, all of them, somewhere in the prior 8 art. 9 Is that what your analysis was? 10 A. I think it's even more than that because let 10:31:41 11 me make a counterpoint. What does not meet the 12 requirement is cherry-picking on the one hand a 13 fragment of a limitation from the claim, and on the 14 other hand matching it up to something that appears 15 to say the same thing in a piece of prior art. 10:32:11 16 That's not considering the claimed invention 17 as a whole, because through that cherry-picking 18 process, there is a chance that within say the prior 19 art, those cherry-picked citations don't actually -- 20 cannot be assembled together as a whole within the 10:32:46 21 prior art to perform what is claimed by the claim as 22 a whole. 23 So you can't do that. That's my 24 counterargument. 25 Q. Understood. 10:33:04 Page 43	1 at the '101 patent and that's Exhibit 1001 which has 2 been uploaded to Exhibit Share, and I believe you 3 also have a paper copy if you would prefer to use 4 that. 5 A. I have that up. 10:35:41 6 Q. If we take a look at column 24 of claim 1 7 at least. 8 A. Column 24, I have it. 9 Q. Claim 1 has a number of different 10 limitations, it has one starting with transmission 10:36:02 11 device. 12 Do you see that? 13 A. Just a second because I'm -- it's really 14 small on the screen, so I am actually using -- going 15 to the paper copy. 10:36:15 16 Q. Sure. 17 THE WITNESS: Will the court reporter 18 please let me know if the speech becomes muffled 19 because now I'm holding a binder in front of me and 20 if it masks the mic, let me know immediately and 10:36:32 21 I'll try to do better. 22 So we have claim 1 on column 24, right? 23 BY MR. KNIERIM: 24 Q. Right. And you'll see a number of 25 limitations, right? 10:36:46 Page 45

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1 A. Yes. 2 Q. There is one that starts with the 3 transmission device. 4 Do you see that? 5 A. Yes. 10:36:51 6 Q. Another that starts with the reception 7 device. 8 Do you see that? 9 A. Yes. 10 Q. Another is the distribution system 10:36:56 11 comprising a code rate determining unit. 12 Do you see that? 13 A. Yes. 14 Q. And there are more as well, right? 15 A. Yes. 10:37:04 16 Q. In your process in coming to the opinions 17 and conclusions in your declaration, what you did is 18 you looked at all these limitations, both 19 individually and collectively, and then you tried to 20 find them, for example, in Chou? 10:37:19 21 A. Yes. 22 Q. Understood. 23 In the third limitation on line 51, there 24 is reference to two variables. One is the remaining 25 time before reproduction start time. 10:37:46 Page 46	1 the subject matter of U.S. Patent Number 8,752,101. 2 Are you with me? 3 A. Yes. 4 Q. And then you characterize the alleged 5 invention in paragraph 74, right? 10:39:33 6 A. In bullet form, yes. 7 Q. And there are several terms in the bullets 8 that are bolded. 9 Do you see that? 10 A. Yes. 10:39:48 11 Q. Why are they bolded? 12 A. Because the '101 patent distinguishes itself 13 in a number of different ways, so that there is 14 certain aspects of the '101 patent that identify -- 15 let me try and say it this way: Identify the 10:40:23 16 '101 patent claims in distinction to what other 17 patents in the field might be claiming or might have 18 claimed historically prior to the '101 being filed. 19 So these bolded terms at the time this was 20 drafted, terms that have that distinction to them, 10:40:52 21 not necessarily every such term, but these ones 22 chosen here were picked out. 23 Q. I see. 24 So is this paragraph 74 and these bullets 25 kind of like the road map that you used to find 10:41:11 Page 48
1 Do you see that? 2 A. Yes. 3 Q. For convenience, I'm going to just refer to 4 that as remaining time. 5 Is that okay with you? 10:37:56 6 A. Absolutely. 7 Q. And the second one is the available 8 reproduction time. 9 Do you see that on line 56? 10 A. Yes. 10:38:08 11 Q. I'm going to refer to that one for 12 convenience as available time; is that fair? 13 A. Yes. 14 Q. So you understand and, in fact, in your 15 opinion accounted for the fact that the invention of 10:38:19 16 the '101 patent as a whole requires both of these 17 variables and not just one of them, right? 18 A. That's absolutely correct. 19 Q. If we flip back to your declaration and 20 turn to page 31. 10:38:36 21 A. Page 31? 22 Q. Yes. And I believe it will be 23 paragraph 74. 24 A. I'm there. 25 Q. You have a section here called overview of 10:39:21 Page 47	1 these limitations in the prior art? 2 MR. SHARMA: Objection, form. 3 THE WITNESS: I think that this is part of 4 what I did, but doesn't represent the whole -- 5 doesn't represent the whole activity that I 10:41:30 6 conducted. 7 BY MR. KNIERIM: 8 Q. But you at least used this as a starting 9 point, right? 10 MR. SHARMA: Objection, form. 10:41:40 11 THE WITNESS: I don't know if this was the 12 starting point. Just let me check something for a 13 moment. 14 BY MR. KNIERIM: 15 Q. For the record, what are you checking? 10:41:55 16 A. So I'm just looking at the claim in 17 column 24 of the '101 as a whole. 18 Let me just begin by saying that given my 19 experience and education in this field, when I read a 20 claim, then there is going -- then -- and, of course, 10:42:24 21 I'm reading the claim as a whole, then within the 22 claim as a whole, a well-written claim is going to 23 provide a fair amount of contextual data or terms and 24 description. 25 In order that the alleged invention of the 10:42:54 Page 49

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1 claim can be put into the context and make sense to 2 the person reading it, and of course, the goal here 3 is to teach someone how to take advantage of the 4 alleged invention, so you want something that's 5 readable. 10:43:16 6 So that means that some of the limitations 7 are not novel taken alone, but they're setting the 8 context for certain limitations or terms within 9 certain limitations that are actually calling out the 10 alleged novelty of the invention as expressed by the 10:43:41 11 claim. 12 Does that make sense? 13 Q. Sure. 14 So I guess what I'm trying to understand 15 and maybe we can put those bullets aside and just 10:43:54 16 look at claim 1 of the '101 patent, is claim 1 in 17 its entirety what you used as the road map to find 18 those limitations in the prior art? 19 A. Yes. Because as I said, you have to 20 consider the claim as a whole. 10:44:11 21 Q. And the bolded phrases in paragraph 74 of 22 your declaration are -- can you refresh my memory as 23 to why they're bolded again? 24 A. It's because those terms -- there could be 25 more terms than that, but these terms bolded here 10:44:31 Page 50	1 And the third is quote, "the content data 2 stored in the storage device." 3 Do you see that? 4 A. Correct. 5 Q. The claim as a whole requires both 10:46:24 6 remaining time and available time, correct? 7 A. Yes. 8 Q. It requires that both of those variables 9 are used to determine the code rate, correct? 10 MR. SHARMA: Objection, form. 10:46:43 11 THE WITNESS: So our context here is that 12 we're seeing the beginning of that third bullet with 13 an ellipsis and then determining the code rate based 14 on, and it includes those two things. So 15 determining the code rate is based on remaining time 10:47:06 16 and available time, and if we continue through, then 17 the available time is based on the content data 18 stored in the storage device. 19 BY MR. KNIERIM: 20 Q. So we have a clear record, the claimed 10:47:31 21 invention of the '101 patent requires determining 22 the code rate based on at least both of remaining 23 time and available time, correct? 24 A. That's what's stated here, yes. 25 Q. And I believe you just said that the 10:47:51 Page 52
1 stand out within the text of the whole of claim 1 as 2 being important terms to consider in the context of 3 what is the alleged invention, and is that disclosed 4 by -- 5 THE REPORTER: I can't hear because there 10:45:03 6 is a keyboard going and I am losing your words. 7 THE WITNESS: Can you read back what you 8 have. 9 (Record read.) 10 THE WITNESS: -- the prior art under 10:45:30 11 consideration as a whole. 12 BY MR. KNIERIM: 13 Q. Understood, thank you. 14 The third bullet you've bolded three items. 15 The first is "remaining time before reproduction 10:45:54 16 start time." 17 Do you see that? 18 A. I do. 19 Q. That's what we're going to call remaining 20 time for sake of convenience, okay? 10:46:03 21 A. Yes. 22 Q. Second is "an available reproduction time," 23 right? 24 A. Yes. 25 Q. We'll call that available time. 10:46:12 Page 51	1 available time has to be based on the content data 2 stored in the storage device; is that right? 3 A. That's what it says here, yes. 4 Q. And that is, in fact, your opinion in this 5 matter, right? 10:48:08 6 A. That's correct. 7 Q. What does it mean to be stored in the 8 storage device? 9 A. It means that we're talking about the 10 content at the reception device, and so it's 10:48:29 11 particularly linking the content data that we have to 12 the reception device, and then it's stating that that 13 content data is going to be stored in the reception 14 device. 15 Q. So not the transmission device, right? 10:49:04 16 A. Not the transmission device, correct. 17 Q. So the available time reflects what is 18 stored in the reception device, but not the 19 transmission device, correct? 20 A. That's what the claim requires. 10:49:23 21 Q. In your prior answer, I think you said -- 22 we were talking about the content at the reception 23 device, and so it's particularly linking the content 24 data that we have to the reception device. 25 So you used the term "content" and then you 10:49:45 Page 53

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1 used the term "content data." Are you drawing any 2 distinction between those two terms? 3 A. No, I don't think so. I think it was just 4 how I answered the question. 5 Q. So content data and content could mean the 10:49:58 6 same thing? 7 A. In the context we're discussing right now, 8 yes. 9 Q. And the context of claim 1? 10 A. In the context -- 10:50:10 11 MR. SHARMA: Objection, form. 12 THE WITNESS: Let me look at it and see if 13 it makes any kind of distinction. 14 MR. KNIERIM: I just noticed, Anupam, 15 you're not on camera anymore. 10:50:43 16 MR. SHARMA: No particular reason. Do want 17 me to be on camera? 18 MR. KNIERIM: I think I would prefer it so 19 we all can see each other. 20 MR. SHARMA: Sure. 10:50:54 21 How is this? 22 MR. KNIERIM: Great. 23 THE WITNESS: I mean, claim 1 uses the term 24 "content" on its own, as to what it was using the 25 term "content data," and I think the context is 10:51:20 Page 54	1 Q. In the context of claim 1, a single frame 2 can be content? 3 A. I think so, yes. 4 Q. If we take a look at paragraph 81 of your 5 declaration, it says: "The '101 patent's claims 10:53:59 6 were not inventive in light of the prior art 7 available at the time of filing that was not in 8 front of the examiner." 9 Do you see that? 10 A. I see that. 10:54:19 11 Q. And then you say "for example," and you 12 list Chou first. 13 Do you see that? 14 A. Yes. 15 Q. And then you list U.S. Publication 10:54:26 16 No. 2004/0153951 to Walker, et al. 17 Do you see that? 18 A. Yes. 19 Q. Does Walker have an exhibit number? 20 A. I don't think so. 10:54:47 21 Q. Where did Walker come from? Did you find 22 this? 23 A. I don't recall where this came from. 24 Q. Have you never, in fact, seen this 25 reference to Walker? 10:55:02 Page 56
1 clear as to what is meant in claim 1 when it just 2 says "content" as opposed to saying "content data." 3 BY MR. KNIERIM: 4 Q. What is meant when it just says "content"? 5 A. For example, the last limitation is talking 10:51:36 6 about the end of the processing in which we're going 7 to display the results of all of this, right, so it 8 says that reproducing the content at the set 9 reproduction start time. 10 THE REPORTER: You're getting a little 10:52:05 11 garbled after "reproduction start time"... 12 THE WITNESS: I think I said that's how the 13 claim reads. I think that's what I said. It's 14 appropriate to say that when you're looking at the 15 screen, you're looking at the content. Data has 10:52:34 16 been used to create the pixels that are on the 17 screen, as we're all witnessing at this very moment. 18 But it's natural language to say we're going to 19 display the content. That's a perfectly good term 20 to use in the arm. 10:52:57 21 BY MR. KNIERIM: 22 Q. Can a single frame be content? 23 A. A single frame can be content, yes. I mean, 24 that's an application specific issue, but it can be 25 content. 10:53:16 Page 55	1 A. I likely did a year ago, but I don't recall 2 it. 3 Q. Do you know if Walker is cited anywhere 4 else in your declaration? 5 A. Off the top of my head, I don't know, but I 10:55:22 6 don't think so. 7 Q. And I can represent to you that as far as 8 I'm aware, it's not. And what I'm trying to 9 understand is I find it a little curious that -- a 10 little odd that in paragraph 81 you're saying the 10:55:34 11 '101 patent claims are not invented in light of Chou 12 and Walker, and yet Walker appears nowhere else in 13 your declaration. 14 Can you explain that to me? 15 A. No, I can't. 10:55:48 16 Q. Is this potentially another one of those 17 errors introduced by the lawyers? 18 A. I don't know. 19 Q. The next paragraph 82, immediately 20 following this paragraph, says: "Neither Chou nor 10:56:09 21 Wang were before the U.S. Examiner." 22 Do you see that? 23 A. Right. 24 Q. Wouldn't it make more sense if paragraph 81 25 refers to Wang instead of Walker? 10:56:21 Page 57

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1 A. That could be the case. 2 Q. And it's Wang, W-a-n-g, for a clear record 3 there. 4 So it's certainly possible there 5 paragraph 81 is another error that was introduced by 10:56:38 6 either you or the attorneys; is that right? 7 A. I think it's possible that's the case, yes. 8 Q. You can't tell me sitting here today why 9 Wang was not cited in paragraph 81? 10 A. No, I can't. 10:56:59 11 Q. Was this one of the minor clerical errors 12 you identified earlier in your deposition as having 13 been subsequently identified? 14 A. Yes. Because this is the kind of -- it's 15 not exactly boilerplate. It's just the kind of part 10:57:16 16 of the petition where -- I'm sorry, part of the 17 declaration where I, in review, would not be paying 18 close attention because I would be focused on, as I 19 said, the scientific expert opinion aspect of the 20 document. 10:57:42 21 Q. So let me make sure I got you there. 22 You're saying that the sentence that says: "For 23 example... Walker," invalidates the claims of the 24 '101 patent as something you wouldn't pay close 25 attention to? 10:58:01 Page 58	1 is the -- I think I've studied carefully what I can 2 call, say, the main sections of the declaration in 3 particular going through the grounds. 4 Aside from a couple of things I picked up 5 that we can talk about if we run across them, I 10:59:47 6 don't think there is anything in that material that 7 contains more errors. 8 BY MR. KNIERIM: 9 Q. Paragraph 81 is under a section called: 10 "The Examiner Erred By Allowing the Challenged 11:00:05 11 Claims." 12 Do you see that? 13 A. Yes. 14 Q. In your view is the section entitled: "The 15 Examiner Erred By Allowing the Challenged Claims," 11:00:16 16 a main section or not? 17 A. The only thing that's important in this 18 section is simply pointing out that the examiner had 19 not had this art in front of him or her when they 20 were performing their -- performing a task. 11:00:49 21 Q. And by this art, you mean Walker? 22 A. In paragraph 82, it says neither Chou nor 23 Wang were before the U.S. Examiner, and if the 24 examiner had the benefit of these references, their 25 explanation herein and the remaining background and 11:01:19 Page 60
1 A. I referred to that in terms of going through 2 the kind of review that I did in preparation for 3 today. 4 Q. Clearly this is another error that you 5 missed, right? 10:58:13 6 A. It appears to be that case. 7 Q. And you can't offer an explanation of how 8 you missed this error in paragraph 81? 9 A. I think I just tried to offer an 10 explanation. 10:58:27 11 Q. And I think your explanation was this is 12 not a paragraph that you would have paid close 13 attention to; is that right? 14 A. Not in doing the study for the deposition 15 today. 10:58:40 16 Q. What about in preparing to finalize your 17 declaration, before you signed it? 18 A. If that exists, then I should have caught 19 it, but I didn't see it. 20 Q. I'll ask again: Is it possible that there 10:59:00 21 are other errors throughout this declaration that 22 you did not catch when you signed it and have not 23 caught today? 24 MR. SHARMA: Objection, form. 25 THE WITNESS: I think what I have studied 10:59:14 Page 59	1 technical discussion herein, the challenged claims 2 would not have issued. 3 Q. Let's look at page 44 of your declaration. 4 Are you there? 5 A. Yes, I am. 11:02:02 6 Q. Page 44 at the bottom you'll see the start 7 of the a section called "Claim Construction." 8 A. Yes. 9 Q. It says you've "considered the claim 10 language, specification, and portions of the 11:02:12 11 prosecution history of the '101 patent," right? 12 A. Yes. 13 Q. And you did that to determine the meaning 14 of the claim language as it would have been 15 understood by a person of skill in the art? 11:02:21 16 A. Yes. 17 Q. And then you say: "I understand that the 18 plain and ordinary meaning or Philips standard has 19 traditionally been applied in district court 20 litigation," and it continues. 11:02:36 21 Do you see that? 22 A. Yes. 23 Q. And then next sentence, you say: "I have 24 applied the Philips standard in my analysis. Unless 25 otherwise stated, I've applied the plain and 11:02:48 Page 61

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1 ordinary meaning to all claim terms." 2 Right? 3 A. Yes. 4 Q. Can you explain for me your understanding 5 of what the Philips standard is? 11:02:58 6 A. Are you saying the Philips standard? 7 Q. Right. The words that you used in your 8 declaration. 9 A. Again, this is a legal matter and I'm not an 10 attorney or had any legal training. My understanding 11:03:14 11 of the Philips standard is that there was a case some 12 years ago in which the court, I guess, made a 13 definition of what the plain and ordinary meaning 14 should be, and subsequent to that, it is common 15 practice to use this Philips standard as it says in 11:03:49 16 the declaration. 17 Q. Right. I'm trying to get at what your 18 understanding of that is, and I might be able to 19 help you here because I think I skipped over a 20 sentence in your declaration. 11:04:06 21 It says: "A claim term is given its plain 22 and ordinary meaning in view of the specification 23 from the viewpoint of a person of ordinary skill in 24 the art." 25 Do you see that? 11:04:17 Page 62	1 itself is a part of understanding the plain and 2 ordinary meaning of the claim terms. 3 BY MR. KNIERIM: 4 Q. Very helpful, thank you. 5 In your opinion, as set forth in your 11:06:22 6 declaration, did the inventors of the '101 patent 7 act as their own lexicographer with respect to any 8 terms in the claims? 9 A. I think in terms of -- let's use an example. 10 The term "remaining" or "remaining time," remaining 11:06:45 11 has very, very broad meaning in the English language. 12 In the '101 patent, the term "remaining time" is 13 defined within the specification. 14 And so it's important to understand the 15 context in which the word "remaining" is used in 11:07:12 16 order to be able to perform the task of saying yes, 17 this is a term in the claim. Do I find this term. 18 Not literally the same words necessarily, but given 19 my understanding of that term in the '101, do I find 20 that in the prior art, such as Chou? 11:07:47 21 Q. Let me make sure I got you there. You're 22 saying that the term "remaining time" is defined in 23 the specification? 24 Is that your position? 25 MR. SHARMA: Objection, form. 11:08:03 Page 64
1 A. Correct. 2 Q. Is that your understanding of what the 3 Philips standard is? 4 MR. SHARMA: Objection, form. 5 THE WITNESS: My understanding is that one 11:04:28 6 reads the claim and there are going to be certain 7 terms in that claim that, as we discussed a few 8 minutes ago are significant for being able to 9 disclose the claimed invention. 10 It may be when looking at the claim that a 11:04:53 11 person of ordinary skill in the art knows exactly 12 what is meant by those terms as set out in the claim 13 itself. 14 But in addition, as you just read, that one 15 can further understand the claim terms by looking at 11:05:16 16 the specification of the patent. And it's my 17 understanding that a patent, the inventors of the 18 patent have the right to be their own lexicographer, 19 so they can choose to define terms in the English 20 language in the way in which they want them to be 11:05:44 21 used or viewed. 22 And then if they exercise that right, then 23 the additional insight or clarification that a 24 person of ordinary skill in the art gets by reading 25 the specification, as well as reading the claim 11:06:06 Page 63	1 THE WITNESS: What I'm saying is the 2 specification of the '101 explains what this 3 remaining time should be in understanding what is 4 being claimed by the use of that term in the claims. 5 BY MR. KNIERIM: 11:08:28 6 Q. In your prior answer you said, quote, "in 7 the '101 patent, the term remaining time is defined 8 within the specification and so it's important to 9 understand the context in which the word remaining 10 is used in order to be able to perform the task of 11:08:41 11 saying yes, this is a term in the claim." 12 Is that an accurate statement that you 13 agree with right now? 14 A. I think that's correct, yes. 15 Q. Where in the specification is the term 11:08:52 16 "remaining time" defined? 17 A. Without reading it all the way through, I 18 can't quickly answer that question. 19 Q. Is it somewhere in your declaration? 20 A. Let me make one point, which is that in the 11:09:43 21 claim itself -- in this case, in the claim itself, we 22 have the claim language saying -- let's just read the 23 claim itself first as explaining the term, and then 24 we can find more support for that, if we wish. 25 The claim itself says -- I'll read into the 11:10:17 Page 65

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1 claim, and say: "Determining the code rate based on 2 a remaining time before reproduction start time set 3 as the time at which the reception device starts 4 reproduction of the content," so that is providing 5 within the claim language itself what is meant by 11:10:46 6 "reproduction start time." 7 And then what I was quoting from the claim 8 continues to say, "from a present moment." So 9 actually in this case, within the claim itself, it 10 says, okay, we've got one point in time which is the 11:11:10 11 time at which reproduction starts, and we've got 12 another time which is the present moment. 13 So that I think is described within the body 14 of the '101 patent, but the claim itself has given us 15 a pretty complete or concrete example of that. 11:11:36 16 Q. I appreciate the clarification and I think 17 we're on the same page. 18 You're saying here the claim itself defines 19 what remaining time means, right? 20 A. I think that's correct in this case. 11:11:57 21 Q. And I think that's consistent with your 22 declaration. I'm just trying to make sure we're all 23 on the same page here. 24 In your declaration you say that -- in 25 paragraph 106 you say that you've applied the plain 11:12:12 Page 66	1 I think a person of ordinary skill in the 2 art from that alone understands that content is going 3 to be digital media data, and I don't know if the 4 patent, the '101 detailed description explicitly 5 states what I just stated, but I think it's clear to 11:14:55 6 a person of ordinary skill in the art what is meant 7 by "content." 8 Q. And so in your opinion, one of ordinary 9 skill in the art would understand that the plain and 10 ordinary meaning of content here is I think you said 11:15:10 11 digital media data; is that right? 12 A. That's what I said, yes. 13 MR. SHARMA: Objection, form. 14 BY MR. KNIERIM: 15 Q. What about the phrase "from a present 11:15:25 16 moment," do you see that in line 55? 17 A. Yes. 18 Q. What is the plain and ordinary meaning of 19 "from a present moment "to one of ordinary skill in 20 the art? 11:15:41 21 A. I think in this case we do need to go to my 22 dec to understand that. Just a moment and I'll find 23 a good place. 24 There is a number of places we could go to, 25 but I think probably the most simple way to look at 11:17:46 Page 68
1 and ordinary meaning of all claim terms unless 2 otherwise stated, right? 3 A. Yes, that's correct. 4 Q. And I want to make sure I'm not missing 5 something. You're not saying this term "remaining 11:12:28 6 time" has some special other definition than what's 7 in the claims, right? 8 A. I think that's right, and I think that the 9 body of the '101 is consistent with that; although I 10 don't have a pincite to give you at this moment. 11:12:48 11 Q. What about the term "content"? For 12 example, if we look at claim 1, column 24, line 55, 13 it says starts: "Reproduction of the content from a 14 present moment." 15 Did you see that? 11:13:25 16 A. Yes. 17 Q. The term "content" there doesn't have some 18 special lexicography definition in the 19 specification, does it? 20 A. We first learn about content in the first 11:13:44 21 limitation, so that reads: "The transmission device 22 being equipped with a content transmitting unit for 23 transmitting content data, which is one content coded 24 with any one code rate of a plurality of code rates 25 different from each other, to the reception device." 11:14:15 Page 67	1 it is to go to my paragraph 145 on page 69. Let's 2 just read into this. It says: "Accordingly, Chou 3 teaches that, as part of, and at the time of, 4 determining the code rate for a subject frame (the 5 present moment), the code rate determining unit 11:18:17 6 determines the playback deadline for the subject 7 frame (the time reproduction will start from the 8 present moment) and adjusts the code rate so that the 9 subject frame arrives at the decoder buffer at or 10 near its target scheduled arrival time." 11:18:39 11 So summarizing that, the present moment is a 12 moment at which the transmitter is making the 13 decision on the code rate that is to be used for the 14 next piece of content. 15 Q. So I think I understood. I just want to 11:19:13 16 clarify a little bit. 17 The paragraph you read from is about what 18 Chou, C-h-o-u, teaches, right? 19 A. Yes. 20 Q. So my initial question is: What is the 11:19:27 21 plain and ordinary meaning of the term "the present 22 moment" in the claim of the '101 patent? I think I 23 understand you're saying that in the '101 patent the 24 plain and ordinary meaning of "the present moment" 25 is the moment at which the transmitter is making the 11:19:47 Page 69

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1 decision on the code rate that is to be used for the 2 next piece of content. 3 Is that accurate? 4 A. That's what I said, yes. 5 Q. Looking back at the '101 patent, claim 1 or 11:20:01 6 column 24, you'll see reference to a code rate 7 determining unit on line 51. 8 Do you see that? 9 A. Yes. 10 Q. What is the plain and ordinary meaning of a 11:20:19 11 code rate determining unit to one of skill in the 12 art? 13 A. It is an entity within the overall system 14 that is going to make a calculation of a particular 15 code rate to use in the context that if we look at 11:20:55 16 the first limitation of claim 1, then we have a 17 transmission device equipped with a content 18 transmitting unit for transmitting content data, 19 which is one content coded with any one code rate of 20 a plurality of code rates different from each other. 11:21:31 21 So in the context of the language of 22 claim 1, then the code rate determining unit is the 23 thing within the system that is going to pick one of 24 those plurality of code rates. 25 Q. Okay. Thank you. I think I understood 11:21:55 Page 70	1 portion of the specification of the '101 patent and 2 in particular it references Figure 1; is that right? 3 A. Yes. 4 Q. Is it my understanding, is it your position 11:25:17 5 that content transmitting unit in claim 1 is defined 6 by this portion of the specification? 7 A. I'm not sure that the scope is limited to 8 exactly what was -- the scope isn't limited to 9 exactly what Figure 1 illustrates, if that's your 10 question. 11:26:23 11 Q. That is my question and I'll tell you why 12 I'm asking. 13 In your declaration in paragraph, I think 14 it was 106 that we were just talking about, you said 15 that you applied the plain and ordinary meaning of 11:26:31 16 all claim terms. And I'm just trying to understand 17 from your perspective what that plain and ordinary 18 meaning is, or alternatively if you're doing 19 something more and construing it more narrowly as if 20 the patent you were acting as your own lexicon. 11:26:49 21 Does that make sense? 22 A. Yes. My understanding is that the claims of 23 a patent are limited by a one or more disclosed 24 embodiments in the patent that the scope of the 25 claims can be larger than that. So Figure 1 of the 11:27:10 Page 72
1 that, but let me make sure I understood. 2 So in the context of claim 1 to a person of 3 ordinary skill in the art, the code rate determining 4 unit is the thing in the system that does the steps 5 that are performed in the claim at lines 52 through 11:22:13 6 58? 7 A. Yes, I think that's right. I think that's 8 correct, yes. 9 Q. What about -- you'll see in claim 1 there 10 is also a content transmitting unit referred to 11:22:51 11 first on line 41. 12 A. Yes. We were just talking about that. 13 Q. Were we? Perhaps I've forgotten, but just 14 so we're clear, in your opinion, what is the plain 15 and ordinary meaning of the term "content 11:23:10 16 transmitting unit"? 17 A. A content transmitting unit, I don't know 18 if -- just a second. 19 If you go to my dec paragraph 75, which 20 illustrate -- which includes reference to Figure 1 of 11:24:35 21 the '101 patent, I believe the context is given by 22 that. We can read it onto the record, if you like. 23 Q. I don't think we need to read it into the 24 record. I do have a follow-up question, though. 25 Paragraph 75 of your declaration is about a 11:24:58 Page 71	1 '101 is an embodiment that provides an illustration 2 of what a transmission device, how a transmission 3 device can be configured within a transmission, a 4 distribution system. 5 So the claim is not necessarily limited to 11:27:36 6 what Figure 1 says, but the plain and ordinary 7 meaning of a transmission device in the context of 8 this patent is something that is going to transmit 9 content. 10 Q. So, again, let me make sure I understand. 11:27:59 11 In your opinion, a person of ordinary skill in the 12 art would understand that the content transmitting 13 unit of claim 1 is not limited to the embodiments in 14 the specification, correct? 15 A. That's what I said. That's my 11:28:13 16 understanding. 17 Q. And in your opinion, a person of ordinary 18 skill in the art would understand that the content 19 transmitting unit of claim 1 is something that is 20 going to transmit content? 11:28:24 21 A. That's correct. 22 Q. One more. Why don't we look at the 23 available time in claim 1, which is at line -- 24 starting line 55, it says: "Based on an available 25 reproduction time." 11:28:48 Page 73

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1 Do you see that? 2 A. I see that, yes. 3 Q. Is it your opinion that that term should be 4 afforded its plain and ordinary meaning as well? 5 A. Again, this term is defined in the context 11:29:04 6 of the '101. I think if you let me go to a good 7 place in my dec for this. 8 In paragraph 76 of my dec I'm pointing to 9 the -- I'm sorry -- the '101 for the available 10 reproduction time. Just a second. Another second. 11:32:44 11 I'm sure you've already asked me for one. 12 What's cited in 76 doesn't give us a 13 particularly detailed explanation of what the '101 14 says the available time is because it's essentially 15 repeating a similar. 11:34:13 16 Q. Let's break that down. In paragraph 76 it 17 says, jumping into the middle of the paragraph: 18 "Available reproduction time, which is a time 19 available for reproducing the content based on the 20 content data stored in storage device 33b of 11:34:29 21 reception device 20a." 22 And then it has a citation to the '101 23 specification, right? 24 A. Right. 25 Q. And the claim language is an available row 11:34:39 Page 74	1 you know, you need to know what the claim means 2 before you start analyzing prior art; is that fair? 3 A. That's fair. 4 Q. As part of your analysis here you 5 considered the claim as a whole and you also 11:36:16 6 considered the meaning of those claim terms and 7 used that as a road map to find limitations in the 8 prior art, correct? 9 A. Correct. 10 MR. KNIERIM: Let's take a short break. 11:36:28 11 THE VIDEOGRAPHER: We're off the record at 12 11:36 a.m. 13 (Recess taken.) 14 THE VIDEOGRAPHER: Here begins Media Unit 15 Number 2. We're back on the record at 11:51 a.m. 11:51:05 16 BY MR. KNIERIM: 17 Q. Dr. Reader, did you have any conversations 18 with anyone during any of the breaks today so far? 19 A. No, I have not. 20 Q. Before the break, I had asked you if in 11:51:18 21 your opinion a person of ordinary skill in the art 22 would understand that the content in the 23 transmitting unit of claim 1 is something that is 24 going to transmit content and you said that's 25 correct. 11:51:33 Page 76
1 production time, which is a time available for 2 reproducing the content based on the content data 3 storage device of the reception device, right? 4 A. Right. 5 Q. And those are nearly identical except in 11:34:54 6 the specification there are these reference numbers 7 to an exemplary figure, right? 8 A. Yes. 9 Q. Is it your opinion that one of skill in the 10 art would think that the term "available 11:35:06 11 reproduction time" in the claim is limited to this 12 embodiment in the specification? 13 A. It's my opinion that it's not limited to 14 what the specification says. I just checked both of 15 those citations and they don't provide -- they don't 11:35:24 16 provide a greater level of detail than the language 17 that you just read, either in the dec or in the claim 18 itself. 19 Q. Isn't it true that the claim itself defines 20 exactly what the available reproduction time is and 11:35:46 21 in particular it says "which is a time," and then it 22 includes a definition, right? 23 A. True. 24 Q. You just wanted to make sure we're on the 25 same page here as to what the claim means because as 11:36:00 Page 75	1 Do you recall that? 2 A. Yes. 3 Q. So the follow-up question I have is: Would 4 a person of ordinary skill in the art understand 5 what sort of things in the system would do that? 11:51:44 6 A. I think a person of ordinary skill in the 7 art would know there is a number of different things 8 in the system that could do that. I think I may have 9 mentioned -- at some point I mentioned that these 10 things are application specific and in this context 11:52:03 11 that would be true. 12 Q. Can you give me some examples of some of 13 the things that would transmit content? 14 MR. SHARMA: Objection, form. 15 THE WITNESS: I mean in this field of art, 11:52:22 16 there is a cause historically, broadcast television, 17 and broadcast television itself breaks down into 18 whether you're talking about a content originator 19 who is the party that's going to transmit content or 20 whether it's, say, an affiliate station. 11:52:45 21 So you have in this case traditionally 22 since long before I think any of us were born, you 23 have so-called primary distribution in which a 24 content provider like NBC in New York would transmit 25 their content to affiliate stations in your market, 11:53:10 Page 77

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1 there would be an NBC affiliate who then receives 2 that primary transmission of the program and 3 retransmits it onto you in what can be called 4 secondary distribution. So that's an example and 5 there are many more. 11:53:37 6 BY MR. KNIERIM: 7 Q. Understood. 8 I guess what I was trying to ask about is, 9 for example, would a person of ordinary skill in the 10 art understand that the content transmitting unit 11:53:45 11 can be hardware, software, a combination of both? 12 What's your opinion on that? 13 A. Again, it depends on what time period you're 14 talking about because obviously when broadcast 15 television started, software was not a part of what 11:54:03 16 was going on in that time frame. 17 Q. Let me give you a time frame then. How 18 about in the context of claim 1, what would a person 19 of ordinary skill in the art understand about the 20 content transmitting unit? 11:54:20 21 A. If we take an example and say that we've got 22 one of the number of parties that stream content like 23 Netflix and Hulu and Disney and Amazon, Apple and so 24 on, then those entities have server systems and 25 they're going to be a combination of hardware and 11:54:48 Page 78	1 sentence that reads: "Chou states that the" -- 2 sorry -- quote, "the gap between a frame's arrival 3 time and its playback deadline is the client buffer 4 duration at the time of the frame arrival," with a 5 cite to Chou, paragraph 67. 11:56:32 6 Do you see that? 7 A. Yes. 8 Q. What is a frame within Chou? 9 A. A frame is a video frame. It's certainly a 10 video frame. I think somewhere he talks about audio 11:56:50 11 frames as well, I think, if my recollection is 12 correct. 13 Q. What is a video frame? 14 A. A video frame is a still image which is a 15 member of a sequence of video frames which constitute 11:57:08 16 a video presentation. 17 Q. Understood. 18 I may have asked you this earlier, but is a 19 frame content in the context of Chou? 20 A. You hadn't asked that before and I don't 11:57:50 21 know off the top of my head whether Chou uses the 22 term "content." 23 Q. I'm not asking if Chou used it. We spoke 24 earlier about the fact that claim 1 uses the term 25 "content," and so I'm asking if in your opinion the 11:58:11 Page 80
1 software that transmit the content data. 2 Q. Just to make sure I understand, a person of 3 skill in the art reading claim 1 would understand 4 that the content transmitting unit could be a 5 combination of hardware and software that transmits 11:55:08 6 the content data; is that right. 7 MR. SHARMA: Objection to form. 8 THE WITNESS: That's correct. 9 BY MR. KNIERIM: 10 Q. And you give a list of parties that stream 11:55:16 11 content like Netflix, Disney, and Amazon. Would 12 Peloton be included in that list in your view? 13 MR. SHARMA: Objection, form, outside the 14 scope. 15 THE WITNESS: I don't actually know because 11:55:30 16 I've not looked at how the Peloton system works so I 17 don't know. 18 BY MR. KNIERIM: 19 Q. Had you ever ridden a Peloton bike? 20 A. No, I haven't. 11:55:44 21 Q. Let's turn to paragraph 91 of your 22 declaration. 23 A. Did you say 98? 24 Q. 91. 9, 1. 25 In the middle of this paragraph you have a 11:56:09 Page 79	1 frames of Chou meet the definition of content in 2 claim 1? 3 A. If you look at my paragraph 88, it says: 4 "Specifically, Chou teaches transmitting content 5 data, which is one content coded with any one code 11:58:30 6 rate of a plurality of code rates different from each 7 other." 8 So the video frames are an example of 9 content. 10 Q. Thank you for that clarification. 11:58:51 11 Back to paragraph 91 in that same sentence 12 we were just reading, there is also reference to a 13 frame's arrival time. 14 Do you see that? 15 A. Correct. 11:59:04 16 Q. What is the frame's arrival time in Chou? 17 A. Maybe we can go to any one of a number of 18 figures in Chou that's going to show us that. Here 19 it's citing to Figure 5. I think Figure 5 is 20 somewhere in here, shall we go to that? 11:59:46 21 Q. We shall. And this reminds me, let me put 22 Exhibit 10- -- 1004 in the Exhibit Share. Let me do 23 that right now and let me know when you get it so 24 everybody has it. 25 (The document referred to was marked as Page 81

1 Exhibit 5 for identification and is attached 2 hereto.) 3 THE WITNESS: The problem with this system 4 is that it's taking the time both to get -- both to 5 upload the document and download the document, just 12:00:50 6 using Zoom chat meetings, everybody accesses the 7 document in parallel and immediately. 8 BY MR. KNIERIM: 9 Q. I am aware. 10 A. But it's arrived for me. 12:01:04 11 Q. Let's reset the context here. My question 12 was: What is a framed arrival time in the context 13 of Chou? 14 A. So Chou has -- on the title page of the Chou 15 he shows Figure 5, but let's actually go down to 12:01:26 16 Figure 5 that it's on sheet 3 of 9. 17 Everybody there? 18 Q. Yes. 19 A. So in the middle of Figure 5 if we see a 20 staircase and in this art, the way that the process 12:01:56 21 is modeled it uses this kind of staircase approach, 22 and that was true at the beginning of standardization 23 in the 1980s. 24 The fact that the stair has, you know, a 25 vertical tread height and a horizontal tread depth is 12:02:26 Page 82	1 realistic illustration of how the real world is going 2 to operate. 3 And because this is showing you what's 4 happening at the receiver and on the left we have 5 that axis called client time, this is actually 12:05:02 6 showing you the timing from the perspective of the 7 receiver. And the arriving time is -- of an 8 illustrative step in the staircase is that we have 9 T.A.N. on the left, that is the arrival time of 10 the -- the arrival time of a particular frame at the 12:05:28 11 receiver's storage. 12 Q. Okay, thank you. Let me break that down a 13 little bit so I understand. 14 Is it correct that in Chou the frame's 15 arrival time is the time that the frame arrives at 12:05:48 16 the client from the server? 17 A. Yes, and enters the storage of the client. 18 Q. And in Figure 5, each of the steps in the 19 staircase labeled "arrival schedule" reflects the 20 receipt of an additional frame at the client? 12:06:14 21 A. That's correct. 22 Q. And on the y-axis labeled "client time" -- 23 let me rephrase that. 24 The y-axis which is labeled "client time," 25 reflects the time that a particular frame arrives at 12:06:31 Page 84
1 a technique that's referred to as this being a 2 hypothetical model because the vertical -- the 3 exactly vertical height of the tread says that the 4 encoder is going to encode a frame instantaneously, 5 which of course is not true, but to make the model 12:03:05 6 accessible to everybody and simple to explain, we 7 just use that approach. 8 So this staircase is showing us that the 9 content data is being transmitted and received 10 according to this staircase. And we can point out 12:03:26 11 that within this staircase illustration that Chou 12 has, the width of the treads of the stairs are all 13 the same, and that's because in the way that Chou 14 illustrates it, he is illustrating it with a fixed 15 frame rate kind of video. 12:03:54 16 So each of the frames arrives at the same 17 amount of time after its predecessor, but you can see 18 that the height of the tread there is towards the 19 upper right of the figure, there is a little tiny 20 rise from one frame to the next, whereas in the 12:04:19 21 center of the figure, the step height as it were, the 22 tread height is significantly larger than that other 23 one. 24 So this is a fairly realistic scenario 25 for -- it's just an illustration, but it's a fairly 12:04:41 Page 83	1 the client? 2 A. Points along that axis represent that. 3 (Cross talk.) 4 BY MR. KNIERIM: 5 Q. Right. So let's take an example. You'll 12:06:49 6 see in Figure 5 on the x-axis there is a label and a 7 vertical dashed line labeled tau, sub d of (n). 8 Do you see that? 9 A. Yes. 10 Q. And it intersects that staircase at the 12:07:03 11 fourth step, right? 12 A. Yes. 13 Q. And so for frame n, the arrival time at the 14 client is given by the horizontal dash line labeled 15 t sub a of (n)? 12:07:22 16 A. Yes. 17 Q. What is media time? 18 A. Media time is the time at the transmitter 19 side, at the server side according to Chou. 20 Q. Media time is the time at the server side 12:07:44 21 according to Chou, is that your position? 22 A. I think that's how Chou defines it. Let me 23 just double-check. I think that's right. 24 He has a paragraph where he sets this up. 25 If look at Chou's paragraph 59 paid to distinguish -- 12:09:05 Page 85

22 (Pages 82 - 85)

1 it will pay to distinguish between the temporal 2 coordinate systems or clocks used to express time. 3 Herein media time refers to the clock running on the 4 device used to capture and timestamp the original 5 content. 12:09:38 6 Q. Does that have to be the transmitting 7 device? 8 A. The way that it's expressed there, it 9 doesn't have to be the transmitting device but it 10 could be. 12:10:00 11 Q. Back to paragraph 91 of your declaration, 12 Exhibit 1006, in that same sentence we were looking 13 for -- looking at, there is also reference to a 14 frame's playback deadline. 15 Do you see that? 12:10:20 16 A. No, because I'm trying to get to that 17 document. 18 You said paragraph 91? 19 Q. Yes. 20 A. Excuse me until I get there. 12:10:31 21 Can you repeat the question? 22 Q. If we're looking at the middle of that 23 paragraph, there is a sentence that starts with 24 "Chou states that" and a quote that reads "the gap 25 between..." 12:10:47 Page 86	1 Q. Yes. 2 A. Yes. It would arrive at the top of the 3 stair tread to the left. 4 Q. Immediately to the left of the stair 5 identified by tau, sub d? 12:13:18 6 A. Yes. 7 Q. And then frame n-2 would arrive at the 8 client device at the top of the tread two stairs 9 down from tau, sub d? 10 A. Three steps down, yes. 12:13:36 11 Q. Back to paragraph 91, same sentence, quote 12 from Chou -- let me know when you're there. 13 A. I'm going to use the paper copy instead of 14 switching back and forth continuously and having to 15 scroll from the beginning of the document. 12:13:58 16 Q. Sure. 17 A. I'm at 91. 18 Q. That sentence in the middle of the 19 paragraph that says, "Chou states that," quote, "the 20 gap." 12:14:14 21 Do you see that? 22 A. Yes. 23 Q. So Chou is referring to this gap between 24 the frame's arrival time and its playback deadline, 25 right? 12:14:22 Page 88
1 The phrase I'm interested in is its 2 playback deadline, and my question to you is: What 3 is the frame's playback deadline in the context of 4 Chou? 5 A. If we go back to Figure 5 again, the 12:11:08 6 playback deadline is illustrated -- it's labeled at 7 the very top of Figure 5 and is illustrated with a 8 diagonal line that begins at the origin of time in 9 Figure 5 and goes towards that label with a slope of 10 one divided by v, and that's deadline. 12:11:44 11 Q. Is the playback deadline the time at which 12 the frame is played at the client device? 13 A. It's the time -- yes. When playback, play 14 out reproduction, it's the time when that happens. 15 Q. So if you go 5, by way of example, frame n 12:12:16 16 is played back at the client device at a time 17 labeled t sub d of (n), correct? 18 A. Yes. 19 Q. And that same frame n arrived at the client 20 device earlier as labeled by t sub a of (n), 12:12:38 21 correct? 22 A. That's correct. 23 Q. Can you tell me when the frame n-1 would 24 arrive at the client device? 25 A. You mean in relationship to Figure 5? 12:13:02 Page 87	1 A. That's what he -- excuse me, he describes 2 that as a gap, yes. 3 Q. And if we want to visualize that gap on 4 Figure 5, we could look for the span on the y-axis 5 between tau, sub a, and tau, sub d, right? 12:14:44 6 A. No. "T of a" and "t of d" as in David. 7 Q. And that would be on the y-axis? 8 A. On the y-axis, the client time. 9 Q. Do you know if Chou discloses calculating a 10 value for that gap? 12:15:15 11 A. Chou -- the answer to your question is given 12 in -- I've got to find the right paragraph. 13 Chou's system determines that time but it's 14 not correct to say that Chou calculates that time. 15 Q. Please explain. 12:17:51 16 A. If you look at my paragraph 153 and three 17 lines from the bottom of the page 73, so: "As each 18 frame arrives at the client, a feedback loop can send 19 a message to the server to adjust the coding bit 20 rate." And citing to Figures 5 to 6, okay. 12:18:29 21 So when a frame arrives then what you just 22 described happens. The system, the client obviously 23 knows the time at which the frame has arrived. The 24 client can send a message to the server saying I just 25 got this frame. 12:19:05 Page 89

23 (Pages 86 - 89)

1 Q. A couple follow-up questions there, but 2 first let me just try to understand your prior 3 answer. You say that Chou's system determines the 4 gap between the frame's arrival time and its 5 playback deadline, but it does not -- Chou does not 12:19:30 6 calculate that time; is that right? I'm sorry. Let 7 me try that again. 8 Am I correct in understanding your 9 testimony that -- let me just rephrase it. 10 Am I correct in understanding your 12:19:47 11 testimony? 12 A. You are correct in understanding my 13 testimony, but let me provide additional 14 clarification. The time at which a frame arrives 15 over a channel that is not a fixed bandwidth 12:20:06 16 circuit-style channel is a variable, so you can't 17 calculate the time of arrival. That's an unknown 18 quantity. 19 Q. I think we might be talking past each other 20 a little bit. Does Chou calculate a value for the 12:20:45 21 gap between a frame's arrival time and its playback 22 deadline? 23 A. Chou's client knows that time because it 24 knows the arrival time and it knows the playback 25 deadline, so the difference between the client, which 12:21:21 Page 90	1 the y-axis -- axis, client time, intersects the 2 x-axis, media time? 3 A. You mean the origin of the graph? 4 Q. Right. 5 A. Yes. 12:23:44 6 Q. At time zero does the client know what the 7 value of $t_{sub a of (n)}$ is? 8 A. No, it doesn't. 9 Q. In fact, it can't, right? 10 A. That's correct. 12:23:59 11 Q. And if we were to go up the y-axis a little 12 bit in time to halfway between the origin and the 13 place where $t_{sub a of (n)}$ intersects the y-axis. 14 Are you with me so far? 15 A. Yes. 12:24:16 16 Q. At that point in time, does the client know 17 the value of $t_{sub a of (n)}$? 18 A. I'm sorry. You're saying where the dotted 19 line intersects the playback deadline? 20 Q. It's halfway between the origin and $t_{sub a}$ 12:24:33 21 of (n), halfway between. 22 A. Right. 23 Q. At that point in time, does the client know 24 the value of $t_{sub a of (n)}$? 25 A. No, it doesn't know that and nobody knows 12:24:50 Page 92
1 is what Figure 5 is showing us, the difference 2 between $t_{sub a of (n)}$ and $t_{sub d of (n)}$ is 3 that time that you're referring to. 4 Q. How does Chou's client know that? 5 A. Chou's client -- let's do it backwards. 12:21:52 6 Chou's client knows the time at which a given frame, 7 in other words a given piece of content data must be 8 reproduced and put on the screen, so the client knows 9 that. And when the subject frame arrives in its 10 storage, it knows the time at which that arrived. 12:22:21 11 Q. So in order to calculate the gap which is 12 the difference between the playback deadline and the 13 arrival time, you have to wait until the client 14 actually receives that frame, correct? 15 A. We're talking about this in the context of 12:22:47 16 what's happened at the client, and the client knows 17 the frame has arrived when it arrives, and yes, the 18 client doesn't receive that frame until it actually 19 gets there. 20 Q. Let's look at Figure 5 of Chou. Let's talk 12:23:09 21 about frame n. At the very beginning of the y-axis, 22 in other words where the y-axis intersects the 23 x-axis, do you see where I am? 24 A. Say that again, please. 25 Q. I would like you to look at the point where 12:23:29 Page 91	1 that and nobody can know that. 2 Q. On the y-axis, at the time $t_{sub a of (n)}$, 3 the client then knows the value of $t_{sub a of (n)}$, 4 correct? 5 A. At the client, the client knows that and 12:25:13 6 what I read to you, it's the client Chou may 7 communicate that to the server. 8 Q. Can you tell me in Figure 5 when is the 9 determination made about the code rate for frame n? 10 A. Figure 5 is not showing us -- so Figure 5 is 12:25:43 11 a client time diagram, so Figure 5 doesn't literally 12 show us what the timeline is between the server and 13 the client. 14 Q. You would agree, though, that in Figure 5 15 in client time on the y-axis, the time that the 12:26:13 16 determination of code rate is made for frame n is 17 before $t_{sub a of (n)}$, correct? 18 A. Of course. 19 Q. Why do you say "of course"? Is that 20 because of course the server needs to determine the 12:26:36 21 code rate before it transmits the frame before the 22 frame is received and so on? 23 A. That's part of it. I mean, there are two 24 parts to that. One is that the server is going to 25 perform the task of computing which of the available 12:26:53 Page 93

1 code rates it's going to use for this forthcoming 2 frame and it's going to transmit that frame, but 3 because the network is unpredictable, nobody, not the 4 server, not the client knows when that frame is going 5 to arrive. 12:27:23 6 Q. At the time the server is determining the 7 code rate for frame n, neither the client nor the 8 server know the value of the gap between the 9 playback deadline and the arrival of frame n, 10 correct? 12:27:42 11 A. That's correct. But what they do know -- 12 what they do know is the time between the target 13 schedule and the playback deadline. 14 Q. I'm glad you mentioned target schedule. 15 Let's put a pin in that. We'll get back to that in 12:28:04 16 a minute. 17 Staying on the gap between the playback 18 deadline and the arrival time of a frame, my 19 question is: Does Chou anywhere, either at the 20 client or the server, disclose calculating a value 12:28:21 21 for that gap? 22 MR. SHARMA: Objection, form, asked and 23 answered. 24 THE WITNESS: What Chou describes is -- I 25 stated already that no one can calculate that 12:28:34 Page 94	1 calculation of code rate based upon -- I'm sorry -- 2 Chou doesn't calculate the value of code rate 3 directly using the arrival time. He does it 4 indirectly. 5 BY MR. KNIERIM: 12:31:02 6 Q. Appreciate that but I still don't think 7 that was my question. 8 If we look at Figure 5 of Chou, we can draw 9 a line between $t_{sub\ d\ of\ (n)}$ and $t_{sub\ a\ of\ (n)}$, 10 right? 12:31:16 11 A. I'm sorry. Can you very clearly state 12 which -- it's hard to understand, to hear exactly 13 which subscript you're using, sorry. 14 Q. $T_{sub\ d\ of\ (n)}$, which is the playback 15 deadline, and $t_{sub\ a\ of\ (n)}$ which is the arrival 12:31:31 16 time, right? 17 A. Yes. 18 Q. So we can see on the graph here, we can 19 draw a line between those two points and that would 20 be indicative of a time, right? 12:31:42 21 A. That's right. 22 Q. What I'm trying to understand is: Does 23 Chou anywhere in its entire system ever calculate 24 that gap? 25 A. We're going around the same argument. Chou 12:31:58 Page 96
1 because it is a point in a future -- in the future, 2 and this is no different than rolling the dice in 3 Las Vegas. You don't know, nobody knows, nobody can 4 know on a variable rate channel when the arrival, if 5 any will occur, so you can't calculate something 12:29:05 6 that you don't have the data to calculate with. You 7 don't know that until -- you don't know that until 8 the frame arrives. 9 BY MR. KNIERIM: 10 Q. Understood. Let me phrase my question 12:29:23 11 slightly differently. 12 When the frame arrives, does Chou calculate 13 a value for the gap between the arrival schedule and 14 the playback? 15 MR. SHARMA: Same objection. 12:29:37 16 THE WITNESS: What Chou does is calculate a 17 value based on that to use in the feedback loop 18 process that Chou has that's going to be used for 19 the next frame. 20 BY MR. KNIERIM: 12:30:07 21 Q. There is no variable anywhere in Chou that 22 represents the gap between the arrival schedule and 23 the playback deadline, correct? 24 MR. SHARMA: Objection, form. 25 THE WITNESS: Chou doesn't base his 12:30:22 Page 95	1 can calculate that gap at the client when the event 2 occurs of the current frame. 3 So Chou can calculate $t_{a\ of\ (n)}$ minus $t_{d\ of\ (n)}$ 4 (n), or vice-versa, Chou can do that at the client. 5 Q. My question isn't whether Chou can do that, 12:32:39 6 sir. My question is: Does Chou disclose doing 7 that? 8 MR. SHARMA: Objection, form. 9 THE WITNESS: Chou uses that in the way in 10 which his system operates. 12:32:59 11 BY MR. KNIERIM: 12 Q. You're saying that Chou calculates a 13 difference between $t_{sub\ d\ of\ (n)}$ and $t_{sub\ a\ of\ (n)}$ 14 and uses that in the way the system operates. 15 Is that your testimony? 12:33:12 16 A. Just one moment. 17 If you look at Chou paragraph 67 right at 18 the end of paragraph 67, it's the last sentence. 19 Chou says: "Thus the gap between a frame's arrival 20 time and its playback deadline is the client buffer 12:34:52 21 duration at the time of the frame's arrival. This 22 must be no negative to allow continuous playback." 23 Then goes on to refine the process that he's 24 just described which made an assumption in the next 25 series of occasions. 12:35:20 Page 97

25 (Pages 94 - 97)

1 Q. There is nothing in that next series of 2 equations that calculates the gap between the 3 arrival schedule and the playback deadline, correct? 4 A. You have to go through the derivation of the 5 equations on page 902 where he takes you through -- 12:36:31 6 where he takes you through analysis in which he is -- 7 in paragraph 68 he's taking you through an analysis 8 based upon the arrival times of two of the frames. 9 Q. And nowhere in that analysis does Chou 10 disclose calculating a difference between the 12:37:13 11 playback deadline and the arrival time, correct? 12 MR. SHARMA: Objection, form. 13 THE WITNESS: In order to base the 14 operation of the system upon -- as required by the 15 claim 1 of the '101 patent, in order to base the 12:38:14 16 code rate on the content data received, Chou doesn't 17 need to subtract ta of (n) from td of (n) to, as I 18 said, to base -- 19 BY MR. KNIERIM: 20 Q. Respectfully, sir, that was not my 12:38:49 21 question. My question was: Nowhere in the analysis 22 in paragraph 68 does Chou disclose calculating a 23 difference between the playback deadline and the 24 arrival time, correct? 25 MR. SHARMA: Objection to form. 12:39:07 Page 98	1 A. That's correct. 2 Q. And my first question is: Am I correct in 3 understanding that it's your opinion that the gap 4 between the arrival schedule and the playback 5 deadline of Chou meets the limitation of the 12:41:20 6 available reproduction time in claim 1 of the 7 '101 patent? 8 A. If you refer to Figure 5, then the gap 9 between the instant of a particular frame's arrival 10 time, ta of (n) in Figure 5, and the playback 12:42:37 11 deadline, td of (n), is one of many values that meet 12 the requirement for the available time. 13 Q. What are the others? 14 A. The others are the values in Figure 5 15 between ta of (n) and tb of (n). 12:43:08 16 Q. Can you give me an example. 17 A. The limiting example would be tb of (n) 18 itself. 19 Q. Your position is that the gap between 20 t sub b and t sub a is the available reproduction 12:43:41 21 time in the '101 patent? 22 A. That's one. That's another example. 23 Q. Can you show me where you opine on that in 24 your declaration? 25 A. I'm talking about this -- I'm answering your 12:44:00 Page 100
1 THE WITNESS: I don't know what else to 2 tell you. I told you that the client knows that. 3 BY MR. KNIERIM: 4 Q. I think this is a fairly simple question. 5 Does Chou disclose calculating the difference 12:39:25 6 between the playback deadline and the arrival time, 7 and if so, where? 8 MR. SHARMA: Objection, form, asked and 9 answered. 10 THE WITNESS: The difference td of (n) 12:39:40 11 minus ta of (n) does not appear in the equations on 12 page 9 in paragraph 68. 13 BY MR. KNIERIM: 14 Q. In paragraph 91 of your declaration, you 15 say in the next sentence -- let me know when you're 12:39:59 16 there. 17 A. I'm there. 18 Q. The sentence starts: "Accordingly, in 19 Figure 5, the gap between the arrival schedule and 20 the playback deadline is the buffer duration, 12:40:47 21 equivalent to the, quote, available reproduction 22 time." 23 Do you see that? 24 A. That's at the bottom of the page, right? 25 Q. Yes. 12:41:00 Page 99	1 questions as best as I can from both my knowledge of 2 how the system really works and what is being shown 3 in Chou. And all of the values in Figure 5 between 4 ta of (n) and tb of (n) are available time. 5 Q. So to take another example, t sub -- 12:44:36 6 capital T of (n) minus t sub a of (n) in Chou would 7 also meet the limitation of an available 8 reproduction time in claim 1 of the '101 patent? 9 A. Not in my understanding of the way Figure 5 10 is drawn. 12:45:07 11 Q. Why not? 12 A. Because t -- middle lower case t sub upper 13 case T of (n) is the target schedule, and that's 14 above the buffer tube shown in the diagram. 15 Q. I want to break for lunch shortly but I 12:45:39 16 want to get clarity on this first. 17 Let's go back to your declaration, 18 paragraph 91, last sentence and let me know when 19 you're there. 20 A. I'm there. 12:45:51 21 Q. It says: "In Figure 5, the gap between 22 the" quote, "arrival schedule," end quote, "and 23 the," quote, "playback deadline," end quote, "is 24 the," quote, "buffer duration," end quote, 25 "equivalent to the", quote, "available reproduction 12:46:07 Page 101

1 time," end quote. 2 Do you see that? 3 A. Correct. 4 Q. And available reproduction time there means 5 the available reproduction time in claim 1 of the 12:46:16 6 '101 patent, correct? 7 A. That's correct. 8 Q. And you are offering an opinion here in 9 paragraph 91 that Chou's gap in Figure 5 between the 10 arriving schedule and the playback deadline is the 12:46:32 11 available production time in claim 1 of the 12 '101 patent, correct? 13 A. Right. 14 MR. KNIERIM: Let's break for lunch. 15 THE VIDEOGRAPHER: Off the record at 12:46:46 16 12:46 p.m. 17 (At the hour of 12:46 p.m., a luncheon 18 recess was taken. The deposition was resumed at 19 1:50 p.m., the same persons being present.) 20 21 22 23 24 25 Page 102	1 When you say "expressly," I want to make 2 sure I'm understanding that correctly. I mean, Chou 3 doesn't necessarily explicitly use the language of 4 claim limitations, and so exactly what are you 5 looking for with the word "expressly"? 01:48:50 6 Q. If you recall we were talking earlier today 7 about inherency. 8 Do you recall that? 9 A. Yes. 10 Q. And in your understanding, inherency is 01:48:59 11 where the reference may not expressly disclose 12 something but nevertheless it has to be present 13 because of some other factor. 14 Is that fair? 15 A. Yes, understand. 01:49:11 16 Q. So what I'm trying to understand is in your 17 analysis of Chou, are you relying on any inherency 18 theory where a limitation may not be expressly 19 present but you're nevertheless filling the gap for 20 some other reason? 01:49:27 21 A. I don't think so. 22 What I did discuss this morning was that I 23 believe that Chou renders all of the claims obvious, 24 as opposed to pure anticipation. And I mean for 25 example, if you look at my declaration for claim 5, 01:49:57 Page 104
1 Laguna Niguel, California, Thursday, May 16, 2024 2 1:50 p.m. 3 4 EXAMINATION (RESUMED) 5 12:49:46 6 THE VIDEOGRAPHER: Back on the record at 7 1:45 p.m. 8 BY MR. KNIERIM: 9 Q. Good afternoon, Dr. Reader. 10 A. Good afternoon. 01:45:57 11 Q. I would like you to turn to paragraph 108 12 of your deposition, Exhibit 1006. 13 A. I'm there. 14 Q. In paragraph 108, you state your opinion 15 that the claim of the '101 patent are rendered 01:46:23 16 obvious by Chou. 17 Do you see that? 18 A. Yes. 19 Q. Is there any portion of claim 1 that you 20 believe is not expressly disclosed by Chou? 01:46:32 21 A. I don't think so. 22 Q. What about the other claims, are there any 23 other claims, any other challenged claims that are 24 not expressly disclosed by Chou? 25 A. Let me double-check. 01:47:14 Page 103	1 paragraph 180, just trying to tackle this question of 2 what is expressly, you can read my argument there -- 3 we can read my argument there if you want to. 4 But it's talking about -- because that claim 5 limitation is talking about a plurality of reception 01:50:27 6 devices in claim 1, I'm making an obviousness 7 argument based upon Chou and the knowledge of one in 8 ordinary skill in the art. 9 Q. That's what I'm trying to explore. I 10 understand you're saying for claim 5, your 01:50:52 11 invalidity argument is based on a combination of 12 Chou and the knowledge of one skilled in the art. 13 A. Yes, and that's stated in paragraph 118. 14 Q. Let's turn back to claim 1. Is there any 15 limitation in claim 1 for which you rely on an 01:51:12 16 obviousness combination of Chou and the knowledge of 17 skill in the art? 18 A. I think -- just a second. 19 MR. SHARMA: Objection, form. 20 THE WITNESS: I'm just trying to be as 01:53:12 21 precise as possible. I pointed out earlier that the 22 language of a given reference and the subject patent 23 may not be identical, but if I understand what you 24 mean by "expressly," then I think Chou expressly 25 discloses each limitation of claim 1. 01:53:38 Page 105

27 (Pages 102 - 105)

1 And in conjunction with the knowledge of a 2 POSITA where in connection with looking through it 3 limitation by limitation, if the -- if the words 4 used by Chou are not identical to the word used by 5 the '101, well then the person of ordinary skill in 01:54:04 6 the art knows that the meaning of those terms is the 7 same. 8 BY MR. KNIERIM: 9 Q. Does Chou in your opinion anticipate 10 claim 1? 01:54:22 11 A. That's not my opinion. 12 Q. I understand. I'm just trying to figure 13 out if you think that each limitation of claim 1 is 14 disclosed in Chou, why aren't you presenting an 15 anticipation argument rather than an obviousness 01:54:38 16 argument? 17 MR. SHARMA: Objection to form. 18 THE WITNESS: I think what I just said is 19 the key point. I mean, if you take the very last... 20 on page 81 of the dec starting on paragraph 163, the 01:55:25 21 last limitation is the content reproducing unit is 22 configured to start reproduction of the content at 23 the set reproduction start time. 24 And Chou uses the terminology of providing 25 playback, so playback isn't exactly the word that is 01:55:50 Page 106	1 A. I think a person of ordinary skill in the 2 art knows how to take the disclosures of Chou to 3 perform the claimed function. 4 Q. Again, I'm not sure we're talking past each 5 other. Would a person of ordinary skill in the art 01:58:24 6 have to modify Chou in any way to meet the 7 limitations of claim 1? 8 MR. SHARMA: Objection, form, asked and 9 answered. 10 THE WITNESS: I think I answered before I 01:58:35 11 don't think so. 12 BY MR. KNIERIM: 13 Q. I'm glad we're clear on that. 14 Let's look at paragraph 137. This is under 15 the header from limitation 1d? 01:58:57 16 A. Did you say 177? 17 Q. 137. 18 A. I'm at paragraph 137. 19 Q. You see that is under header for 20 limitation 1d? 01:59:25 21 A. 1d, as in David. 22 Q. Paragraph 137 -- let me rephrase that. 23 Paragraph 137 starts by saying: "Chou teaches the 24 distribution system, comprising." 25 Do you see that? 01:59:41 Page 108
1 in the claim, that one of ordinary skill in the art 2 knows that reproduction of the content and playback 3 of the content are the same thing. 4 So my opinions are, if you like, not 5 aggressive in saying it's a 102 anticipation. 01:56:19 6 BY MR. KNIERIM: 7 Q. Are there any modifications needed to Chou 8 in order to meet the limitations of claim 1? 9 A. I personally don't think so, no. 10 Q. So it's your opinion that a person of 01:56:40 11 ordinary skill in the art would not need to make any 12 modifications to Chou in order to meet the 13 limitations of claim 1? 14 MR. SHARMA: Objection, form. 15 THE WITNESS: I think that if we look 01:56:53 16 through it limitation by limitation first, then I 17 think we find Chou disclosing the technology that is 18 required for each of the limitations. And I further 19 believe that when we take Chou and proclaim as a 20 whole, then Chou discloses the claim as a whole as 01:57:34 21 well. 22 BY MR. KNIERIM: 23 Q. I just want to make sure that it is not 24 your opinion that Chou would need to be modified in 25 order to meet the limitations of claim 1? 01:57:48 Page 107	1 A. Yes. 2 Q. And that's the claim language in plain text 3 there? 4 A. In this place, in this location, yes. 5 Q. And then there are parentheses throughout 01:59:50 6 this paragraph, right? 7 A. Okay. 8 Q. So the first instance of a parentheses 9 says: "(e.g., coding bit rate)." 10 Do you see that? 02:00:03 11 A. Yes. 12 Q. What do the parentheses here mean? 13 A. It's just a way of delineating the example 14 as opposed to using commas. 15 Q. Fair enough. 02:00:17 16 Does the content of the parentheses 17 indicate the portion of Chou that you believe meets 18 the claim language in the '101 patent that precedes 19 it? 20 A. Without going back to Chou in detail, I'm 02:00:40 21 not sure how to answer the question. I can answer 22 the question this way, which is as a person of 23 ordinary skill in the art, the coding bit rate is a 24 term that is used very, very -- I mean, very commonly 25 by all of us. 02:01:08 Page 109

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1 Q. Let's look at that sentence as it 2 continues. It says: "Based on a remaining time 3 before reproduction start time (e.g., playback 4 deadline)." 5 Do you see that? 02:01:24 6 A. Yes. 7 Q. And so what is the meaning of that 8 parentheses there, playback deadline? 9 A. I mean Chou, we were looking this morning at 10 Chou Figure 5, for example, where Chou uses the 02:01:39 11 terminology playback deadline, and in -- bearing in 12 mind that we're dealing with the hypothetical model 13 in which encoding and decoding is represented as 14 being instantaneous, the reproduction start time 15 would be synonymous with the playback deadline. 02:02:07 16 Q. So in your opinion, Chou's playback 17 deadline is the remaining time before reproduction 18 start in the claims? 19 MR. SHARMA: Objection, form, 20 mischaracterizes testimony. 02:02:35 21 THE WITNESS: We discussed this this 22 morning at some length. The remaining time is the 23 difference between two times, right. So the literal 24 answer to your question -- maybe you would like to 25 rephrase the question. 02:02:58 Page 110	1 BY MR. KNIERIM: 2 Q. So if we continue with paragraph 137 onto 3 the -- just down on the bottom of page 65, it says: 4 "Starts reproduction of the content from a present 5 moment and based on an available reproduction time 02:04:41 6 (e.g., buffer duration)." 7 With me so far? 8 A. Where did you start? I'm sorry. 9 Q. Let me try it again. I'm on page 65, 10 paragraph 137. 02:05:02 11 A. Yes. 12 Q. It says: "And based on an available 13 reproduction time (e.g., buffer duration)". 14 A. Yes. 15 Q. Is it your opinion that the buffer duration 02:05:16 16 of Chou meets the available reproduction time 17 limitation in claim 1? 18 A. What is meant in claim 1 is that the whole 19 phrase that matters is that to practice claim 1 you 20 need to have -- in this claim limitation at the 02:05:50 21 beginning we're talking about determining a code rate 22 and the code rate -- the determination of the code 23 rate is based on two things. And one of them is the 24 available reproduction time. 25 And for example, that can be the buffer 02:06:20 Page 112
1 BY MR. KNIERIM: 2 Q. In your opinion, Chou's playback deadline 3 is the remaining time before reproduction start in 4 the claim? 5 MR. SHARMA: Same objection. 02:03:10 6 THE WITNESS: No. The playback deadline is 7 a point in time. The remaining time is a duration 8 of time. So a point in time is not equal to a 9 duration in time. 10 BY MR. KNIERIM: 02:03:28 11 Q. It's your testimony in claim 1 of the 12 '101 patent, the quote, remaining time before 13 reproduction start time is a duration of time? 14 Let me rephrase my question. I think I 15 found the error. 02:03:47 16 Is it your opinion that the reproduction 17 start time in the claims is met by Chou's playback 18 deadline? 19 A. The reproduction start time, yes, is met by 20 Chou's playback deadline, that's correct. 02:04:07 21 Q. Now I understand. 22 A. In terms of the answer to your previous 23 question, the claim language itself explains the 24 remaining time is a different between two times -- 25 (Cross talk.) 02:04:24 Page 111	1 duration. 2 Q. And the other thing that the code rate 3 determination is based on is the remaining time 4 before reproduction start, right? 5 A. Correct. 02:06:37 6 Q. And the reproduction start time, in your 7 opinion, is met by the playback deadline of Chou? 8 MR. SHARMA: Objection, form. 9 THE WITNESS: The reproduction -- I'm sorry 10 you said the reproduction start time -- 02:06:53 11 BY MR. KNIERIM: 12 Q. Yes. 13 A. -- is met by the playback deadline? That's 14 your question? 15 Q. Yes. 02:07:00 16 A. I think I answered that as yes, that's 17 correct. 18 Q. Would a person of skill in the art need to 19 modify Chou's playback deadline in any way to meet 20 the reproduction start time limitation of claim 1? 02:07:20 21 A. I don't think so. 22 Q. Would a person of ordinary skill in the art 23 need to modify Chou's buffer duration in any way to 24 meet the available reproduction time limitation of 25 claim 1? 02:07:43 Page 113

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1 A. Given that we are determining the code rate 2 based on, in your example, the buffer duration, then 3 Chou discloses, absolutely discloses how to do that. 4 Q. So I understand, your opinion is that a 5 person of skill in the art would not need to modify 02:08:17 6 Chou's buffer duration in any way to meet the 7 available reproduction time limitation of claim 1? 8 MR. SHARMA: Objection, form, asked and 9 answered. 10 THE WITNESS: I think my testimony is that 02:08:32 11 a person of ordinary skill in the art would not need 12 to modify Chou in any way in order to determine the 13 code rate based on the buffer duration. 14 BY MR. KNIERIM: 15 Q. Let's look at paragraph 141. 02:08:50 16 A. 141? 17 Q. Yes. It says that: "Chou teaches that 18 either the client or the server are a code rate 19 determining unit." 20 Do you see that? 02:09:16 21 A. Yes. 22 Q. In the context of claim 1 of the 23 '101 patent, can the code rate determine either the 24 client or a server? 25 A. You're asking me in the context of claim 1? 02:09:33 Page 114	1 determining unit. 2 A. Right. 3 Q. Does the code rate determining unit of 4 claim 1 need to be on the server, the client, or 5 could it be both? 02:13:00 6 A. As far as actually calculating the change in 7 the code rate, it could be either, but implementing 8 the code rate change is going to be done by the 9 transmitting unit according to claim limitation 1e. 10 Q. Let's look at 143, paragraph 143. 02:13:26 11 A. I'm there. 12 Q. In paragraph 143 under header, it says: 13 "[Determining the code rate] based on the remaining 14 time before reproduction start," and it continues, 15 right? 02:13:58 16 A. Yes. 17 Q. This is your analysis of how Chou meets the 18 remaining time limitation of element 1d, correct? 19 A. That's right. 20 Q. Can you describe for me what in Chou meets 02:14:09 21 the remaining time before reproduction start time 22 limitation? 23 MR. SHARMA: Objection, form. 24 THE WITNESS: I think the best place to 25 look is -- if you look at my paragraph 147 on 02:14:42 Page 116
1 Q. Right. 2 A. You're talking about the '101 and can it be 3 a client -- sorry. 4 You're talking about the '101 patent claim 5 and asking can the code rate determining unit be 02:09:48 6 in the server or the client? 7 Q. Right. 8 A. I think we have to look back and say that 9 the way that claim 1 lays it out is that it's at the 10 server, right? We have to go back to -- it's not in 02:10:09 11 the front. It's in the back. 12 Limitation 1e, page 76 of my dec, 13 paragraph 158 says: "The content transmitting unit 14 is configured to change the code rate to the content 15 data to be transmitted to the reception device to the 02:12:05 16 determined code rate. 17 So the way the claim is written, it's the 18 transmitting unit that's going to change the code 19 rate. 20 Q. But my question was about content 02:12:26 21 transmitting unit. Does the content transmitting 22 unit of the '101 patent, claim 1 need to be on the 23 server, client, or either? I'm sorry. Let me try 24 that again. 25 My question is about the code rate 02:12:44 Page 115	1 page 14 -- 17, sorry. Are you there? 2 BY MR. KNIERIM: 3 Q. I'm there. 4 A. And we hit one of the constructions I wanted 5 to make, because the first word in paragraph 147 is 02:15:07 6 the word "this." And I think that's a bit confusing 7 upon review, so I would correct that to "the gap 8 between the time at which," instead of saying "this 9 gap between the time at which." 10 Q. Okay. 02:15:35 11 A. So then with that change the gap between the 12 time at which Chou's system is determining the coding 13 bit rate for a given frame to meet the target of 14 either schedule and the playback deadline for that 15 frame discloses the claimed remaining time before 02:15:54 16 reproduction start time, et cetera. 17 So then here we're citing to the paragraphs 18 in 70 to 75. Would you like me to go through those? 19 Q. No, thank you. That was very helpful. I 20 would like to dig into that just a little bit. 02:16:25 21 So this gap between the time that you 22 determine the coding bit rate for a given frame and 23 the playback deadline is what you believe satisfies 24 the remaining time limitation in claim 1? 25 A. That's right. 02:16:49 Page 117

30 (Pages 114 - 117)

1 Q. What is the time at which the coding bit 2 rate is determined for a given frame? 3 A. So under the hypothetical model where we are 4 doing -- where we instantaneously encode, then the 5 time at which Chou's system is determining the coding 02:17:15 6 bit rate for a given frame is the moment immediately 7 at which the instantaneous encoding is going to occur 8 and that is -- one way of expressing that is to say 9 that that is the present moment. 10 Q. Take a look, if you would, at paragraph 81 02:17:40 11 of Chou, Exhibit 1004. 12 A. You're saying 81? 0081? 13 Q. Correct. 14 A. I'm there. 15 Q. Take a minute to read paragraph 81 to 02:18:39 16 yourself and let me know when you're done. 17 A. Thank you. I've read it. Thank you. 18 Q. Paragraph 81 says in part: "At the time 19 t sub a of (n), frame n+2 is the earliest frame for 20 which the controller can determine the coding bit 02:19:52 21 rate." 22 Do you see that? 23 A. Yes. 24 Q. Can you help me understand what that means? 25 A. I think we actually already covered this 02:20:04 Page 118	1 A. Yes. 2 Q. And at that moment in time, the earliest 3 frame for which the server can determine a code rate 4 is frame n+2, correct? 5 A. Chou talks about it a couple of times and I 02:22:43 6 have a recollection that he can shorten that to n+1, 7 but if you could go to Figure 10, for example, then I 8 think that illustrates graphically what you just 9 talked about. 10 Q. Before we get to Figure 10, can you let me 02:23:04 11 know where Chou discloses that you can shorten that 12 to n+1? 13 A. I'll see if I can find it. He talks about 14 it in terms of a low delay mode somewhere. 15 I'm not finding it fast skimming through. I 02:24:50 16 just recall it being somewhere that he says there is 17 a way of doing that. Do you want me to continue 18 reading? 19 Q. I would, thank you. 20 A. I can't find it. I thought I found a low 02:31:06 21 delay mode discussion in here, but I'm not seeing it. 22 Q. Maybe I can direct you to paragraph 5 to 23 settle this, paragraph 5 refers to low delay. 24 A. I wondered if it might be near the beginning 25 while I'm looking through the end. This is talking 02:31:26 Page 120
1 this morning. If we think about what's happening in 2 the real system, then when I was talking about before 3 lunch was the fact that when you look at the top -- 4 in Figure 5 when you look at the top of a stair step, 5 then you have at that point in time at that moment in 02:20:37 6 client time, or you have the frame has arrived and 7 you know what that moment is, but that's after the 8 frame has arrived. And that's going to be true in 9 any system. That's true in the '101 system, patent 10 system, and it's true in any of the systems that we 02:21:14 11 have historically or future or whatever, that's just 12 the reality of it. 13 So that particular frame was encoded with -- 14 was encoded sometime prior to that. 15 Does that adequately answer the question or 02:21:43 16 would you like to ask again? 17 Q. No, that's helpful. I have some follow up. 18 Is it true, based on your understanding of 19 what's described in paragraph 81, that if in the 20 present moment t sub a of (n) -- let me rephrase it. 02:21:58 21 If in the present moment frame n has just 22 arrived at the client. Are you with me so far? 23 A. Yes. 24 Q. So that would be a time t sub a of (n), 25 right? 02:22:25 Page 119	1 about the start-up condition. 2 Q. Paragraph 5 does not discuss that you can 3 determine the code rate for n+1 at the time of 4 arrival at frame n, right? 5 A. I think because he's using the hypothetical 02:31:53 6 model, based on my read through, which obviously was 7 fairly fast, I didn't see where he was going through 8 a detailed description of being able to effect the 9 change in n-1 frame times, as opposed to n-2 frame 10 times. 02:32:27 11 Q. Right. And paragraph 81 he expressly says 12 that: "By the time frame n arrives completely at 13 the client, frame n+1 has already started 14 streaming from the server. Thus the coding bit rate 15 r sub c(n+1) for frame n+1 must already be 02:32:41 16 determined by time t sub a of (n)," right? 17 A. Right. That's not necessarily -- yes, I 18 completely agree that it says that. You can 19 certainly imagine scenarios in which that -- it's not 20 absolute that I couldn't adjust the next frame based 02:33:06 21 upon the current frame depending on the network 22 conditions and the frame rate and so on. 23 Q. What would you need to change in order to 24 do that? 25 A. You would need to be able to -- you would 02:33:22 Page 121

1 need to be able to -- you would need to be able to 2 compute -- what you would need to do is instead of 3 imagining that there is an absolute continuous flow 4 of data in the pipe, if in fact there was a delay in 5 the pipeline from the transmitter to the receiver 02:33:50 6 such that after you got the last bit of a frame there 7 was a gap before encoding and beginning to transmit 8 the next frame, then you could compute it for the 9 next frame in that gap. You could do that. You 10 could design a system to work that way. 02:34:16 11 Q. And in order for that to work, you would 12 have to delay sending frame n+1 until after frame n 13 was received by the client, correct? 14 A. Completely received. 15 Q. Completely received. 02:34:33 16 And also after the client sends its 17 feedback loop to the server indicating the time it 18 was received, right? 19 A. Right. You can imagine the sequence of 20 events in which that happens. Even the way that Chou 02:34:49 21 describes the n-2 or n+2 situation, it's assuming 22 that there is uninterrupted -- that there is an 23 attempted uninterrupted flow of bits from one frame 24 to the next by the transmitter in the system. 25 But you know historically from analog 02:35:17 Page 122	1 A. That's right. 2 Q. Let's look briefly at paragraph 70 of Chou, 3 Exhibit 1004. 4 A. Yes, I'm there. 5 Q. About a little more than midway down the 02:37:28 6 paragraph, it says: "Note that the controlling" -- 7 sorry. "Note that controlling the actual arrival 8 times (rather than their upper bounds) to the target 9 would result in an approximately constant number of 10 bits per frame, which would in turn result in very 02:37:46 11 poor quality overall." 12 Do you see that? 13 A. Yes. That's what I was referring to before 14 lunch when we were having the discussion about the 15 timing of Chou's system. 02:38:07 16 Q. So it's fair to say then that you agree 17 that Chou discloses that controlling the actual 18 arrival times of the frames is a bad thing? 19 MR. SHARMA: Objection, form. 20 THE WITNESS: It would have at least the 02:38:28 21 potential problem that he describes here that 22 remember that nobody can do an absolute job of doing 23 that because you're talking about forecasting the 24 future, which nobody can do, given the fact that the 25 transmission time of each bit of a coded frame is 02:39:00 Page 124
1 television that there was quite a substantial gap in 2 time between transmitting the data from one frame to 3 the next known as the "flyback time" in the old 4 analog days of CRT television and so on. 5 So what doing that would require is that 02:35:39 6 instead of having -- let's say you have 30 frames a 7 second, instead of having an entire 30th of a second 8 to send the data for a frame, you would be cutting 9 that back by some amount and you would have to 10 transmit the bits of each frame in, say, whatever you 02:36:02 11 want to choose, 85 percent of the frame time so that 12 you left 15 percent of the frame time open to do the 13 calculation. You could do that. 14 Q. In paragraph 143 of your declaration... 15 A. At the beginning of it. 02:36:36 16 Q. On the next page there is a sentence that 17 says: "Chou teaches setting the coding bit rate to 18 control the arrival time of each frame to attempt to 19 achieve this desired target buffer duration." 20 Do you see that? 02:36:57 21 A. Yes. 22 Q. And you cite Chou paragraph 27 through 29? 23 A. At that moment, yes. 24 Q. Later you also cite 70 to 75 after the next 25 sentence? 02:37:13 Page 123	1 indeterminate. 2 BY MR. KNIERIM: 3 Q. Chou does not teach setting the coding bit 4 rate to control the arrival -- the actual arrival 5 time of each frame, correct? 02:39:24 6 A. That's what this says. And if you read more 7 in this context, you'll find -- I mean, there are 8 certain parameters that are fixed -- not fixed. This 9 may be a bad word. That are absolutely known. I 10 mean, it is known in Chou what the playback deadline 02:39:53 11 is and that is the moment at which a particular frame 12 must be presented on the screen. So we know that. 13 In Chou, we know the target that he's set 14 up, because he set it up, so he knows exactly that 15 time. And then in Chou's system based on that, he 02:40:24 16 establishes an upper bound on the buffer duration, so 17 we know that. 18 What we don't know until a moment of present 19 time as opposed to future time, is we don't know 20 exactly when a frame will arrive because that's 02:40:49 21 dependent on the channel behavior. 22 Q. In paragraph 144, there is this phrase 23 "after the startup period." It comes from a quote 24 in Chou. Let me know when you see it. 25 A. Where is it, roughly speaking? 02:41:22 Page 125

1 Q. I'm sorry, let me clarify. Paragraph 144 2 of your declaration, it is on the third line. 3 A. Okay. "After the startup period," yes. 4 Q. What does that mean here? Does that mean 5 after the content has started to be reproduced? 02:41:39 6 A. No. In this case, Chou has an operation 7 that operates his system in two basic modes with a 8 transition between the two modes. 9 So in the startup period, which is the first 10 of the modes, that is at the very beginning of the 02:42:05 11 transmission of the video sequence and Chou spends a 12 fair amount of time describing ways -- potential ways 13 in which the delay before reproduction begins can be 14 shortened to -- shortened safely to a good degree. 15 So that's his startup period. 02:42:41 16 Q. Does Chou disclose changing the code rate 17 after that startup period ends? 18 A. Chou describes changing the code rates both 19 before and after startup period. 20 Q. In paragraph 145 of your declaration, there 02:43:03 21 is a couple references to the present moment. 22 Do you see that? 23 A. Yes. 24 Q. And I think you said earlier that the 25 present moment is the moment at which the code rate 02:43:27 Page 126	1 the axis, right? 2 A. Yes. 3 Q. I thought I heard you say before that 4 Figures 4 and 5 are not showing what is happening in 5 client time. 02:45:24 6 Did I get that wrong? 7 A. I may have misspoken, in which case I 8 apologize. They definitely do show us what's 9 happening in client time. What they don't show us is 10 we don't see in Figures 4 or 5 this moment of present 02:45:39 11 time in which the decision is made to encode the 12 frame and that's not how these figures are drawn. 13 Q. And so just to clarify, the present moment 14 in your view is defined with reference to the media 15 time and not the client time? 02:46:05 16 A. Yes. 17 Q. Is there a corresponding moment in client 18 time to the present moment in media time? 19 A. Not shown in Figure 5, no. 20 Q. What about disclosed in Chou in any way? 02:46:24 21 A. Figure 3 which hasn't formed the buffer tube 22 is media time on the bottom axis versus the bits 23 being generated, so for a given frame n in Figure 3 24 choose a step, say choose the third frame which is 25 the third step in the staircase. 02:47:02 Page 128
1 is determined for a given frame. 2 Is that right? 3 A. That's right. And that given frame in the 4 hypothetical model instantaneously encoding. 5 Q. Is that present moment defined with 02:43:47 6 reference to client time or media time? 7 A. That present moment is a present moment in 8 media time, but let me make sure to make clear that 9 we don't see that because Figures 4 and 5 are figures 10 that only are showing us on a timeline what's 02:44:17 11 happening in client time. We don't see that moment 12 in those Figures 4 and 5. 13 Q. Let's look at 4 and 5 again just to 14 clarify. And let's look at Figure 5 in particular 15 of Chou. 02:44:39 16 Figure 5 of Chou has two axis, right? 17 A. That's right. 18 Q. One of them is client time and one of them 19 is media time? 20 A. That's right. 02:44:51 21 Q. So Figure 5 does show client time as an 22 axis, right? 23 A. I'm sorry. I'm not sure I heard your 24 question correctly. Could you please repeat, sir? 25 Q. Figure 5 does show client time as one of 02:45:08 Page 127	1 If you go up line A in figure 3, three 2 steps, then that's the moment at which frame n is 3 encoded. And then in Figure 3 going horizontally 4 across that frame 3 is going to get decoded 5 instantaneously where the third step in the staircase 02:47:35 6 is in line D. 7 Q. Got it. 8 So if we were to take that concept and then 9 look at Figure 5, we can see in Figure 5 that 10 frame n has arrived at $t_{sub a}$ of (n), right? 02:47:55 11 A. Yes. 12 Q. And that's in client time? 13 A. That's in client time. 14 Q. So in client time at $t_{sub a}$ of (n), that 15 is the present moment that frame n-2 -- sorry, 02:48:10 16 n+2 -- let me try that again. 17 In client time at $t_{sub a}$ of (n), that is 18 the present moment that the code rate is determined 19 for frame n+2? 20 A. I think that's correct. 02:48:47 21 MR. KNIERIM: Let's take a short break, if 22 that's okay with you. 23 THE VIDEOGRAPHER: Off the record at 24 2:49 p.m. 25 (Recess taken.) 02:49:10 Page 129

1 THE VIDEOGRAPHER: We're back on the record 2 at 3:01 p.m. 3 BY MR. KNIERIM: 4 Q. I would like to talk about paragraph 153 of 5 your declaration. 03:01:43 6 A. I'm there. 7 Q. The first sentence you refer to the 8 difference between the playback deadline of a frame 9 and its arrival time $t_{sub\ d\ of\ (n)} - t_{sub\ a\ of\ (n)}$, right? 03:02:13 11 A. Yes. 12 Q. And then you have a citation to Chou, 13 paragraph 67 to 68, 70, 74, and 81, right? 14 A. Yes. And we hit the second correction that 15 I wanted to point out to you. The choice of the word 03:02:33 16 "remaining" in that sentence is just simply 17 unfortunate because the sentence should have been 18 written as "the time left" before that frame was to 19 be played to avoid -- the sentence is correct English 20 the way it's written, but because remaining has a 03:02:58 21 special meaning in the case, it was just unfortunate 22 that I wrote it this way. And it should -- like I 23 said, the sentence would be much less confusing if it 24 said: "Is the time left before that frame is to be 25 played from its arrival time." 03:03:20 Page 130	1 the playback deadline? 2 A. No, it's not. You can see in Figure 5 that 3 they are two distinct lines. 4 Q. So my question -- what I'm trying to 5 understand is why are you citing and quoting 03:05:09 6 paragraph 74 of Chou that refers to the gap between 7 playback deadline and target schedule for a sentence 8 that refers to the gap between the playback deadline 9 and the frame's arrival time? 10 A. This is referring to how Chou operates. 03:06:08 11 Maybe -- just a moment while I look for that simple 12 explanation. 13 I think we have to talk about how Chou 14 works, and I'm looking for something else that I 15 want to quote if I can find it. 03:07:25 16 The whole citation to Chou is from 70 17 through 74, right? 18 Q. It's 67 through 68, 70, and 74, and if you 19 want to look back at 67, I think that's the quote 20 you want, right? That one refers to the gap between 03:07:52 21 a frame's arrival time and its playback deadline, 22 right? 23 A. 74 has maybe the same quote because at the 24 bottom of page 9 of 74 is in Chou, "The gap between 25 the playback deadline and the target schedule is the 03:08:15 Page 132
1 Q. Great, I appreciate that clarification. 2 A. I'm sorry. 3 Q. This paragraph, in fact, is under the 4 header for the available reproduction time 5 limitation, right? 03:03:34 6 A. Yes. 7 Q. I'm sorry. I'm having a little trouble 8 hearing you. I'm not sure if it's on my end. 9 A. You sound a little bit muffled yourself 10 since we came back. Not seriously so. 03:03:50 11 Q. So my question, and just to set the context 12 again, in the first sentence you refer to this 13 difference between playback deadline and arrival 14 time of a frame, right? 15 A. That is correct. 03:04:11 16 Q. In the citation to paragraph 74 that 17 follows, there is a quote that refers to: "The gap 18 between the playback deadline and the target 19 schedule." 20 Do you see that? 03:04:27 21 A. Yes. 22 Q. Is the target schedule the same thing as 23 the playback deadline? 24 A. Can you say your question again, I'm sorry. 25 Q. Is the target schedule the same thing as 03:04:49 Page 131	1 desired client buffer duration (in client time)." 2 And you're saying 67 says the same thing? 3 Q. No, let's take a step back. The first 4 sentence of paragraph 153 in your declaration refers 5 to the gap between playback deadline and frame 03:08:33 6 arrival time, right? 7 A. Yes. 8 Q. And that is $t_{sub\ d\ of\ (n)} - t_{sub\ a\ of\ (n)}$ 9 (n)? 10 A. Yes. 03:08:51 11 Q. And if you skip that citation you have 12 there and go down a little bit in the paragraph, 13 you'll see another citation of paragraph 67 with a 14 quote in parenthetical? 15 A. Yes. 03:09:05 16 Q. And then paragraph 67 of Chou refers to the 17 gap between the frame's arrival time and playback 18 deadline, right? 19 A. 67 talks about more than that, but yes, it 20 does. 03:09:26 21 Q. That's consistent with the first sentence 22 of your paragraph 153 that refers to that same gap, 23 right? 24 A. Yes. 25 Q. So I'm just trying to understand why in the 03:09:36 Page 133

1 middle there you cited and quoted paragraph 74 of 2 Chou which refers to a different gap, one between 3 the playback deadline and the target schedule? 4 A. We have a discussion in paragraph 67 in 5 which Chou takes a first step in explaining the 03:10:03 6 system by saying at the very beginning assume for the 7 moment that bits arrive at the client at a constant 8 rate r_a. So that's paragraph 67 is predicated upon 9 that. 10 And then at the beginning of paragraph 68, 03:10:22 11 it begins by saying: "In reality the arrival rate is 12 not constant." And then goes through an analysis 13 that takes that into account. 14 So now we have a somewhat adapted an 15 analysis based upon that. 03:10:45 16 When we get to 74, which is under a whole 17 new section of Roman III, Optimal Control Solution, 18 and within that "A," the Target Schedule Design, then 19 we get to paragraph 74, and he's talking about the 20 same thing again, but now he's explaining how things 03:11:10 21 work. 22 So let's just quickly go through that 23 because if you go to Figure 5, and again, we talk 24 about what is known and what can't be known, then 25 what Chou says is I know both at the server and the 03:11:29 Page 134	1 question. 2 In paragraph 53 (sic), you have a sentence 3 that reads: "This time is referred to by Chou as 4 the client buffer duration, or simply buffer 5 duration." 03:13:55 6 Do you see that? 7 A. Yes. 8 Q. Which time are you referring to? 9 A. That's referring to the desired client 10 buffer duration in client time, and is the gap 03:14:30 11 between the playback deadline and the target 12 schedule. 13 Q. And the quotation that follows from Chou 14 paragraph 67, it says: "The gap between the frame's 15 arrival time and its playback deadline is the client 03:14:52 16 buffer duration at the time of the frame arrival," 17 right? 18 A. That's correct. 19 Q. So you're saying that in the sentence that 20 proceeds that citation, when you use the word "this 03:15:05 21 time," you're referring to instead -- you are 22 instead referring to the gap between the target 23 schedule and the playback duration? 24 A. This is pointing to -- the keyword here is 25 the word "desired." 03:15:23 Page 136
1 client that I've got a playback deadline. 2 In Chou's design, he's established a target 3 schedule and the target schedule is known to the 4 server and to the client. So the point -- lower case 5 t sub upper case T of (n), the point on the target 03:11:55 6 schedule related to the account frame is on the 7 target schedule, together with the actual arrival 8 time not known in advance, t_a of (n), and the 9 playback schedule t_d of (n). And then in addition 10 what we have in Chou is we have t_b of (n), a point on 03:12:17 11 an upper bound. 12 Now, what Chou's system does is based upon 13 the data that he has available for the arrival 14 schedule, which is a history of how the channel is 15 being -- has been behaving, including and up to the 03:12:42 16 latest arrival that arrived this moment in time. 17 Based upon that he knows where the target 18 schedule is, although he's going to update it based 19 upon the channel that he's established an upper bound 20 on the buffer content which is the t_b of (n), based 03:13:09 21 upon all of the data that he has that he's known. 22 And if we read into Chou, he explains that this gives 23 him the guarantee that the frame -- that underflow 24 will not occur. 25 Q. Let me put a bit of a finer point on my 03:13:38 Page 135	1 Q. Where is the word "desired"? 2 A. "Desired" is four lines up in the bottom on 3 page 73 in paragraph 153. "The gap between the 4 playback deadline and the target schedule is the 5 desired client buffer duration." That isn't -- 03:15:39 6 that's not -- that's related to but is different 7 from -- obviously you can see in the figure, it's 8 different from the buffer duration, the instantaneous 9 buffer duration that we just got because of an 10 arrival. 03:16:08 11 Q. So we've got two different values. We've 12 got the desired buffer duration on the one hand, and 13 then we have the client buffer duration or simply 14 buffer duration on the other hand, right? 15 A. We have the actual instantaneous buffer 03:16:32 16 duration that happened when a frame came in at 17 t_a of (n). We have that. And then we also have a 18 desired buffer duration, which is the gap between the 19 playback deadline and the target schedule. 20 And what Chou does, which is what anybody 03:16:53 21 does if we design a good feedback control system with 22 unknown variables in the loop, is they build in a 23 margin of error -- 24 Q. Right, and I'm sorry to cut you off, but 25 I'm trying to understand. In your declaration, what 03:17:07 Page 137

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1 are you referring to when you say: "This time is 2 referred to by Chou as a client buffer duration," 3 right, you understand my question? 4 A. Yes. 5 Q. And are you referring to the desired client 03:17:19 6 buffer duration there, or the instantaneous buffer 7 duration there? 8 A. It's confusing. I'm sorry. 9 I think it's intended to refer back to the 10 desired up duration, but I think the point is as a 03:18:33 11 citation when we go into the page that it's talking 12 about the actual -- it's the actual gap that we've 13 gotten in the frame and arrived. 14 Q. That is indeed my point and I'm confused by 15 your paragraph here and I just wanted to get some 03:18:57 16 clarity. 17 A. Okay. 18 Q. So sitting here today, can you tell us 19 which time you refer to when you say: "This time is 20 referred to by Chou as the client buffer duration"? 03:19:09 21 A. Excuse me, the statement at the bottom of 22 page 73, "This time is referred to by Chou as client 23 buffer duration, or simply buffer duration," that 24 should be interpreted to refer back to what is these 25 quoted in paragraph 74. That's the way it should 03:21:24 Page 138	1 and the playback deadline, the target buffer 2 duration? 3 A. Figure 6 is what you said? 4 Q. Let's just go back to basics. 5 In your opinion, which of those values do 03:23:22 6 you believe meets the available reproduction time in 7 the claims? 8 A. So the way that Chou operates, he builds in 9 a margin of error and the margin of error is the 10 difference between the -- is actually the difference 03:23:50 11 between the upper bound in Figure 5 and the arrival 12 time, the actual arrival time. 13 But the way that Chou operates is he tries 14 to use the data that's available to him, which is all 15 historic data, of course, because he can't see into 03:24:24 16 the future, but he takes -- he tries to get that 17 upper bound as close as he can to the target 18 schedule. 19 So the way that -- would've not gone through 20 the portions of Chou where he's describing the 03:24:42 21 feedback loop process of how he adjusts everything. 22 Figure 6 gives us a little bit of an introduction to 23 it because he's going to use the slope of the target 24 buffer duration, the slope of the target schedule in 25 Figure 6 in order to figure out how you should change 03:25:03 Page 140
1 read. 2 Q. Can we look at Figure 6 of Chou real quick. 3 A. Yes, I'm there. 4 Q. In the middle of Figure 6, there is a text 5 that says: "Target buffer duration," with arrows 03:21:53 6 next to it. 7 A. Yes. 8 Q. That is the desired target duration 9 described in paragraph 74 of Chou? 10 A. Yes. 03:22:04 11 Q. That is not the instantaneous buffer 12 duration $t_{sub\ b\ of\ (n)}$ minus $t_{sub\ a\ of\ (n)}$? 13 A. Correct. 14 Q. And if we look back to paragraph 67 of 15 Chou, paragraph 67 of Chou is referring to the gap 03:22:31 16 between frame arrival and playback deadline, right? 17 A. Yes. 18 Q. That's the instantaneous, what you're 19 calling the instantaneous buffer duration? 20 A. Yes. 03:22:46 21 Q. Isn't it true that Chou calls that duration 22 here in paragraph 67 the client buffer duration? 23 A. Yes, that's correct. 24 Q. Isn't it true that Chou in Figure 6 at 25 least refers to the gap between the target schedule 03:23:01 Page 139	1 the rates, if he should. 2 But what Chou is doing is he's got an actual 3 buffer duration at an instant in time, frame n is the 4 instant we're looking at. 5 He has an actual buffer duration at that 03:25:32 6 point but instead of using that directly which as you 7 read on the record is undesirable. Instead of doing 8 that, he takes a conservative approach, he builds in 9 a margin of error into the design of the system, and 10 he bases his code rate determination on something 03:26:00 11 that is smaller than the actual buffer duration, but 12 he attempts to make that optimally smaller than the 13 actual number itself, and that's the way he works. 14 Because as I mentioned this morning, if you 15 look from -- in Figure 5 from this moment of $\tau_{b\ of\ (n)}$ in media time to the next moment in media time 03:26:35 17 which would be $\tau_{sub\ d\ of\ (n+1)}$, if you look at 18 that interval, then nobody knows what the channel is 19 going to do in that period. 20 The way Chou works is he says I'm going to 03:27:03 21 assume everything is going to hold constant, and the 22 way that I built in my margin of error is such that 23 whatever happens in that interval, I'm still 24 guaranteed not to underflow. That's what Chou does. 25 And then he bases his selection of code 03:27:27 Page 141

1 rate, changing it up or down or leaving it where it 2 is. He bases that on this conservative buffer 3 duration that he's using that involves the target 4 schedule. 5 Q. Chou discloses two durations, the target 03:27:52 6 buffer duration and the instantaneous buffer 7 duration. Which of those durations do you believe 8 meets the available reproduction time in the claims? 9 A. What I believe is that he bases his code 10 rate determination on the number he gets from using 03:28:12 11 the target schedule. 12 Q. Okay. So the one based on the target 13 schedule, that's your answer? 14 A. That's my answer. 15 Q. Good, okay. Let's move on to 03:28:32 16 paragraph 168. 17 A. May I just add one thing? 18 Q. If you must. 19 A. Thank you. 20 I have to point out that, of course, the 03:28:46 21 target schedule itself is based upon what has been 22 happening with the actual buffer durations. So it 23 itself is based on the other behavior historically. 24 Q. The available production time in the 25 claims, in your opinion, is met by the duration 03:29:13 Page 142	1 claim. 2 BY MR. KNIERIM: 3 Q. Let's look at paragraph 168. There is two 4 parentheticals in the first sentence. The first 03:31:34 5 refers to buffer duration and the second refers to 6 buffer duration target level, right? 7 A. Yes. 8 Q. Is the first parenthetical that says 9 "buffer duration," referencing the instantaneous 10 buffer duration? 03:31:47 11 A. Can you please ask the question again? 12 Q. Does the first parenthetical in 13 paragraph 168 which recites a, quote, "buffer 14 duration," refer to the instantaneous buffer 15 duration? 03:35:39 16 A. I think that's correct, yes. I looked at 17 the cited passages and I think that's correct. 18 Q. Does the second parenthetical in 19 paragraph 168, which recites a, quote, "buffer 20 duration target level," refer to the target buffer 03:36:03 21 duration depicted in Figure 6? 22 A. Yes. I think that's correct, yes. 23 Q. So the first parenthetical references the 24 duration defined by $t_{sub\ d}$ of (n) minus $t_{sub\ a}$ 25 of (n)? 03:36:31 Page 144
1 defined by $t_{sub\ d}$ minus $t_{sub\ capital\ T}$, correct? 2 A. That's correct, yes. 3 Q. The available reproduction time in the 4 claims, in your opinion, is not met by the duration 5 defined by $t_{sub\ d}$ of (n) minus $t_{sub\ a}$ of (n), 03:29:35 6 correct? 7 MR. SHARMA: Objection, mischaracterizes 8 prior testimony. 9 MR. KNIERIM: I would appreciate it if you 10 don't coach the witness, Anupam. 03:29:51 11 THE WITNESS: As you read onto the record, 12 Chou recommends against using the actual buffer 13 duration and he does that because he's an expert in 14 control theory, and he knows that a good feedback 15 loop system builds into it a certain accommodation 03:30:13 16 we could call a margin of error perhaps. 17 He builds that in, and so instead of using 18 an absolute value, he bases his control -- in other 19 words choosing a bit rate, he bases his control on a 20 conservative measure which is itself, of course, 03:30:42 21 developed on the basis of the actual measured 22 performance. 23 So the actual arrival times are all being 24 used, albeit indirectly, but they're all being used 25 in order to act as the alleged invention of the 03:31:04 Page 143	1 A. T minus a did you say? 2 Q. Yes. For a clear record, the first 3 parenthetical references the duration defined by 4 $t_{sub\ d}$ minus $t_{sub\ a}$. 5 A. Yes, right. 03:37:00 6 Q. The second parenthetical refers to the 7 duration defined by $t_{sub\ d}$ of (n) minus $t_{sub\ capital\ T}$ of (n), correct? 8 A. Right. 9 Q. Paragraph 168 is under a header for 03:37:23 10 claim 2, right? 11 A. Yes, that's correct. 12 Q. Let's look at claim 2. You can either look 13 at your report here that has the text of it, or you 14 can look at it in the '101 patent, if you prefer. 03:37:35 15 A. Yes. 16 Q. Claim 2 uses two separate phrases. One of 17 them is the available reproduction time and the 18 other is target available reproduction time. 19 Do you see that? 03:37:55 20 A. Yes. 21 Q. The available reproduction time has the 22 word "the," t-h-e, in front of it, right? 23 A. Yes. 24 Q. What do you understand that to mean? 03:38:06 Page 145

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1 A. That there is an entity basis to that. 2 Q. It means that the available reproduction 3 time in claim 2 is the same available reproduction 4 time in claim 1, correct? 5 A. Yes. 03:38:21 6 Q. The available reproduction time and the 7 target available reproduction time are different 8 things, correct? 9 A. Yes. 10 Q. In claim 2 here you're relying on the 03:38:45 11 instantaneous buffer duration as meeting the 12 available reproduction time, correct? 13 A. I think that's what we said. 14 Q. Is that consistent with your opinion on 15 claim 1? 03:39:05 16 A. In claim 1, we have paragraph -- in 17 paragraph 140 something. 18 Q. Do you mean 153? 19 A. Yes, sorry. 140-something is the remaining. 20 I think it's actually in the course of 03:40:28 21 discussing everything in the 140s Chou makes the 22 explicit statement. 23 Q. If I may, Doctor, I just spent considerable 24 effort trying to understand your opinion for 25 claim 1, and as best I could tell, your opinion is 03:40:57 Page 146	1 rate] based on an available reproduction time, which 2 is a time available for reproducing the content based 3 on the content data stored in the storage device of 4 the reception device." 5 And then you look at Figure 5 and you look 03:43:54 6 at the time td of (n) minus -- I'm sorry -- okay, 7 td of (n) minus ta of (n). That time is available 8 for reproducing the content, correct. 9 Q. Let me just try to short circuit this. I'm 10 going to read back your prior testimony and you tell 03:44:31 11 me if you still agree with it or not. 12 "Question: If available reproduction time 13 in the claims in your opinion is met by the duration 14 defined by $t_{sub\ d}$ minus $t_{sub\ capital\ D}$, correct? 15 Answer: That's correct, yes." 03:44:50 16 Do you agree with that still? 17 MR. SHARMA: Objection to form. 18 THE WITNESS: The point is this, may I 19 please finish what I was saying? 20 So at an instant in Figure 5, the instant 03:45:05 21 of frame n, the instantaneous available reproduction 22 time is td of (n) minus ta of (n) because that is 23 literally the available time at that particular 24 moment, but the time td of (n) minus tb of (n) is a 25 subset of that time. 03:45:42 Page 148
1 that the available reproduction time in claim 1 is 2 met by the target buffer duration, not the 3 instantaneous buffer duration. 4 Did I get that right? 5 A. What we're talking about for the purposes -- 03:41:14 6 are we talking about on what is the code rate change 7 based? We're looking for the basis of the code rate 8 change in claim, correct? 9 Q. Yes, but it's a very simple question. 10 Claim 1 recites an available reproduction time. 03:41:36 11 That is a value, correct, it's a time? 12 A. And the target and the code rate is going to 13 be based upon that. 14 Q. Sure. Let's just stick with the time, 15 available reproduction time. In claim 1, what time 03:41:50 16 do you believe in Chou meets that limitation? 17 A. Can you say that question again? 18 Q. Sure. Claim 1 recites an available 19 reproduction time. What time in Chou do you believe 20 meets that limitation of claim 1? Is it the target 03:42:36 21 buffer duration, or is it the instantaneous buffer 22 duration? 23 A. So when I was talking about claim 1, let's 24 look at page 71 of the dec. Then when we read the 25 sublimitation c, it says: "And [determining the code 03:43:31 Page 147	1 So the key point is that both of them are 2 an available time for performing the necessary 3 function of the claim. Both of them are. 4 BY MR. KNIERIM: 5 Q. So let me just get that straight. Your 03:46:01 6 opinion is that your available production time in 7 the claims is met by both the instantaneous target 8 buffer duration and the target buffer duration, 9 correct? 10 A. If you have a larger number like the number 03:46:17 11 10 and you say, well, I can accomplish something 12 rather within a time period that goes from zero to 13 10, you have that time available to you to do 14 something, and you finish it in only 8 counts instead 15 of 10 counts, you've performed it within the 03:46:41 16 available time. 17 Q. The claim says the available reproduction 18 time which is a time available for producing the 19 content based on the content's data stored in the 20 storage device, right? 03:46:59 21 A. Right. 22 Q. Is it your opinion that that value, the 23 available production time, is met by both the 24 instantaneous buffer duration and the target buffer 25 duration of Chou? 03:47:14 Page 149

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1 A. What I'm saying is that the target -- 2 Q. You can't answer that question yes or no? 3 MR. SHARMA: Objection, form. 4 THE WITNESS: I don't think the record will 5 look straight if I answer yes or no. 03:47:28 6 BY MR. KNIERIM: 7 Q. Why not? 8 A. Because of what I explained. The fact is 9 that the claim requires determining the code rate 10 based on the available time, and Chou achieves that 03:47:47 11 with a subset of the potentially available time, but 12 he achieves it by using the target schedule as his 13 method for managing the variability and the delivery 14 rate. 15 Because we're looking at one single instance 03:48:23 16 here in Figure 5, right, and so it's only just a 17 snapshot, not the complete picture, and so Chou's 18 system says, well, I have to have some kind of 19 conservative margin of error in which to operate and 20 he's calculating the code rate based on the target 03:48:46 21 schedule which itself is based on, albeit indirectly, 22 the basic succession, historic succession of an 23 actual arrival schedules and that's how his system 24 works. 25 Q. You have been hired as an expert to opine 03:49:11 Page 150	1 just a very crisp quote to give you. I'm sorry, it's 2 taking a little bit of time. 3 Q. Take your time. Again, for a clear record, 4 you've been looking for about four minutes now and 5 the question on the table is: Can you point to a 03:54:30 6 value in Chou that you believe is the available 7 reproduction time in claim 1? 8 A. So we have two situations that we've been 9 discussing already because in paragraph 67 we have 10 thus the gap between the frame's arrival time and its 03:57:26 11 playback deadline is client's buffer duration at the 12 time of the frame arrival; and in Chou's model, that 13 time gets used in the process of establishing -- in 14 the process of setting the coding rate. 15 In other words, the coding rate is set, 03:58:01 16 albeit indirectly, on that time. That in addition, 17 in Chou's model in paragraph 74, we have the gap 18 between the playback deadline and the target schedule 19 is the desired client duration, as I pointed out, in 20 client time. 03:58:30 21 So we have those two things, and Chou 22 describes -- illustrates both of those in Figure 5, 23 and I mentioned what those were a few minutes ago. 24 And in this claim limitation, the code rate is based 25 on the target -- the desired -- paragraph 74 desired 03:58:58 Page 152
1 on the validity of claim 1 of the '101 patent, 2 correct? 3 A. Correct. 4 Q. Sitting here today, you will not give me a 5 yes or no answer to the following question: Is it 03:49:25 6 your opinion that the available reproduction time in 7 claim 1 is met by both the instantaneous buffer 8 duration and the target buffer duration of Chou? 9 MR. SHARMA: Objection, form, prior 10 objection. 03:49:46 11 THE WITNESS: So when you say "the 12 instantaneous arrival time," are you referring to 13 the specific illustration in Figure 5 or in general? 14 BY MR. KNIERIM: 15 Q. I'm using your words. You used the words 03:50:04 16 "instantaneous buffer duration." 17 Let me make it even more simple. Can you 18 point to a value in Chou that you believe is the 19 available reproduction time in claim 1? 20 A. An example of that is -- 03:50:40 21 Q. Just for a clear record, Doctor, what 22 document are you reviewing right now? 23 A. I'm looking for the right places to cite in 24 my dec. 25 I'm not finding something that I want. It's 03:54:15 Page 151	1 client buffer duration, which in itself is based on a 2 succession, in fact, of the actual buffer durations 3 collected historically in the staircase that we see 4 in Figure 5. 5 Q. You've given that explanation several times 03:59:35 6 now and I understand it, but my question is: Can 7 you point to a value in Chou that you believe is the 8 available reproduction time in claim 1? 9 MR. SHARMA: Objection, form. 10 THE WITNESS: I just don't know how to 04:00:08 11 answer your question any other way. As an instance 12 illustrated in Figure 5, td of (n) minus ta of (n) 13 is an available time. 14 BY MR. KNIERIM: 15 Q. In claim 1? 04:00:33 16 A. In claim 1, at the same time because it's a 17 subset of td minus -- td of (n) minus ta of (n), the 18 target, the time td of (n) minus tb of (n), for 19 example, the upper bound, that's an available time. 20 And, for that matter, td of (n) minus little t sub 04:01:03 21 big T of (n) is an available time, and they're all 22 the same time so they're all available. 23 Q. Okay. Your opinion, the available 24 production time in claim 1 is met by, first, 25 tb of (n) minus ta of (n), correct? 04:01:24 Page 153

1 A. At that instant, yes. 2 Q. Second, available production time in 3 claim 1 in your opinion is met by t sub d minus 4 t sub b, as in boy, of (n), correct? 5 A. Yes. 04:01:45 6 Q. And in your opinion, the available 7 production time in claim 1 is met by, third, 8 t sub d of (n) minus t sub capital T of (n), 9 correct? 10 A. Correct. 04:01:58 11 Q. It's met by all of them? 12 A. Right. Because the last two are subset of 13 the first. So if the first time is available at this 14 instance, then of course, the other times are 15 available, too. 04:02:11 16 Q. In claim 2 -- withdrawn. Let me move on. 17 I think we got a clear answer there finally. 18 I have more, I expected to be done by now. 19 Do you want to take a break or keep going? 20 MR. SHARMA: I need to hit the restroom, so 04:02:31 21 if we could take a ten-minute break. 22 THE WITNESS: How about five? 23 MR. SHARMA: Five. 24 THE VIDEOGRAPHER: We're off the record at 25 4:02 p.m. 04:02:41 Page 154	1 this limitation 1b should be construed as a 2 means-plus-function limitation, correct? 3 A. I think my report contains two approaches. 4 One, the initial approach, this and all of the claims 5 is that they're not means-plus-function, but my dec 04:11:50 6 includes a discussion of the claim, each claim 7 limitation -- each relevant claim limitation were it 8 to be construed that way. 9 Q. Can you give me your understanding of how a 10 means-plus-function limitation should be construed? 04:12:11 11 MR. SHARMA: Objection, form, outside the 12 scope. 13 THE WITNESS: I can only give you a 14 non-legal -- 15 BY MR. KNIERIM: 04:12:24 16 Q. I'm only asking for your understanding. 17 A. Based upon what I've been taught by 18 qualified attorneys, it is customary for 19 means-plus-function claims to contain the word 20 "means," means for. But I'm aware and have had 04:12:46 21 experience in which that specific word "means" 22 doesn't appear, and yet it has been argued that a 23 claim is, in fact, a means-plus-function form claim. 24 Q. If a claim is in fact a means-plus-function 25 claim, how do you interpret it? 04:13:14 Page 156
1 (Recess taken.) 2 THE VIDEOGRAPHER: Here begins Media Unit 3 Number 3. We're back on the record at 4:10 p.m. 4 BY MR. KNIERIM: 5 Q. Doctor, would you please flip back to 04:10:22 6 paragraph 118 of your declaration. 7 A. Okay, I'm there. 8 Q. This paragraph starts with the sentence 9 that reads: "To the extent that [1b] might be 10 deemed to be a means-plus-function limitation under 04:10:52 11 35 U.S.C. 112 paragraph 6, [1b] is still taught by 12 Chou." 13 Do you see that? 14 A. Yes. 15 Q. Do you believe that limitation 1b should be 04:11:03 16 construed as a means-plus-function limitation? 17 MR. SHARMA: Objection, form. 18 THE WITNESS: I'm not an attorney, so I 19 don't think I can offer an opinion on that. 20 BY MR. KNIERIM: 04:11:18 21 Q. You have analyzed these claims and opined 22 on how they should be construed as understood by one 23 of skill in the art, correct? 24 A. Yes, I did. 25 Q. And you have not taken the position that 04:11:27 Page 155	1 MR. SHARMA: Same objection. 2 THE WITNESS: My understanding is that 3 there has to be, as the name itself suggests, a 4 function performed by practicing the claim, and 5 there has to be structure that is used to perform 04:13:36 6 the function. 7 BY MR. KNIERIM: 8 Q. Great. 9 Now, with that understanding and with 10 reference to paragraph 118, can you explain for me 04:13:48 11 what structure is identified for limitation 1b? 12 A. So as my report says in 118, "Chou discloses 13 a server implemented on," quote, "a general purpose 14 computing device," unquote, and sites to Chou, 15 "which" quote, "includes a modem 172 or other means 04:14:18 16 for establishing communications over... the 17 Internet," unquote. And it continues. 18 Would you like me to continue? 19 Q. Please. 20 A. "And includes," quote, "program modules... 04:14:36 21 that perform particular tasks," unquote, "such as 22 transmitting the streaming media" -- 23 THE REPORTER: Can you speak up as you 24 read. 25 THE WITNESS: I'm reading from the report 04:14:52 Page 157

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1 which is as I warned can mask the microphone. I'll 2 do my best, thank you. 3 I then have to sit further away so it's six 4 of one, half dozen of another. 5 BY MR. KNIERIM: 04:15:11 6 Q. After that sentence you also go on to say 7 that: "This is consistent with the '101 patent's 8 disclosure of a transmitting unit, which discloses 9 that the server device 10 is a transmission device 10 and includes a content transmitting part," right? 04:15:23 11 A. That's correct. 12 Q. So the structure you've identified as 13 sufficient is a transmitting unit or a transmitting 14 device that includes a content transmitting part, 15 right? 04:15:44 16 A. We're discussing a portion of a claim 17 limitation which is... transmitting... one content 18 coded with any one code rate -- 19 THE REPORTER: Your voice dropped. 20 THE WITNESS: All the plurality of code 04:16:10 21 rates different from each other to the reception 22 device. That's what we're -- that's the claim 23 limitation fragment that we're discussing. 24 BY MR. KNIERIM: 25 Q. And you pointed in the '101 specification 04:16:25 Page 158	1 A. It is for claim 27. 2 Q. And claim 27 is a claim that uses the term 3 "means," correct? 4 A. Yes. 5 Q. Have you come to an opinion as to whether 04:18:43 6 claim 27 is a means-plus-function claim or not? 7 A. I didn't offer an opinion on that. What I 8 said was that it's substantially the same as claim 1, 9 except for the different language that is pointed out 10 here, so I think by reference I'm pointing to my 04:19:08 11 analysis, my complete analysis of claim 1. 12 Q. Right. So in claim 1, claim 1 uses the 13 term "content transmitting unit," whereas claim 27 14 uses the term "content transmitting means"; is that 15 right? 04:19:34 16 A. That's what is stated here, yes. That 17 states it. 18 Q. And instead of a code rate determining unit 19 in claim 1, claim 27 uses the term "code rate 20 determining means," right? 04:19:46 21 A. Yes. 22 Q. And you have not identified any separate 23 functionality or structure for claim 27 that you 24 have not identified for claim 1, correct? 25 A. I think that's consistent, yes. 04:20:04 Page 160
1 to column 5, lines 12 through 16, 546 through -47 2 and column 8, lines 46 through 58, correct? 3 A. That's the citation made, yes. 4 Q. And that's what you believe is the 5 structure in the '101 patent specification, right? 04:16:47 6 A. That's what is cited here, yes. 7 Q. And that's for limitation 1b, just to 8 clarify? 9 A. That's correct, yes. 10 Q. In paragraph 119 you say: "Moreover, to 04:17:05 11 the extent Chou were deficient (it is not), [1b]'s 12 structure and functionality were also generally 13 known by persons of skill in the art." 14 Do you see that? 15 A. Yes. 04:17:24 16 Q. You agree that the structure and 17 functionality of limitation 1b are generally known 18 by persons of skill in the art? 19 A. Correct. 20 Q. Let's take a look at paragraph 154 -- 04:17:36 21 actually before we do that, let's look at 22 paragraph 227. It's on page 106. 23 A. I'm there. 24 Q. Paragraph 227 is related to claim 27, 25 correct? 04:18:29 Page 159	1 Q. You can scroll through paragraphs 228, -29, 2 -30, -31, -32, -33, they all just refer back to 3 claim 1, correct? 4 A. That's correct, yes. 5 Q. So as far as you're concerned claim 27, 04:20:15 6 claim 1 mean the same thing, right? 7 A. I'm saying that the analysis I provided for 8 claim 1, which has the two parts we talked about with 9 or without consideration whether it's a 10 means-plus-function applies to claim 27. 04:20:36 11 Q. Does claim 1 and claim 27 -- do claim 1 and 12 claim 27 have any difference in scope? 13 A. Can you tell me what you mean by "scope"? 14 Q. Do they cover the same thing, or does one 15 cover more or less than the other? 04:21:11 16 A. From a layperson's perspective, from a 17 non-attorney's perspective, they are probably the 18 same scope. 19 Q. By "layperson," do you mean a person of 20 skill in the art or like a person off the street? 04:21:39 21 A. That's why I half corrected myself. I mean, 22 yes, a person of skill in the art compared to an 23 attorney. 24 Q. To a person of ordinary skill in the art, 25 claim 1 and claim 27 have the same scope? 04:21:51 Page 161

1 A. I think that's correct. 2 Q. Now, let's go to paragraph 154. 3 A. I'm there. 4 Q. You say here that: "Chou also teaches a 5 structure for the code rate determining unit." 04:22:19 6 A. Yes, that's what it says. 7 Q. Can you explain to me what that structure 8 is? 9 A. Based upon paragraph 156, which says that 10 when the structured functionality rules are generally 04:24:23 11 known by POSITA -- 12 THE REPORTER: I can't hear you. Can you 13 speak up. 14 THE WITNESS: Paragraph 156 says: "[1d]'s 15 structure and functionality were also generally 04:24:39 16 known by POSITAs rendering it obvious even if not 17 explicitly taught by Chou." 18 And a POSITA would know that if you're 19 going to calculate an appropriate coding bit rate, 20 then you would need a processing device and 04:25:05 21 appropriate software. 22 BY MR. KNIERIM: 23 Q. So you would agree that a person of 24 ordinary skill in the art would understand that the 25 structure of the code rate determining unit would be 04:25:16 Page 162	1 Exhibit Share, which we'll designate as 2 Exhibit 2013. 3 (The document referred to was marked as 4 Exhibit 2013 for identification and is attached 5 hereto.) 04:28:47 6 BY MR. KNIERIM: 7 Q. Let me know when you get it. 8 A. Nothing yet. Okay. 9 Q. I'll represent for the record that 10 Exhibit 2013 is a declaration of Kevin Almeroth 04:29:32 11 submitted in connection with the District Court 12 Claim Construction proceeding, and I think I know 13 the answer but I'll ask anyway. 14 Have you seen this document before? 15 MR. SHARMA: Objection, form. 04:30:11 16 BY MR. KNIERIM: 17 Q. I can see, Doctor, that you're flipping 18 through some papers. What are you looking at? 19 A. I was looking at my dec. 20 Q. So the question is: Have you seen this 04:30:31 21 document, Exhibit 2013, before? 22 A. I don't think so. I don't recall. I don't 23 recall seeing it before. 24 Q. If you turn to page 29 of this document, 25 which is page 32 of the PDF. 04:31:17 Page 164
1 a processing device and appropriate software? 2 A. Yes. 3 Q. In paragraph 155, you say here that: "This 4 is similar to the disclosure of the '101 patent," 5 and then you have a quote and citation to column 10, 04:25:37 6 line 7 through 18. 7 Do you see that? 8 A. Yes. 9 Q. And in your opinion, a person of ordinary 10 skill in the art would understand that this portion 04:25:48 11 of the '101 patent, column 10, lines 7 through 18, 12 recite sufficient structure for a code rate 13 determining unit? 14 A. Let me check. Yes, that's correct. 15 Q. You understand that -- I think I asked you 04:26:55 16 earlier, you understand that the parties are 17 involved in copending litigation in district court; 18 is that right? 19 A. Yes, correct. 20 Q. You understand that the parties have 04:27:04 21 submitted claim construction briefing in that case? 22 A. I heard that they have, yes. 23 Q. Have you seen any of that briefing? 24 A. I don't think so, no. 25 Q. I'm going to introduce an exhibit into 04:27:22 Page 163	1 A. Page 29 of the document, right? 2 Q. Yes. And actually before we get there, do 3 you know Dr. Kevin Almeroth? 4 A. No. 5 THE REPORTER: What's the last name? 6 MR. KNIERIM: A-l-m-e-r-o-t-h. 7 BY MR. KNIERIM: 8 Q. On page 29 there is a table under the 9 header: "Reproduction start time set as time at 10 which the reception device starts reproduction of 04:32:03 11 the content." 12 Do you see that? 13 A. Yes. 14 Q. That's a clean term from the '101 patent, 15 right? 04:32:13 16 A. I don't know. Can you point me to -- above 17 it the table says it's in claims 1, 11, et cetera. 18 Q. And if you want to satisfy yourself, if you 19 want to look at the '101 patent, Exhibit 1001, 20 column 24, claim 1, line 53? 04:32:39 21 A. Where are you, please. 22 Q. The question is: Is the term "reproduction 23 start for time set as time at which the reception 24 device starts reproduction of the content," a claim 25 term in the '101? 04:33:38 Page 165

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1 And if I were to point your attention to 2 line 53 of column 24 of the '101 patent, you may 3 find it there. 4 A. That's what I was trying to read. So 5 line 54 of column 24 is reproduction -- actually, 04:34:06 6 line 53, "reproduction start time set as time at 7 which the reception device starts reproduction of the 8 content from a present moment," which is not what it 9 reads there. 10 Q. It reads identically up until that last 04:34:34 11 phrase, right? 12 A. It only reads the same for the first few 13 words. 14 Q. True or false, the phrase: "Reproduction 15 start time set as time at which the reception device 04:35:07 16 starts reproduction of the content" is present in 17 claim 1 of the '101 patent? 18 A. The word "that" doesn't appear. It says "at 19 which." 20 Q. I think we may be looking at different 04:35:33 21 things. Let's take a fresh start here. 22 You'll see on page 29 of Exhibit 2103 there 23 is a header B.1. 24 Do you see that? 25 A. Yes. 04:35:44 Page 166	1 reproduction start time in claim 1 requires a 2 session participation request? 3 MR. SHARMA: Objection to the form, outside 4 the scope. 5 THE WITNESS: I don't know. I didn't study 04:37:22 6 this. 7 BY MR. KNIERIM: 8 Q. You did however analyze these claims and 9 determine how they should be construed in order to 10 apply them to the prior art, correct? 04:37:30 11 A. Yes, but I've not looked at this 12 instruction. 13 Q. I'm asking you now. In your declaration 14 you said that you've applied the plain and ordinary 15 meaning of the claim terms at issue, right? 04:37:42 16 A. Correct. 17 Q. Does the plain and ordinary meaning of 18 reproduction start time require a session 19 participation request? 20 MR. SHARMA: Objection, outside the scope. 04:37:55 21 THE WITNESS: I don't know. 22 BY MR. KNIERIM: 23 Q. What would you need to figure that out? 24 A. Spending time to understand the context of 25 this, for example. 04:38:09 Page 168
1 Q. That header has the claim language of 2 claim 1 of the '101 patent, correct? 3 A. That's correct. 4 Q. And now in the table below that, in the 5 left-hand side, there is a column called Peloton's 04:36:13 6 Proposed Construction. 7 Do you see that? 8 A. Yes. 9 Q. And under that in that column there is a 10 construction there that has different words than the 04:36:22 11 literal claim language of claim 1, right? 12 A. Apparently so. 13 Q. And one of the differences as you pointed 14 out is that it says "that" instead of "at which," 15 right? 04:36:39 16 A. You pointed me to a particular place in 17 claim 1, so I was just trying to compare that part. 18 I don't know if somewhere else it says something -- 19 it says the same thing. 20 Q. The construction here also says "that the 04:36:51 21 reception device having transmitted a session 22 participation request." 23 Do you see that? 24 A. Yes. 25 Q. Do you believe that the meaning of 04:37:06 Page 167	1 Q. You're telling me that to understand what a 2 term in the '101 patent means, you need to study 3 Dr. Almeroth's deposition? 4 MR. SHARMA: Objection, form, misstates his 5 testimony. 04:38:22 6 THE WITNESS: That's not what I said. 7 BY MR. KNIERIM: 8 Q. What did you say? 9 A. I said I would have to understand the 10 context. 04:38:27 11 Q. What context? 12 A. You didn't ask a question really about 13 Almeroth's declaration. You asked me about the 14 language that's in the table and you asked me a 15 question about that, and I don't know because I 04:38:43 16 haven't studied that. And I'm just saying it would 17 take me time to understand the context of your 18 question and the context in which that proposed 19 construction was written, neither of which I've done. 20 Q. You can put the declaration aside for a 04:39:02 21 moment and look at the '101 patent. 22 In the '101 patent, in your opinion, does 23 the reproduction start time in claim 1 require a 24 session participation request? 25 A. I don't know, because one would look at the 04:39:24 Page 169

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1 whole patent specification to understand whether or 2 not an intrinsic definition is given or whether or 3 not there's a disclosure that might support such an 4 idea or not, and that's not an analysis I've done. 5 Q. Does Chou disclose a session participation 04:39:54 6 request? 7 A. I don't know because I haven't looked at 8 that before. 9 Q. So if claim 1 were to have required a 10 session participation request, you have not analyzed 04:40:05 11 whether or not Chou discloses that, correct? 12 MR. SHARMA: Objection, form. 13 THE WITNESS: You're asking me to provide 14 answers on things that I have not had an opportunity 15 to look at, so I just don't know. 04:40:20 16 BY MR. KNIERIM: 17 Q. Another difference between the claim 18 language and this proposed construction in 19 Exhibit 2013 on page 29 is that the proposed 20 construction has the word "first" in it. 04:40:33 21 Do you see that? 22 A. The word, what, sorry? 23 Q. "First." 24 A. I see that the word "first" is there, yes. 25 Q. In your analysis in your declaration of 04:40:51 Page 170	1 A. I've considered everything that the 2 '101 patent discloses. 3 Q. And you don't know whether or not the 4 purpose of the '101 patent is to update the code 5 rate of the content data being transmitted from the 04:42:28 6 server to the terminal before the reproduction of 7 the content begins? 8 MR. SHARMA: Objection, form, outside the 9 scope. 10 THE WITNESS: I didn't offer an opinion on 04:42:39 11 that. It was not -- it wasn't part of the analysis 12 that I did for the claims. 13 BY MR. KNIERIM: 14 Q. In paragraph 72 of Exhibit 2013, it also 15 says: "Once reproduction starts, the purpose of the 04:42:55 16 '101 patent ends and, as a result, the specification 17 does not address such a scenario." 18 Do you see that? 19 A. I see that. 20 Q. Do you agree -- 04:43:06 21 MR. SHARMA: Outside the scope. 22 THE WITNESS: I don't know. 23 BY MR. KNIERIM: 24 Q. You, again, have considered the purpose of 25 the '101 patent, correct? 04:43:13 Page 172
1 claim 1 of the '101 patent, have you opined that 2 that term requires the word "first" in it? 3 A. I don't believe I provided any opinion one 4 way or the other on it. 5 Q. Look at paragraph 72 of Exhibit 2013. 04:41:15 6 A. It's kind of muffled. It's a little bit 7 hard to hear. 8 Q. Let me move my documents. Paragraph 72 of 9 Exhibit 2013. 10 A. So just scrolling down a little bit you 04:41:37 11 mean? 12 Q. Yes. It reads: "The purpose" -- and I'm 13 reading in part, "the purpose of the invention 14 disclosed in the '101 patent is to update the code 15 rate of the content data being transmitted from the 04:41:56 16 server to a terminal before the reproduction of 17 content begins?" 18 Do you see that? 19 A. I see that. 20 Q. Do you agree? 04:42:05 21 MR. SHARMA: Objection, outside the scope. 22 THE WITNESS: I don't know. 23 BY MR. KNIERIM: 24 Q. You've considered the purpose of the 25 '101 patent in forming your opinions? 04:42:13 Page 171	1 A. I read the '101 patent specification all the 2 way through more than once. 3 Q. And you don't know one way or the other 4 whether the purpose of the '101 patent ends after 5 production starts? 04:43:30 6 MR. SHARMA: Objection, form, outside the 7 scope, asked and answered. 8 THE WITNESS: I don't have an opinion on 9 that. 10 BY MR. KNIERIM: 04:43:40 11 Q. In paragraph 72, it also says: "Therefore 12 the term 'reproduction start time' as employed in 13 the claims of the '101 patent refers to the start 14 time when the content (e.g., a movie) is first 15 played after the server starts to transmit the 04:43:52 16 content to the terminal." 17 Do you see that? 18 A. I see that. 19 Q. Do you agree? 20 MR. SHARMA: Same objection. 04:43:59 21 THE WITNESS: I don't know. 22 BY MR. KNIERIM: 23 Q. Paragraph 72 continues and it says: "It 24 refers to one instant of time when the content is 25 first played and not a series of time instants when 04:44:12 Page 173

1 portions of content, (i.e., content data or 2 segments) are sequentially played by the terminal 3 device. Thus, the terms in the claim implies one 4 reproduction time." 5 Do you see that? 04:44:27 6 A. I see that. 7 Q. Do you believe that the term "reproduction 8 start time" in the claims implies only one 9 reproduction time? 10 MR. SHARMA: Objection, form, outside the 04:44:35 11 scope. 12 THE WITNESS: I don't have an opinion on 13 that. 14 BY MR. KNIERIM: 15 Q. You've pointed to multiple reproduction 04:44:39 16 times in Chou, haven't you? 17 A. In Figure 5, for example, we see a staircase 18 that is representing the hypothetical model for 19 multiple frames. 20 Q. Let's look at that, but let's look at your 04:45:10 21 declaration first, paragraph 92, it's on page 39. 22 A. Paragraph 92. 23 Q. Quote, "Thus Chou also teaches the," quote, 24 "reproduction start time," end quote, "which is 25 shown by the," quote, "playback deadline," end 04:45:45 Page 174	1 30 or 60 frames a second, and each of the asterisks 2 represents the point at which one of those frames per 3 second is -- reaches a playback deadline. 4 Q. There are multiple playback deadlines 5 throughout client time, correct? 04:48:01 6 A. You're muffled again. 7 Q. I'm sorry. I missed that last -- oh, I was 8 muffled. Let me ask that again. 9 There are multiple playback deadlines in 10 Chou throughout client's time, correct? 04:48:17 11 A. As shown in Figure 6 as a success of frames. 12 Q. And each one has its own playback deadline? 13 A. They lie on the line that's in a straight 14 line because it's a -- because it's a fixed frame 15 rate playback. 04:48:42 16 Q. I think we're on the same page, I just want 17 to make sure. 18 On the left hand side of Figure 6, you see 19 the first asterisk on the playback deadline line? 20 A. Yes. 04:48:59 21 Q. That would be the playback deadline for the 22 first frame, correct? 23 A. I'm looking at the bottom axis, that's frame 24 zero. 25 Q. And the next asterisk would be frame 1? 04:49:18 Page 176
1 quote, "of Figure 5." 2 Do you see that? 3 A. Yes. 4 Q. And then it says: "Chou states that the 5 playback deadline is the time at which frame n is 04:45:54 6 scheduled to be played." 7 Do you see that? 8 A. Yes. 9 Q. And in Chou Figure 5, frame n is one of 10 multiple frames that each have their own playback 04:46:08 11 deadline, correct? 12 A. Not necessarily. 13 Q. Please explain. 14 A. As an example -- 15 Q. If we look at Chou Figure 6, you'll see 04:46:37 16 that there is a plot of playback deadline. 17 Do you see that? 18 A. Yes. 19 Q. What are each of the asterisks on that line 20 mean? 04:46:49 21 A. You mean on the playback deadline line? 22 Q. Yes. 23 A. The playback deadline illustrated in Chou's 24 Figure 6, the way the Figure 6 is constructed, there 25 is a fixed frame rate, and for example, it could be 04:47:32 Page 175	1 A. Yes. 2 Q. Next asterisk would be frame 2? 3 A. Yes. 4 Q. So each of those frames has its own 5 playback deadline? 04:49:32 6 A. Yes. They are lying on the playback 7 deadline line. 8 MR. KNIERIM: I would like to take a short 9 break and hopefully we can conclude my questioning. 10 THE VIDEOGRAPHER: We're off the record at 04:49:56 11 4:49 p.m. 12 (Recess taken.) 13 THE VIDEOGRAPHER: We're back on the record 14 at 4:55 p.m. 15 BY MR. KNIERIM: 04:55:59 16 Q. Just one last question, Doctor. 17 During any of the breaks today, did you 18 speak with anybody regarding the substance of your 19 testimony? 20 A. No, I didn't. 04:56:07 21 MR. KNIERIM: I have no further questions 22 and pass the witness. 23 MR. SHARMA: Okay. So let's take a break 24 and we'll come back and see if there are any 25 questions. 04:56:19 Page 177

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1 MR. KNIERIM: Sure. How long do you need? 2 MR. SHARMA: Like maybe 30 minutes, and 3 what we can do is message you all when you're back 4 if you get done sooner. 5 MR. KNIERIM: Okay. 04:56:32 6 MR. SHARMA: Would you mind putting me, 7 Rajesh and Janice in a separate room? 8 THE VIDEOGRAPHER: Off the record at 9 4:56 p.m. 10 (A recess taken for 25 minutes.) 04:56:50 11 THE VIDEOGRAPHER: We're back on the record 12 at 5:20 p.m. 13 MR. KNIERIM: Before we get started, I 14 wanted to note for the record that Exhibit 1006 was 15 filed as sealed and is labeled highly confidential 05:20:41 16 and should be treated as such. 17 18 EXAMINATION 19 BY MR. SHARMA: 20 Q. Good afternoon. I know it's a long day and 05:20:53 21 I want to ask you a few questions and I'll try to 22 speak loudly because we are sharing the same 23 microphone, but the request for the court reporter, 24 if you have trouble hearing me, please let me know 25 and I'll repeat my question. 05:21:07 Page 178	1 Chou? 2 A. Correct. 3 Q. And number 2 you specify there are certain 4 claims that are obvious in view of Chou and Wang -- 5 THE REPORTER: I didn't understand the last 05:23:52 6 name. 7 BY MR. SHARMA: 8 Q. Let me ask the question again. 9 Dr. Reader, in paragraph 5 you specify in 10 ground 2 certain claims are obvious in view of Chou 05:24:00 11 combined with Wang, W-a-n-g; is that correct? 12 A. That's correct. 13 Q. Likewise in paragraph 5, you specify in 14 ground 3 certain claims are obvious based on Chou 15 combined with Nobuyoshi? 05:24:19 16 A. Correct. 17 Q. Coming up with your opinions summarized in 18 paragraph 5, did you view all these references from 19 the perspective of a person of ordinary skill as 20 specified in paragraph 68 of your declaration? 05:24:40 21 MR. KNIERIM: Objection to form. 22 BY MR. SHARMA: 23 Q. In coming up with your opinions that are 24 given on paragraph 5 of your declaration, you did 25 not apply any knowledge that would not be available 05:25:14 Page 180
1 Dr. Reader, let me take you to your 2 declaration, Exhibit 1006, and if you don't mind 3 going to page 29, Section V. 4 On paragraph 68 of Exhibit 1001 (sic), what 5 do you state? 05:21:53 6 A. In paragraph 68, it's talking about one of 7 ordinary skill in the art. 8 Q. And here in this paragraph 68 of 9 Exhibit 1001, you describe -- sorry, let me start 10 again. 05:22:12 11 In paragraph 68 of Exhibit 1006, you opine 12 on the skill level of a person of ordinary skill; is 13 that correct? 14 A. That's correct, yes. 15 Q. And do you agree with the definition given 05:22:23 16 in paragraph 68? 17 A. Yes. 18 Q. Let's go back to paragraph 5 of your 19 declaration. 20 A. I'm there. 05:22:56 21 Q. And you opine, you give a summary of your 22 opinions in paragraph 5; is that correct? 23 A. Yes. 24 Q. And you mention that certain claims as 25 specified on paragraph 5 are obvious in view of 05:23:11 Page 179	1 to a person of ordinary skill in the art at the time 2 of the invention of the '101 patent; is that 3 correct? 4 MR. KNIERIM: Objection to form and 5 leading. 05:25:26 6 THE WITNESS: That's correct. 7 BY MR. SHARMA: 8 Q. I'm just flipping through, Dr. Reader, give 9 me a minute. Let's go to page 34 of your 10 declaration, Exhibit 1006. 05:26:26 11 A. I'm there. 12 Q. Section E is entitled: "The Examiner Erred 13 By Allowing the Challenged Claims," and has two 14 paragraphs in there, paragraph 81 and paragraph 82. 15 Do you see that? 05:26:48 16 A. Yes. 17 Q. In paragraph 82 you state: "The Examiner 18 erred in allowing the '101 patent. Neither Chou nor 19 Wang were before the U.S. Examiner." 20 Do you see that? 05:27:03 21 A. Yes. 22 Q. Did I read those two sentences correctly? 23 A. I think so. 24 Q. In the previous paragraph, you were asked a 25 few questions on paragraph 51. 05:27:16 Page 181

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1 Do you remember that? 2 A. Yes, I do. 3 Q. There is reference to a patent, U.S. 4 Publication to Walker in paragraph 51. 5 Do you see that? 05:27:26 6 A. Yes. 7 Q. And just to make the record clear, did you 8 testify earlier today the reference to "Walker" in 9 paragraph 51 was an error? 10 A. I believe that's correct, yes. 05:27:38 11 Q. And feel free to look at the exhibit list, 12 but did you rely on the Walker reference in 13 rendering any of your opinions in the declaration? 14 A. I think I checked it earlier and I'm just 15 rechecking, but I think something called Walker 05:28:02 16 doesn't appear in that list. I don't think it's 17 there, no. 18 Q. Now that you know that paragraph 51 has a 19 mistaken reference to Walker publication, does your 20 opinion offered in Exhibit 1006 alter in any manner? 05:28:30 21 A. No, it's not. 22 Q. Let's go to page 44 of your declaration, 23 Exhibit 1006. 24 A. I'm there. 25 Q. There is a Section VIII entitled: "Claim 05:28:59 Page 182	1 declaration you mentioned the second sentence -- 2 before I begin, let me start with paragraph 107. 3 You state: "Additionally, it is my understanding 4 Patent Owner has served Infringement Contentions in 5 the related District Court Case." And cites to 05:30:18 6 Exhibit 1031. 7 Do you see that? 8 A. Yes, I do. 9 Q. You can look at your exhibit list. It 10 lists Exhibit 1031. 05:30:29 11 MR. KNIERIM: Objection, outside the scope. 12 BY MR. SHARMA: 13 Q. Page 3 of your declaration. 14 A. I see that. 15 Q. You see on top of page 3 in the list of 05:30:46 16 exhibits, it says, Exhibit 1031, and NEC's 17 infringement contentions served in, and then it 18 references the pending district court litigation. 19 Do you see that? 20 A. Yes, I see that. 05:31:01 21 Q. And in forming your opinions in this 22 declaration, did you consider NEC's infringement 23 contentions? 24 MR. KNIERIM: Objection, outside the scope. 25 THE WITNESS: I think as I testified, there 05:31:12 Page 184
1 Construction," with two paragraphs, 106 and 107. 2 Are you there? 3 A. Yes. 4 Q. Earlier today counsel for NEC asked you 5 some questions regarding paragraph 106 today. 05:29:12 6 A. Yes. 7 Q. Do you remember that? 8 A. I do. 9 Q. And in that line of questioning, the 10 counsel for NEC did not direct your attention to 05:29:20 11 paragraph 107. 12 Do you remember that? 13 MR. KNIERIM: Objection to form. 14 THE WITNESS: Yes. 15 BY MR. SHARMA: 05:29:32 16 Q. Why don't you look at paragraph 107, and I 17 have a couple of questions on that, and please let 18 me know when you've read paragraph 107? 19 MR. KNIERIM: I'll object to this entire 20 line of questioning because as you've established, 05:29:42 21 Counsel, I did not ask the witness about 22 paragraph 107, and therefore, it is outside the 23 scope of my questioning. 24 BY MR. SHARMA: 25 Q. As mentioned paragraph 107 of your 05:30:01 Page 183	1 are extracts from the infringement contentions in my 2 declaration and I considered those. I think I 3 testified to that earlier today. 4 BY MR. SHARMA: 5 Q. And also subsequently in paragraph 107, you 05:31:31 6 state that, and I'll quote in part: "My analysis of 7 limitations of certain Challenge Claims is 8 consistent with Patent Owner's assertion of 9 infringement against Petitioner's product." 10 And then you state that: "As shown in the 05:31:52 11 excerpted portions of NEC's Infringement Contentions 12 (EX1031) copied below." 13 Do you see that? 14 A. Yes, I see that. 15 MR. KNIERIM: Objection, outside the scope. 05:32:06 16 BY MR. SHARMA: 17 Q. Is this a reference to the infringement 18 contentions you mentioned just now that excerpted 19 later in your declaration? 20 A. Yes, that's what I analyzed. It's in my 05:32:13 21 declaration, yes. 22 Q. In summary, sir, did you rely on NEC's 23 infringement contentions in evaluating whether the 24 claims of '101 patent are rendered obvious by the 25 prior art cited in your declaration? 05:32:36 Page 185

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1 MR. KNIERIM: Objection to form, outside 2 the scope. 3 THE WITNESS: In the claim limitations in 4 which they're included, and I think in each case in 5 offering opinions regarding means for assumption, 05:32:52 6 then yes, I was relying on those infringement 7 contentions that are cited. 8 BY MR. SHARMA: 9 Q. You were shown declaration of Dr. Almeroth 10 earlier today, Exhibit 2031, if I'm not mistaken. 05:33:23 11 Sorry, Exhibit 2013. 12 A. Yes. 13 Q. And you had not reviewed or seen that 14 declaration before your deposition today; is that 15 correct? 05:33:38 16 A. I think that's correct. 17 Q. And have you spoken to Dr. Almeroth 18 regarding claim construction issues in this 19 litigation? 20 A. No, I don't know him. 05:33:52 21 Q. So the answer is you have not spoken to 22 him; is that correct? 23 A. I have not -- 24 MR. KNIERIM: Objection, leading. 25 /// Page 186	1 A. I've read that. 2 Q. Let me also ask you a few questions of 3 paragraph 90 also. So I request you read 4 paragraph 90 also. 5 A. I've read that. 05:37:21 6 Q. What you describe -- 7 THE REPORTER: I'm sorry. Can you say that 8 again. 9 BY MR. SHARMA: 10 Q. At a high level, what do you describe in 05:37:31 11 paragraph 90 of your declaration? 12 A. Paragraph 90 concerns Chou and determining 13 the code rate, and then that code rate is based on 14 two things, one of which is based on a further thing, 15 but the two things that determining the code rate is 05:38:03 16 based on are remaining time and an available time. 17 And then the available time is in turn based on what 18 it says is the content data stored in the client's -- 19 THE REPORTER: In the client's what? 20 THE WITNESS: The client's decoder buffer. 05:38:27 21 BY MR. SHARMA: 22 Q. And then in paragraph 90 you mention early 23 on that the first is based on remaining time before 24 reproduction start time, and you mention playback 25 deadline set as the time at which the reception 05:38:49 Page 188
1 BY MR. SHARMA: 2 Q. Have you spoken to Dr. Almeroth regarding 3 any part of the litigation between NEC and Peloton? 4 A. No, I haven't. 5 Q. You were asked earlier today about certain 05:34:18 6 opinions on claim construction about the terms in 7 '101 patent. 8 Do you recall that? 9 A. Yes. 10 Q. And the paragraphs you state in Section 05:34:30 11 VIII entitled, "Claim Construction" specifically 12 paragraphs 107 and 106, are replicable to the claim 13 construction opinions you rendered as part of this 14 declaration; is that correct? 15 (Cross talk.) 05:34:49 16 MR. KNIERIM: Objection to form and 17 leading. 18 BY MR. SHARMA: 19 Q. When you reviewed -- strike that. Let me 20 take you to a different portion of your declaration. 05:35:38 21 Let's go to paragraph 91 of your declaration. 22 A. I'm there. 23 Q. Long paragraph, why don't you take a few 24 minutes to read through paragraph 91, and then I 25 have a few questions to ask you on paragraph 91. 05:36:14 Page 187	1 device of the content from the present moment media 2 time. 3 Do you see that? 4 A. Yes. 5 Q. What does the term "playback deadline" 05:39:04 6 refer to over there? 7 A. Playback deadline is the deadline -- the 8 point in time at which a frame must be presented -- 9 must be reproduced and presented. 10 Q. And that's consistent with the testimony 05:39:30 11 you gave earlier this morning, correct? 12 MR. KNIERIM: Objection, form and leading. 13 BY MR. SHARMA: 14 Q. And in the second half of paragraph 90, you 15 mention, and I quote over here: "And based on an 05:39:42 16 available reproduction time," and in double quotes 17 you mention, ("buffer duration"), which is a time 18 available for reproducing the content based on the 19 content data stored in the storage device," and you 20 mention, "(client's decoder buffer) of the reception 05:40:05 21 device." 22 Do you see that? 23 A. Yes. 24 Q. What does the term "buffer duration" in 25 paragraph 90 refer to? 05:40:12 Page 189

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1 A. That refers to the amount of time that's 2 available to reproduce the content that is stored in 3 the buffer. 4 Q. Let's go to paragraph 91. In paragraph 91, 5 first sentence you mention: "More specifically, 05:40:44 6 Chou teaches an," quote, "available reproduction 7 time," end quote, "in that the client of Chou has a 8 client buffer and," quote, "the size of the client 9 buffer can be expressed as a number of seconds of 10 content in the buffer, called the buffer duration," 05:41:08 11 end quote. And you cite to Exhibit 1004, 12 paragraph 7. 13 Do you see that? 14 A. Yes, I see that. 15 Q. Let's go to paragraph 7 of Chou. 05:41:24 16 A. Okay. I'm there. 17 Q. You see the quote in paragraph 91 of your 18 declaration is from paragraph 7 of the Chou 19 publication. 20 Do you see that? 05:42:22 21 A. Yes, I see that. 22 Q. Later on in the second sentence, you 23 mention as shown in Figure 5: "Frames arrive at the 24 client between the upper and lower bounds, in an," 25 quote, "arrival schedule," end quote. 05:42:51 Page 190	1 A. That's correct. 2 Q. Let's go back to paragraph 91 again of your 3 declaration, and paragraph 91 ends stating: 4 "Accordingly, in Figure 5, the gap between the 5 arrival schedule and the playback deadline is the 05:44:58 6 buffer duration equivalent to the available 7 reproduction time." 8 Do you see that? 9 A. Yes. 10 Q. Did I read that correctly? 05:45:11 11 A. Yes. 12 Q. And then you cite to Exhibit 1004, which is 13 Chou, and you also cite to paragraph 67 and 14 paragraph 5. 15 Do you see that? 05:45:22 16 A. And Figure 5. 17 Q. And Figure 5. 18 A. Yes. 19 Q. In this paragraph, you state that the gap 20 between the arrival schedule and the playback 05:45:35 21 deadline is the buffer duration, and it's also 22 equivalent to the available reproduction time; is 23 that correct? 24 A. That's what it states. 25 Q. If you go to Figure 5 of Chou. 05:45:51 Page 192
1 Do you see that? 2 A. Yes. 3 Q. And after that you cite to Exhibit 1004, 4 paragraph 67 and Figure 5. 5 A. Yes, I see that. 05:43:03 6 Q. And if you go to -- let's continue over 7 here. In the next sentence you mention: "Chou 8 states that," quote, "the gap between a frame's 9 arrival time and its playback deadline is the client 10 buffer duration at the time of the frame arrival," 05:43:28 11 end quote. 12 A. Yes. 13 Q. And then you cite again to Exhibit 1004, 14 paragraph 67 and Figure 5. 15 A. Correct. 05:43:40 16 Q. And let's go to Chou publication and go to 17 paragraph 67. Paragraph 67 is on page 8 of Chou, 18 and if you see the last sentence of paragraph 67 on 19 page 8, it reads: "Thus gap between a frame's 20 arrival time and its playback deadline is the client 05:44:18 21 buffer duration at the time of the frame arrival." 22 Do you see that? 23 A. Yes. 24 Q. And that's the portion of paragraph 67 that 25 you're quoting in your declaration in paragraph 91? 05:44:32 Page 191	1 A. Yes. 2 Q. In Figure 5 of Chou, if you look at the 3 straight line on the top, this is slope 1 over v and 4 on the top it says the "playback deadline." 5 Do you see that? 05:46:21 6 A. Correct. 7 Q. So in Figure 5 playback deadline is a 8 straight line all the way on the left; is that 9 correct? 10 A. Yes. 05:46:29 11 Q. And then in Figure 5 there is a staircase 12 pattern in the middle, which is to the left of the 13 playback deadline. 14 Do you see that? 15 A. Can you ask that question again, please. 05:46:43 16 Q. Let me ask again. In Figure 5, do you see 17 a staircase pattern? 18 A. I see a staircase in Figure 5. 19 Q. How does Figure 5 label the staircase 20 pattern? 05:46:57 21 A. That's labeled the "arrival schedule." 22 Q. If you look at the dotted lines, and if you 23 see the top corner of Figure 5, the subscript d 24 sub d(n). 25 Do you see that? 05:47:19 Page 193

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1 A. Yes. 2 Q. Is that the row fresh time to the playback 3 deadline; is that correct? 4 A. That's correct. 5 Q. And if you look at the dotted lines on the 05:47:27 6 left side subscript d, sub a and (n) within 7 parentheses. 8 Do you see that? 9 A. Yes. 10 Q. And d sub a points to a point on the 05:47:40 11 staircase pattern. 12 Do you see that? 13 A. Yes. 14 Q. What does d sub d(n) in Figure 5 depict? 15 A. I'm sorry. Repeat the question so I can 05:47:55 16 hear it clearly. 17 Q. No problem. 18 What does the subscript d sub d(n) within 19 parentheses depict in Figure 5? 20 A. So t sub d of (n) is the playback deadline 05:48:10 21 for the frame that occurs on the staircase where the 22 dotted line goes to. 23 Q. And Figure 5, what does d sub a within 24 parentheses (n) depict? 25 A. That's depicting the top of that step in the 05:48:34 Page 194	1 Q. Does the reference to arrival schedule in 2 paragraph 91 is a reference to the staircase pattern 3 in Figure 5 of the Chou patent? 4 A. Yes, it is. 5 Q. And likewise the reference to playback 05:50:13 6 deadline in paragraph 91 of your declaration is a 7 reference to the playback deadline in Figure 5; is 8 that correct? 9 A. Yes. The sentence begins "accordingly, in 10 Figure 5," and that's what those are referring to. 05:50:32 11 Q. Then the difference between the playback 12 deadline and the arrival schedule is the buffer 13 duration in Chou? 14 A. That's right, that's what it says. 15 Q. And then you state in paragraph 91 is 05:50:51 16 equivalent to the available reproduction time of 17 claim 1 of '101 patent; is that correct? 18 A. That's what this states. 19 Q. Is this the understanding that is shown in 20 Figure 91 that you applied in your rendering, your 05:51:09 21 opinions in this declaration? 22 MR. KNIERIM: Objection to form. 23 THE WITNESS: Yes, it is. 24 BY MR. SHARMA: 25 Q. Let me go to paragraph 143 of your 05:51:22 Page 196
1 staircase and that's the time of arrival of that 2 frame n. 3 Q. And in paragraph 91 of your declaration in 4 the last sentence you mention about a gap. 5 Do you see that? 05:48:59 6 A. Yes. 7 Q. Does the reference to arrival schedule in 8 paragraph 91 same as the playback deadline in 9 Figure 5? 10 MR. KNIERIM: Objection to form. 05:49:12 11 THE WITNESS: That's correct. 12 BY MR. SHARMA: 13 Q. And the reference -- and I make a mistake. 14 Let me ask the question again. 15 In 91, in paragraph 91 of your declaration 05:49:29 16 in the last sentence you mention about a schedule. 17 Is the reference to -- 18 THE REPORTER: The reference to what 19 schedule? 20 BY MR. SHARMA: 21 Q. Let me start again. In paragraph 91 in the 22 last sentence there is a reference to arrival 23 schedule. 24 Do you see that? 25 A. Yes. 05:49:56 Page 195	1 declaration. I'm sorry, paragraph 153 of your 2 declaration on page 73? 3 A. I'm there. 4 Q. You were asked a few questions on paragraph 5 153 earlier today. 05:51:49 6 Do you recall that? 7 A. A few questions, yes. 8 Q. Having reviewed paragraph 91, let's look at 9 paragraph 153 and there was a reference in first 10 paragraph 153, and I'll read portions of it. It 05:52:06 11 says: "The time between a playback deadline of a 12 frame and its arrival time. (Td(n) minus ta(n) is 13 the remaining time before the frame is to be played 14 from its arrival time." 15 Do you see that? 05:52:31 16 A. I see that. 17 Q. And you have correction earlier today 18 regarding this word "remaining time," do you recall 19 that? 20 A. Yes. 05:52:39 21 Q. What was the correction? 22 A. I said it's the timing left. 23 Q. So the appropriate reading would be: "The 24 time between a playback deadline of a frame and its 25 arrival time. (Td(n) minus ta(n)) is the time left 05:52:54 Page 197

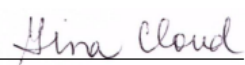
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1 before the frame is to be played from its arrival 2 time." 3 Do you see that? 4 A. Yes. 5 Q. And if you read paragraph 91 and 153 05:53:07 6 together? 7 MR. KNIERIM: Objection to form. I'm not 8 sure there is a question there. 9 BY MR. SHARMA: 10 Q. Do you have paragraph 91 and 153 with you? 05:53:30 11 A. I've got the two paragraphs, yes. 12 Q. If you look at the phrase from 153 between 13 a playback deadline of a frame and its arrival time, 14 is that the same as the buffer duration in 15 paragraph 91? 05:53:49 16 MR. KNIERIM: Objection to form. 17 THE WITNESS: Yes, that's correct. 18 BY MR. SHARMA: 19 Q. The first sentence of paragraph 153 that 20 begins with: "Therefore, any time," and goes on it 05:54:08 21 says: "Played from its arrival time." The first 22 sentence, is that consistent with your opinion in 23 paragraph 91? 24 MR. KNIERIM: Objection, form. 25 THE WITNESS: Yes, it's correct. Yes, it 05:54:24 Page 198	1 Q. And that is a quote from paragraph 67 of 2 the Chou publication; is that correct? 3 A. Yes, I think I read that earlier today. 4 Q. In the sentence when you say this time is 5 referred to by Chou, are you referring to the time 05:56:00 6 described in paragraph 67 of the Chou reference? 7 MR. KNIERIM: Objection to form and 8 leading. 9 THE WITNESS: So you're referring back to 10 the sentence at the bottom of page 73? 05:56:24 11 BY MR. SHARMA: 12 Q. Yes. 13 A. Yes, that's correct. Yes. 14 Q. And then you conclude paragraph 153 15 stating: "Thus, Chou teaches the," quote, "an 05:56:37 16 available reproduction time, which is the time 17 available for reproducing the content based on the 18 content data stored in the storage device of the 19 reception device." 20 Do you see that? 05:56:59 21 A. Yes. I think you read the available time 22 and it's an available reproduction time. 23 Q. With that correction -- I -- 24 A. Yes. 25 Q. And is your conclusion in paragraph 153 05:57:11 Page 200
1 is. 2 BY MR. SHARMA: 3 Q. Now let's look at the last sentence of 4 paragraph 153 on page 73. Are you there? I'm 5 looking at the last sent -- 05:54:39 6 A. The last sentence on the page, okay. 7 Q. Reading the last sentence on page 73, 8 paragraph 153 of the declaration, it states: "This 9 time is referred to by Chou as the client buffer 10 duration, or simply buffer duration." 05:54:54 11 Do you see that? 12 A. Yes, I see that. 13 Q. And then you cite to Exhibit 1004, 14 paragraph 62. Do you see that? 15 A. Yes, yes, yes. 05:55:05 16 Q. And next sentence on page 74, you quote 17 from Chou on the top of the page. 18 Do you see that? 19 A. Yes, I see that. 20 Q. And the quote reads: "(The gap between a 05:55:18 21 frame's arrival time and its playback deadline is 22 the client buffer duration at the time of the frame 23 arrival.)" 24 Do you see that? 25 A. Yes, I see that. 05:55:35 Page 199	1 consistent with your opinions in paragraph 91 of 2 your declaration? 3 MR. KNIERIM: Objection to form. 4 THE WITNESS: The two of them are 5 consistent and citing to the same place. 05:57:22 6 BY MR. SHARMA: 7 Q. And the last sentence on paragraph -- 8 page 73, and the sentence being: "This time is 9 referred to by Chou as the client buffer duration or 10 simply the buffer duration." 05:57:45 11 Do you see that sentence? 12 A. Yes. 13 Q. Is this sentence on paragraph 153, 14 consistent with the first sentence of paragraph 153 15 with the correction you suggested earlier? 05:57:56 16 MR. KNIERIM: Objection to form. 17 THE WITNESS: Yes, it is, thank you. 18 BY MR. SHARMA: 19 Q. And in rendering any opinion about 20 available reproduction time as disclosed in any of 05:58:12 21 the references, did you apply the understanding you 22 have disclosed in paragraph 91 of your declaration? 23 MR. KNIERIM: Objection to form. 24 THE WITNESS: Yes. 25 /// Page 201

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1 BY MR. SHARMA: 2 Q. You were asked many questions today and you 3 reviewed a bunch of documents and your declaration 4 during the questioning from NEC; is that correct? 5 A. Yes. 05:59:15 6 Q. And based on your deposition today and 7 putting aside minor corrections and errors that we 8 discussed in the reported to, did you have opinion 9 change in any manner that you rendered in your 10 declaration? 05:59:32 11 A. No, they have not. 12 MR. SHARMA: That's all the questions we 13 have. 14 MR. KNIERIM: I just have a couple. 05:59:38 15 FURTHER EXAMINATION 16 BY MR. KNIERIM: 17 Q. Doctor, during the last break, your counsel 18 requested a Zoom breakout room. Were you present 19 for any of the discussions during that break? 05:59:50 20 A. No, he asked me to leave the room and I went 21 out to the lobby. 22 Q. To be clear, during that last break you did 23 not have any discussions with your counsel about the 24 substance of your testimony? 06:00:02 Page 202	1 clarifies this paragraph for me. 2 Q. Let me ask you a question I asked you 3 earlier, which is why is it that you are citing 4 Chou, paragraph 74, quote: "The gap between the 5 playback deadline and the target schedule is the 06:02:12 6 desired client buffer duration in client time," end 7 quote, here in paragraph 153? 8 A. As I discussed with you earlier, I 9 emphasized that the word "desired" is in the middle 10 of the paragraph there. You see that? It says: 06:02:32 11 "The gap between the playback deadline and the target 12 schedule is the desired client buffer duration," and 13 I distinguished that from the, as it says at the 14 bottom, simply buffer duration. 15 So when I was discussing it with you before, 06:02:54 16 I was discussing the fact that if you turn back to 17 the previous page, what we're concerned with here is 18 determining a code rate that's based on the available 19 reproduction time and I was trying to tell you this 20 control feedback loop mechanism that Chou uses. 06:03:19 21 So I think I was answering a much -- 22 thinking I was answering a much more complicated 23 question than the simple question that you had asked. 24 Q. Is it still your opinion that the target 25 buffer duration $t_{sub\ d} - t_{sub\ capital\ T}$ is an 06:03:52 Page 204
1 A. That's correct. 2 Q. Counsel just asked you about paragraph 153 3 of your declaration. 4 Do you recall that? 5 A. Yes. 06:00:17 6 Q. And he asked you whether in the last 7 sentence on page 73, quote, "this time" refers to 8 what's disclosed in paragraph 67 of Chou. 9 Do you recall that? 10 A. That's what the sentence states. 06:00:40 11 Q. My question though is how come when I asked 12 you earlier, you couldn't answer that question? 13 A. This paragraph, as you know, contains the 14 error that we corrected and I think when you were 15 asking me earlier, I was -- excuse me. When I was 06:01:05 16 discussing it with you earlier, I believe I gave 17 correct answers, but it took me quite a while to 18 parse through the language here to do so. I 19 apologize. 20 Q. And so sitting here now, you believe that 06:01:31 21 you have completely parsed through the language in 22 paragraph 153? 23 A. Right, we've talked about -- particularly, 24 we talked about the first sentence and the last 25 sentence in this discussion now and clearly that 06:01:47 Page 203	1 available reproduction time within the medium of 2 claim 1? 3 A. I think that the simple understanding of 4 Chou is that the available production time is the 5 $t_{d\ of\ (n)} - t_{a\ of\ (n)}$. 06:04:18 6 When I was talking to you earlier today, I 7 was talking about how Chou uses a subset of the 8 available time in order to determine the code rate. 9 Q. You were just asked also about paragraph 7. 10 Let's take a quick look at that. Paragraph 7 of 06:04:46 11 Exhibit 1004. 12 A. Paragraph 7 did you say? 13 Q. Yes. Do you recall being asked about 14 paragraph 7? 15 A. I see paragraph 7. Can you tell me the 06:05:12 16 question, please. 17 Q. The question is first you see that it is 18 under a header called "Background Art"? 19 A. Yes, I see that. 20 Q. What do you make of that? 06:05:24 21 MR. SHARMA: Objection, form. 22 THE WITNESS: I think that the first 23 sentence expresses something that was true in the 24 background and it's true in the foreground, too. 25 The size of the client buffer can be expressed as 06:06:24 Page 205

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1 the number of second of content in the buffer called 2 the buffer duration. That's a true statement. 3 BY MR. KNIERIM: 4 Q. In your opinion, is paragraph 7 of Chou 5 part of Chou's invention? 06:06:39 6 A. No. He's setting the background here that 7 that may be historically available property that Chou 8 uses, but that's there. 9 MR. KNIERIM: Okay. Thank you. 10 No further questions. 06:06:59 11 MR. SHARMA: No further questions. 12 THE REPORTER: Do you need a copy? 13 MR. KNIERIM: Should we go off the record? 14 MR. SHARMA: Off the record. 15 THE VIDEOGRAPHER: Before we go off the 06:07:16 16 record, Mr. Knierim, would you like your video 17 synched with the transcript? 18 MR. KNIERIM: I have no idea. I think we 19 should have a standing order or if you wouldn't mind 20 reaching out to our paralegal, he can get you all 06:07:27 21 the details you need. 22 THE VIDEOGRAPHER: That's fine, thank you. 23 Here ends Media Unit 3 of 3. 24 We are off the record at 6:07 p.m. 25 (The deposition was concluded at 6:07 p.m.) 06:07:37 Page 206	1 I, GINA M. CLOUD, a certified shorthand 2 reporter for the State of California, do hereby 3 certify: 4 that prior to being examined, the 5 witness named in the foregoing deposition, was by me 6 duly sworn to testify the truth, the whole truth, 7 and nothing but the truth pursuant to Section No. 8 2093 of the Code of Civil Procedure; 9 That said deposition was taken before 10 me pursuant to notice, at the time and place therein 11 set forth, and was taken down by me in shorthand and 12 thereafter reduced to typewriting via computer-aided 13 transcription under my direction; 14 I further certify that I am neither 15 counsel for, nor related to, any party to said 16 action, nor in anywise interested in the outcome 17 thereof. 18 IN WITNESS WHEREOF, I have hereunto 19 subscribed my name this 21 day of May, 20 2024. 21 22  23 GINA M. CLOUD 24 CSR No. 6315 25 Page 208
1 DECLARATION 2 3 4 I hereby declare I am the deponent in 5 the within matter; that I have read the foregoing 6 deposition and know the contents thereof, and I 7 declare that the same is true of my knowledge except 8 as to the matters which are therein stated upon my 9 information or belief, and as to those matters, I 10 believe it to be true. 11 I declare under the penalties of 12 perjury of the state of California that the 13 foregoing is true and correct. 14 executed on the ____ day of _____ 15 2024, at _____, California. 16 17 18 19 20 _____ 21 CLIFFORD READER PH.D. 22 23 24 25 Page 207	1 CLIFFORD READER PH.D. 2 asharma@cov.com 3 May 21, 2024 4 RE: PELOTON INTERACTIVE, INC. vs. NEC CORPORATION 5 MAY 16, 2024-CLIFFORD READER PH.D.-JOB NO.6704122 6 The above-referenced transcript has been 7 completed by Veritext Legal Solutions and 8 review of the transcript is being handled as follows: 9 ___ Per CA State Code (CCP 2025.520 (a)-(e)) – Contact Veritext 10 to schedule a time to review the original transcript at 11 a Veritext office. 12 ___ Per CA State Code (CCP 2025.520 (a)-(e)) – Locked .PDF 13 Transcript - The witness should review the transcript and 14 make any necessary corrections on the errata pages included 15 below, notating the page and line number of the corrections. 16 The witness should then sign and date the errata and penalty 17 of perjury pages and return the completed pages to all 18 appearing counsel within the period of time determined at 19 the deposition or provided by the Code of Civil Procedure. 20 Contact Veritext when the sealed original is required. 21 ___ Waiving the CA Code of Civil Procedure per Stipulation of 22 Counsel - Original transcript to be released for signature 23 as determined at the deposition. 24 ___ Signature Waived – Reading & Signature was waived at the 25 time of the deposition. Page 209

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