

Transcript of Christopher Hansen, Ph.D.
Conducted on November 29, 2023

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2 (5 to 8)

5 1 EXHIBITS 2 3 EXHIBIT DESCRIPTION PAGE 4 5 EXHIBIT 1 IEEE P802.11 Wireless LANs 12 6 dated March 2005 7 8 EXHIBIT 2 New Participant Orientation 26 9 Bates-stamped INTEL-1038 10 11 EXHIBIT 3 Printout from 40 12 https://mentor.ieee.org/802.11/ 13 documents?n=38&is_group=000n 14 15 16 17 18 19 20 21 22 23 24 25	7 1 CHRISTOPHER HANSEN, PhD, 2 having been administered an oath, was examined and 3 testified as follows: 4 5 EXAMINATION 6 BY MR. HINDMAN: 7 Q Good morning, Dr. Hansen. How are you? 8 A Good. 9 Q I'm sure you understand why you're here 10 today, correct? 11 A Uhm... 12 Q The deposition regarding topics in your 13 subpoena, correct? 14 A Yes. I received a subpoena, correct. 15 Q And I believe you've been deposed before; 16 is that correct? 17 A Yes, I've been deposed before. 18 Q And so you know the general rules of a 19 deposition. You understand that you're under oath, 20 correct? 21 A Yes. 22 Q And same as if you were at a trial in a 23 courthouse with a judge and jury, you have to tell 24 the truth. 25 Do you understand that?
6 1 Palo Alto, California 2 November 29, 2023 10:08 a.m. 3 4 THE VIDEOGRAPHER: Here begins Media 5 Number 1 in the videotaped deposition of Christopher 6 J. Hansen in the matter of AX Wireless LLC versus 7 Dell Inc., et al. in the court of the United States 8 District Court for the Eastern District of Texas, 9 Marshall Division, Case Number 10 2:22-cv-00277-RWS-RSP. 11 Today's date is November 29th. The time 12 on the video monitor is 10:08 a.m. The videographer 13 today is Johanna Lopez representing Planet Depos. 14 This video deposition is taking place at 15 3150 Porter Drive, Palo Alto, California 94304. 16 Would counsel please voice-identify 17 themselves and state whom they represent. 18 MR. HINDMAN: This is Matthew Hindman with 19 Perkins Coie for Defendants Dell Incorporated and 20 Dell Technologies Incorporated. 21 MR. MAKKER: Amit Makker from 22 Latham & Watkins on behalf of Plaintiff AX Wireless. 23 THE VIDEOGRAPHER: The court reporter 24 today is Lori Stokes representing Planet Depos. 25 The witness will now be sworn.	8 1 A Yes, uh-huh. 2 Q All right. And I'm going to ask you some 3 questions. You have to answer audibly. You won't 4 be able to nod or shake your head because the court 5 reporter won't be able to take that down. 6 Is that okay? 7 A Yes. 8 Q And we can take a break at any time, so 9 please feel free to let me know if you need a break. 10 I would appreciate if you answer the question first 11 if we have a pending question. 12 Is that okay? 13 A Yes. 14 Q All right. And also opposing counsel is 15 here and may be making some objections from time to 16 time, but you still have to answer the question. 17 Do you understand that? 18 A Yes. 19 Q Okay. I figured you understood all that, 20 but I just wanted to make that clear for the record. 21 So is there any reason today you cannot 22 offer complete and accurate testimony? 23 A Not that I'm aware of. 24 Q Okay. 25 Did you do anything to prepare for today's

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9 1 deposition? 2 A No. 3 Q Okay. 4 So can you briefly summarize your 5 educational background, institutions you attended 6 and the degrees received. 7 A Sure, yes. I have a bachelor's degree in 8 electrical engineering from Rensselaer Polytechnic 9 Institute. I received that in 1987. 10 I have a master's degree in electrical 11 engineering from the University of Massachusetts. I 12 received that in 1989. 13 And I have a PhD in electrical engineering 14 from UCLA, which I received in 1997. 15 Q All right. And what was your focus of 16 your research at UCLA? 17 A Wireless communications. 18 Q Okay. And what company do you work for 19 now? 20 A I work for Covariant Corporation. 21 Q And what is your current role? 22 A I'm president of the company. 23 Q Okay. And how long have you worked in 24 that role? 25 A I believe ten years.	11 1 24 years. 2 Q Okay. 3 So are you currently involved in any 802 4 wireless standards development now? 5 A No, not right now. 6 Q Okay. But you do have standards 7 development in your background, correct? 8 A Yes, that's correct. 9 Q And for about how long would you say? 10 A I've worked on standards since, I believe, 11 1999. 12 Q Okay. 13 A So, yeah, 25 years. 14 Q Do you recall a general list of the 15 different 802.11 standards you've worked on? 16 A Yeah, I can remember some of them. Do you 17 want the whole list? 18 Okay. Yeah, I've worked on 802.11g, 19 802.11h, 802.11n, 802.11ad, 802.11ay, 802.11md, and, 20 you know, I've reviewed and voted on other 802.11 21 amendments, so -- many of them. 22 Q Okay. So quite a substantial bit. 23 A Yes, uh-huh. 24 Q Okay. And regarding 802.11n, do you 25 recall approximately what time period you were
10 1 Q Okay. And what types of work do you do in 2 your current role? 3 A Engineering work. 4 Q Okay. And does your work involve 802.11 5 wireless communications? 6 A Some of my work does, yes. 7 Q How much would you say involves 802.11 8 wireless communications in your current work? 9 A Maybe 90 percent. 10 Q Okay. And so for those 90 percent, what 11 types of activities do you get involved in? 12 A I work in standards development. 13 (Reporter clarification.) 14 THE WITNESS: I work on -- I do some 15 expert witness work. I do technical analysis for 16 companies. 17 BY MR. HINDMAN: 18 Q Okay. Do you work on any systems or 19 products? 20 A I have worked on products, yes. 21 Q Okay. In your past? 22 A Yes, uh-huh. 23 Q Okay. And about how long have you worked 24 with 802.11 communication systems? 25 A Since roughly January of 2000, so almost	12 1 involved with the development of that standard? 2 A I believe it would be roughly from 3 sometime in 2003 until January of 2006. 4 Q Okay. And what was the scope of your 5 involvement in the 802.11 standardization process? 6 (Reporter clarification.) 7 THE WITNESS: For 802.11n, I worked on a 8 proposal and then supporting that proposal through 9 contributions in the standard -- in the 802.11 10 standard. 11 MR. HINDMAN: Okay. 12 All right. I'm going to hand you what 13 we'll mark as Exhibit 1. 14 (Deposition Exhibit 1 was marked 15 for identification.) 16 BY MR. HINDMAN: 17 Q Do you recognize this document? 18 A It appears to be a contribution to 802.11. 19 Q Okay. And was this -- were you involved 20 in parts of generating this document? 21 A Yes, I believe I was involved in 22 developing this document. 23 Q And this document was submitted by the 24 WWiSE industry group; is that correct? 25 A No -- no, I don't think that's correct.

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13 1 Q Okay. What would you -- how would you 2 characterize this document with regard to the WWiSE 3 industry group? 4 A Well, there was a WWiSE industry group at 5 the time this document -- in the 2005 time frame -- 6 that wrote -- you know, wrote a proposal for 7 802.11n. 8 Q Okay. And were you a part of that WWiSE 9 group? 10 A Not -- well, not -- not exactly. My 11 employer was a part of the WWiSE -- WWiSE is an 12 industry group. My employer was part of that group. 13 And as my work, I worked with that group. 14 Q Oh, got you. 15 A I wasn't a member of that group. I mean, 16 it was an industry group; it wasn't an individual 17 group. 18 Q Understood, okay. 19 And what company was that that you were 20 working for at the time? 21 A I was working at Broadcom Corporation at 22 the time. 23 Q Okay. 24 Do you know what WWiSE stands for? 25 A I believe it was an acronym for World-Wide	15 1 Q Okay. Were you involved in any other of 2 these special interest groups during your time 3 working on the 802.11n standard? 4 A I think WWiSE was the only -- at the 5 time -- for the -- during the 802.11n time frame, I 6 think WWiSE was the only SIG group I was working in. 7 (Reporter clarification.) 8 BY MR. HINDMAN: 9 Q If you'll turn to the next page of this 10 document. 11 On about line 28, do you see your name 12 there listed as a contributor? 13 A Yes. 14 Q Do you recall what your specific 15 contributions were to this document? 16 A No. 17 Q Okay. Do you recall generally the types 18 of activities you were involved in? 19 A Some of them. I mean, we had a large 20 number of meetings, and I participated in those 21 meetings. 22 Q Okay. And those meetings were put on by 23 who? 24 A Those -- so these were meetings that were 25 for WWiSE, and we -- the individual companies that
14 1 Spectrum Efficiency, but I'm not certain of that. 2 It's been a long time. 3 Q Okay. Okay. 4 And what is WWiSE as far as you know? 5 A If I remember correctly -- it's been a 6 long time -- but WWiSE was an industry group that's 7 sometimes called a special interest group, or a SIG, 8 that was put together to develop a proposal for 9 802.11n. 10 Q And what -- this proposal that was 11 developed, who was it submitted to? 12 A Well, the -- the proposal was developed 13 and agreed upon within WWiSE, and then -- an 14 individual who was working in the group would then 15 make it as a -- make the proposal as a contribution 16 to 802.11. 17 Q Okay. And that person, would that be a 18 member of the IEEE working group? 19 A Yes, yeah. 20 Q Okay. And what companies were part of the 21 WWiSE group as far as you recall? 22 A As I recall, the membership changed over 23 time, it grew over time. But originally it included 24 Broadcom, a startup company called Airgo Networks, 25 Texas Instruments, and Conexant was also a member.	16 1 were members of WWiSE would host them in different 2 locations. So they would host meetings. 3 Q Okay. And those were for the purpose of 4 developing what's in this document? 5 A That's correct. 6 Q Okay. And about how often were those 7 meetings held? 8 A I think initially they were every month, 9 roughly every month. But it changed somewhat over 10 time. They probably slowed down, at some point, 11 were every two months or so. 12 Q Okay. 13 And this particular WWiSE proposal, was 14 this ever submitted to the Task Group N as far as 15 you know? 16 A Yeah, I believe it -- this particular 17 document -- what's contained in this document, I 18 believe it was. Although, I don't remember, you 19 know, exactly when. 20 I mean, the formatting is, you know, 21 appropriate, and the time period is appropriate 22 for -- 23 Q Okay. 24 A -- being submission into 802.11n. 25 Q And what is the Task Group N?

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17 1 A Task Group N was a group -- a subgroup of 2 the 802.11 working group that was writing an 3 amendment to 802.11 at the time that became called 4 802.11n. That's what the Task Group N was for. 5 Q Okay. And so what was the purpose of 6 submitting documents like the WWiSE proposal to the 7 Task Group N? 8 MR. MAKKER: Objection. Calls for 9 speculation. 10 THE WITNESS: 802.11 -- the Task Group N 11 had a process for developing the 802.11n amendment. 12 And as part of that process, there was -- the group 13 would accept contributions they called proposals 14 that would be candidates or technical candidates for 15 what would become the amendment itself. So this was 16 part of that process. 17 BY MR. HINDMAN: 18 Q Okay. And what did the TGn do with these 19 documents once they were submitted? 20 A So they would be available to be reviewed 21 by the participants in the task group, and then 22 there would be presentations in the meeting, 23 technical discussions about the contents of the 24 contributions and so forth. 25 Q Okay. So -- and these were different	19 1 speculation. 2 THE WITNESS: The contributions were made 3 available to everyone participating in the meeting, 4 yes. 5 BY MR. HINDMAN: 6 Q Okay. And were you aware of other 7 competing proposals at the time? 8 A Yes. 9 Q Can you tell me -- list a few. 10 A So the main competing proposal was one 11 called TGnSync. 12 Q Can you spell that for the record. 13 A Yeah. It's the letters T-G-N-S-Y-N-C. 14 And starting at the beginning of the 15 process, there was also a proposal from Qualcomm, a 16 proposal from -- I believe a proposal from 17 Mitsubishi. 18 And there were numerous what they called 19 partial proposals, which were technical 20 contributions that wouldn't cover the entire 802.11n 21 amendment, but were -- would cover portions of 22 that -- 23 Q Okay. 24 A -- so there were many -- yeah, there were 25 many.
18 1 meetings than the WWiSE meetings? 2 A That's right. These were IEEE802.11 3 standards meetings. 4 Q Okay. And do you recall about how often 5 those meetings were held? 6 A Those meetings were held every two months, 7 so six times a year. 8 Q Okay. And were members of the public free 9 to join in on those meetings? 10 A Yes. 802.11 is what's called an open 11 standards body. But to participate, you would have 12 to pay a registration -- you would have to register 13 beforehand. But it was open to anyone who chose to 14 register and pay the fee. 15 Q Okay. All right. 16 And can you -- what can you tell me about 17 the voting process? 18 A So 802.11n had a voting process for 19 determining -- well, for making -- I would say 20 802.11, in general, has a voting process for making 21 decisions of all kinds. 22 Q Okay. And so were submissions like this 23 WWiSE proposal available to all participants in 24 these meetings? 25 MR. MAKKER: Objection. Calls for	20 1 Q So this particular WWiSE proposal, was 2 this a complete proposal? 3 A Yes. 4 Q Okay. And what about the TGnSync 5 proposal? 6 A Yes, that was also a complete. 7 Q Okay. 8 So I just want to ask you: Who can submit 9 proposals like the WWiSE proposal to the Task Group 10 N? 11 A I believe anyone could submit a proposal. 12 Q Did you have to be a member of the IEEE 13 working group to submit a proposal? 14 A I don't think so. I think it would be 15 possible to register and submit a proposal. In 16 order to vote, you would have to be a voting member, 17 but I don't think to submit a proposal you had to be 18 a voting member. 19 Q Okay. And do you know who could become a 20 member of the 802.11 working group? Were there any 21 restrictions on that? 22 A I'm not aware of any restrictions. It 23 only required attendance at multiple meetings. So 24 there was a process for -- after attending three 25 meetings or something, then you were a voting

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21 1 member. 2 Q Okay. So would it be fair to say that any 3 interested member of the public who attended these 4 meetings could become a member? 5 A Yes. 6 Q Okay. For example, could someone in 7 academia become a member? 8 A Yes. And I think there were -- there 9 were -- I think there still are academic voting -- 10 you know, say, like a college professor who is a 11 member of 802.11, voting member. 12 Q Okay. And what about students? Could 13 students become members? 14 A Yes. 15 Q Were you aware of any students at the time 16 that were members of the 802.11n working group? 17 A I don't recall any -- I don't recall any 18 students being members. 19 Q Okay. What about engineers working on 20 upcoming products? Would they have been interested 21 in becoming members of the 802.11n working group? 22 MR. MAKKER: Objection. Vague. 23 THE WITNESS: Generally, there were many 24 engineers working on products who were members of 25 the 802 --	23 1 time I started working on the standard itself, so 2 working on both simultaneously. 3 BY MR. HINDMAN: 4 Q Okay. So before the product is final, how 5 would engineers know what to -- or before the 6 standard was final, how would engineers know what 7 features to put into the product? 8 A Yeah, there are a number of factors. 9 That's complicated. There are -- the most important 10 feature would have been to understand if it was 11 interoperable with other companies' products. 12 So features that they felt confident other 13 companies would also be implementing in the same way 14 would be -- would tend to point to the features they 15 would develop. 16 Q Okay. And where would they look to find 17 those features that other companies would be 18 developing for the standardization? 19 MR. MAKKER: Objection. Calls for 20 speculation. Lack of foundation. 21 THE WITNESS: That would generally be in 22 both the draft -- one of the draft standards, and 23 then also it would be common company -- 24 representatives of companies would talk to each 25 other.
22 1 BY MR. HINDMAN: 2 Q Okay. Are you familiar with the term 3 "pre-N products"? 4 A I've heard that term before, yes. 5 Q Can you explain your understanding of that 6 term. 7 A Yeah. So the 802.11n standards 8 development took a long time. And before the 9 standard was finalized, there were draft versions of 10 the standard that were -- that were available, and 11 companies designed products to the draft standard, 12 and those were called pre-N products. 13 Q So would it be typical for engineers to 14 begin developing pre-N products before the final 15 standard was ratified? 16 A Yes. Yes, that was common at the time. 17 Q When you were working at Broadcom, did you 18 begin developing any 802.11 products targeted at the 19 802.11n standard before it was officially published? 20 A Yes. 21 Q Okay. Do you know about how long before 22 you would have started working on these products? 23 MR. MAKKER: Objection. Vague. 24 THE WITNESS: Yeah. I don't remember the 25 exact date, but it was probably roughly the same	24 1 MR. HINDMAN: Okay. 2 THE WITNESS: Yeah. 3 BY MR. HINDMAN: 4 Q So about how many draft standards were 5 there for 802.11n, do you recall? 6 A No, I don't recall exactly. 7 Q So is it fair to say that engineers 8 working on pre-N products would have been following 9 the developments of the 802.11n standardization 10 process? 11 MR. MAKKER: Objection. Lack of 12 foundation. Calls for speculation. 13 THE WITNESS: I believe so, yes. 14 BY MR. HINDMAN: 15 Q And would engineers working on pre-N 16 products be interested in reviewing proposals 17 submitted to the 802.11n working group? 18 MR. MAKKER: Same objections. 19 THE WITNESS: Yeah. I knew engineers 20 working on pre-N products who were reading the 21 different contributions to 802.11n, so yes. 22 BY MR. HINDMAN: 23 Q And do you -- is it fair to say that 24 engineers working on pre-N products would be 25 reviewing the WWiSE and TGnSync proposals at that

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1 time? 2 MR. MAKKER: Objection. Lack of 3 foundation. Calls for speculation. 4 THE WITNESS: I know at least some 5 engineers developing pre-N products that were. 6 BY MR. HINDMAN: 7 Q Okay. And was it your expectation at the 8 time that certain features of the WWiSE and TGSyn 9 proposals would be ultimately incorporated into the 10 802.11n standard? 11 MR. MAKKER: Objection. Vague. 12 THE WITNESS: Yeah. I mean, at the time I 13 was working on the WWiSE proposal hoping that, you 14 know, the WWiSE proposal would be incorporated into 15 the 802.11n draft. Or at least portions of it would 16 be. 17 BY MR. HINDMAN: 18 Q Would it be possible for portions of both 19 standards to be incorporated in the final standard? 20 Or both proposals? 21 A Yes, yeah. 22 Q Okay. All right. 23 Do you recall the procedures for becoming 24 an 802.11 working group member? 25 A I recall that there was a certain meeting	27 1 A Yeah. I believe I used that website, you 2 know, at this time, yeah, back in 2004. 3 Q Okay. And there's a "become a member" tab 4 shown there on the right, correct? 5 A Yes. 6 Q So are you aware of any restrictions on 7 who could access this website and become a member? 8 MR. MAKKER: Objection. Lack of 9 foundation. Calls for speculation. 10 THE WITNESS: Yeah. I'm not aware of any 11 restrictions. 12 BY MR. HINDMAN: 13 Q Could any member of the public then access 14 this website and set up an account for membership? 15 MR. MAKKER: Same objections. 16 THE WITNESS: Yes, I believe they could. 17 BY MR. HINDMAN: 18 Q All right. Why don't we slide over to 19 slide 27. 20 Do you recognize what is shown on 21 slide 27? 22 A It just appears to be a screen capture 23 from a website. 24 Q Okay. And there's a dialogue box there, 25 correct?
26 1 attendance requirement, but I don't remember the 2 specifics -- 3 Q Okay. 4 A -- of that. 5 Q All right. 6 MR. HINDMAN: I'm going to hand you a 7 document that we'll mark as Exhibit 2. 8 (Deposition Exhibit 2 was marked 9 for identification.) 10 BY MR. HINDMAN: 11 Q Do you recognize this document? 12 A Not this -- I don't recognize this 13 specific document. 14 Q So I'm going to represent to you this is a 15 copy of the new participation orientation [verbatim] 16 slides that were presented at the July 2004 working 17 group meeting. 18 Can you please turn to slide 25. 19 Do you recognize what is shown on 20 slide 25? 21 A Yeah. It appears to be, you know, a 22 screen capture of the website. 23 Q And what website is that? 24 A It says 802wirelessworld.com. 25 Q Were you familiar with that website?	28 1 A Yes. It -- yes. 2 Q And so someone who was seeking to become a 3 member would have to enter their email address and 4 password to join as a new member; isn't that 5 correct? 6 MR. MAKKER: Objection. Lack of 7 foundation. Calls for speculation. 8 THE WITNESS: Yeah. I don't recall 9 specifically, but that appears to be correct. 10 BY MR. HINDMAN: 11 Q All right. Let's go over to slide 29. 12 Do you recognize what is shown on 13 slide 29? 14 A Once again, it appears to be a screen 15 capture from a website. 16 Q Okay. And do you see that yellow box 17 there? 18 A Yes. 19 Q Do you -- what is your understanding of 20 what that's indicating? 21 MR. MAKKER: Objection. Lack of 22 foundation. Calls for speculation. 23 THE WITNESS: I think it's just 24 showing that a person filling in the website, 25 there's mandatory information -- required

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29 1 information they would have to put onto the -- into 2 the website. 3 BY MR. HINDMAN: 4 Q Okay. And that would be to become a 5 member and set up an account, correct? 6 A Yeah. It's part of this registration 7 process for the -- for this website. 8 Q All right. 9 And was there any fee that you were aware 10 of for becoming a member? 11 MR. MAKKER: Objection. Lack of 12 foundation. Calls for speculation. 13 THE WITNESS: I don't believe there was a 14 fee for accessing this website. There was a fee to 15 physically attend meetings, but not -- there's no -- 16 I don't believe there's a fee associated with the 17 website, no. 18 BY MR. HINDMAN: 19 Q So based on your familiarity of this 20 Wireless World website, how would submissions like 21 the WWiSE proposal be submitted to the Task Group N? 22 MR. MAKKER: Objection. Mischaracterizes 23 testimony. Lack of foundation. Calls for 24 speculation. 25 THE WITNESS: Yeah. I don't remember the	31 1 THE WITNESS: Yeah. As I recall, there 2 was a process that we used for uploading documents. 3 This appears to be the process that was used at the 4 time. 5 BY MR. HINDMAN: 6 Q Okay. And there's a tab on the right-hand 7 side there called "Document Control Numbers." 8 Do you see that? 9 A Yes, uh-huh. 10 Q Okay. Can you flip over to slide 36. 11 Do you recognize what's shown there in 12 slide 36? 13 A Once again, it appears to be a screen 14 capture from the 802 Wireless World website. 15 Q And do you see at the top there it says 16 "Document Control Numbers"? 17 A Yes. 18 Q Can you explain to me what these document 19 control numbers were? 20 MR. MAKKER: Objection. Lack of 21 foundation. 22 THE WITNESS: I believe these are the 23 numbers that are used to keep track of 802.11 24 contributions. 25 ///
30 1 specifics. But there was -- we used a website -- I 2 believe it was this website -- for uploading 3 contributions to 802.11. 4 BY MR. HINDMAN: 5 Q Okay. And just for the record, this is 6 the 802 Wireless World website you're referring to? 7 A Yeah. I believe at the time for 802.11n 8 that this was the website -- yeah. 802 Wireless 9 World was the website we used for uploading at this 10 time. 11 (Reporter clarification.) 12 THE WITNESS: Uploading contributions. 13 BY MR. HINDMAN: 14 Q Can you turn to slide 35, please. 15 Do you recognize what is shown on 16 slide 35? 17 A Once again, it appears to be a screen 18 capture from the 802 Wireless World website. 19 Q Okay. And you see up at the top there it 20 says Document Submission Process? 21 A Yes. 22 Q So is it your understanding that members 23 could submit documents using this process? 24 MR. MAKKER: Objection. Lack of 25 foundation. Calls for speculation.	32 1 BY MR. HINDMAN: 2 Q So how would that work if you submitted a 3 proposal? 4 A So, for example, you would first request a 5 document -- a number for the contribution. And then 6 it would provide you with a number, and then that 7 number would be -- that would be the number for your 8 contribution, and you would place it in the file 9 name for the name -- for the file that you would 10 upload for the contribution. 11 Q Okay. 12 A That was how that worked. 13 Q Would the WWiSE proposal of Exhibit 1 that 14 we've been discussing have been submitted using this 15 process? 16 MR. MAKKER: Objection. Lack of 17 foundation. Calls for speculation. 18 THE WITNESS: Yes. I believe this 19 document -- like the other documents -- would have 20 been -- would have followed -- this process would 21 have been followed. 22 BY MR. HINDMAN: 23 Q Okay. And would that be the same for the 24 TGnSync proposal? 25 MR. MAKKER: Same objection.

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33 1 THE WITNESS: Yes. I think so, yes. 2 BY MR. HINDMAN: 3 Q Were all the submissions to this Task 4 Group N made through this Wireless World website? 5 MR. MAKKER: Same objections. 6 THE WITNESS: I believe so. I know that 7 the contributions that I made went through a process 8 like this one. So I assume that the other ones did 9 as well. 10 BY MR. HINDMAN: 11 Q Are you aware of any other mechanism by 12 which someone could submit a proposal to the Task 13 Group N? 14 A No, I'm not aware of one. 15 Q Okay. 16 A At this time. 17 Q Was there also an FTP site? 18 A Yeah. So in this time frame, there 19 were -- yeah, I recall that we had a local file -- 20 there was one file server that was used on-site at 21 some meetings, and then that was later synchronized 22 in some way with the main site on the internet 23 that -- but I don't remember the details of how that 24 worked. 25 Q Okay. Do you recall who had access to	35 1 BY MR. HINDMAN: 2 Q Would members of the public have been 3 aware of this website? 4 MR. MAKKER: Objection. Calls for 5 speculation. Lack of foundation. 6 THE WITNESS: Yeah, I don't remember. 7 BY MR. HINDMAN: 8 Q Okay. What are some of the ways that the 9 members of the public might have been made aware of 10 this website? 11 MR. MAKKER: Objection. Calls for 12 speculation. Lack of foundation. 13 THE WITNESS: I believe at the time 14 IEEE802.11 had a publicity group or something. They 15 promoted themselves. 16 I don't remember the details of how they 17 did that or what, but they -- 802.11 -- the 802.11 18 working group and the IEEE standards association had 19 procedures -- had a process of some type for 20 publicizing their activities. 21 BY MR. HINDMAN: 22 Q Okay. And this website is no longer 23 active; isn't that correct? 24 A Yeah. I don't think this -- I don't think 25 this website is used anymore.
34 1 submissions to this Wireless World website? 2 A Yeah. I believe the submissions -- all 3 the 802.11 submissions were public -- 4 Q Okay. 5 A -- or available to the public. 6 Q Were there any procedures you had to do in 7 order to access submissions on this website as far 8 as you recall? 9 A There might have been. I don't remember 10 the exact process, but -- but I -- but my 11 understanding is they were all available. 12 Q Would members of the public need to first 13 become a member in order to access the submissions 14 to the TGN? 15 MR. MAKKER: Objection. Calls for 16 speculation. Lack of foundation. 17 THE WITNESS: They would not have to be a 18 voting member of 802.11. They wouldn't have to be 19 an IEEE member. 20 There may have been some process on the 21 website they had to log in or something, but it 22 was -- they -- there were no -- you didn't have to 23 be an IEEE member or anything like that. It was all 24 publicly available. 25 ///	36 1 Q Were you aware about the Wireless World 2 website being replaced by another website? 3 A I know there is a different website that's 4 used for 802.11 today. I don't -- I don't recall -- 5 I don't recall exactly when that transition took 6 place or -- 7 Q Okay. Okay. 8 So do you recall the name of the new 9 website? 10 A I believe the IEEE calls it Mentor. 11 Q Okay. 12 A But I don't know where that name comes 13 from. 14 Q So submissions to the IEEE802.11 working 15 group currently would be made on that Mentor 16 website, correct? 17 MR. MAKKER: Objection, leading. 18 Objection, lack of foundation. Calls for 19 speculation. 20 THE WITNESS: Right. Current -- yeah. 21 Like if I made an 802.11 contribution today, I would 22 use the Mentor website. 23 BY MR. HINDMAN: 24 Q Okay. And what about the prior 25 submissions on Wireless World? Are they also

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37 1 currently available on Mentor today? 2 A Yes. I believe they all are, yes. 3 Q And so, at some point, the Wireless World 4 submissions were added to the Mentor website; is 5 that correct? 6 A Yeah. There was some process by which 7 they consolidated all the IEEE document -- all the 8 802.11 contributions over the years and unified them 9 on one website. 10 Q Okay. So is it your understanding then 11 that the prior TGn submissions would be available 12 now on Mentor? 13 A Yes, I believe they are. 14 Q And this would include the WWiSE proposal 15 that we've been discussing, correct? 16 A Yes. 17 Q Do you know if these prior submissions to 18 the Task Group N maintained their original titles 19 when they were transferred over to the Mentor 20 website? 21 MR. MAKKER: Objection. Lack of 22 foundation. Calls for speculation. 23 THE WITNESS: I believe they would. I 24 don't think the documents have been changed in any 25 way.	39 1 are required for the current 802.11 website -- 2 Q Okay. So it's just wide open to the 3 public? 4 A Wide open to download the documents, yes. 5 Q Okay. All right. 6 Do you know if entries in Mentor are 7 searchable? 8 MR. MAKKER: Objection. Vague. 9 THE WITNESS: I think you can search by 10 the title and the year and the document number. 11 BY MR. HINDMAN: 12 Q Are there any other parameters that you're 13 aware of that are searchable? 14 A The particular task group -- there's a 15 pull-down in the menu you can pull out the task 16 group or whatever the group was, study group or 17 something like that. 18 Q Do you recall approximately what date this 19 WWiSE proposal was submitted to the TGn? 20 MR. MAKKER: Objection. Vague. 21 THE WITNESS: So there was an original 22 submission -- an original WWiSE proposal. And then 23 revisions were made, proposal was updated, and then 24 uploads were made at different dates. So -- but I 25 believe the first one was in August of 2004.
38 1 BY MR. HINDMAN: 2 Q Okay. What about the original authors? 3 Would they have been the same? 4 MR. MAKKER: Same objections. 5 THE WITNESS: They should all be -- yeah. 6 As I said, I think they're all -- the documents 7 should not have changed. I think they're all -- 8 BY MR. HINDMAN: 9 Q Okay. And just for the record, that would 10 include the document control numbers? 11 MR. MAKKER: Same objections. 12 THE WITNESS: Right, yeah. Right. Those 13 should all be -- those should all be the same. 14 MR. HINDMAN: Okay. 15 THE WITNESS: Same as they were used back 16 in 2004. 17 BY MR. HINDMAN: 18 Q All right. 19 So are submissions to the current IEEE 20 Mentor site available to the public as far as you 21 know? 22 A Yes, I believe they are. 23 Q Is there any credentials that you're aware 24 of that were required to gain access to Mentor? 25 A I don't think -- I don't think credentials	40 1 MR. HINDMAN: Okay. 2 THE WITNESS: Because -- yeah, August 2004 3 was the first one. 4 BY MR. HINDMAN: 5 Q Referring back to Exhibit 1 on the front 6 page there. 7 Do you see that date at the top of the -- 8 just under the title? 9 A Yes, uh-huh. 10 Q What is that date? 11 A There's a template for documents, and 12 there's a -- there's just a spot where you can put a 13 date into the document. That's all it is. 14 Q Oh, okay. Would that be the date of 15 creation, or could it have been any date? 16 A It actually could be any date. 17 Q Okay. 18 A Yeah. 19 Q All right. 20 MR. HINDMAN: I'm going to hand you what 21 we'll mark as Exhibit 3. 22 (Deposition Exhibit 3 was marked 23 for identification.) 24 BY MR. HINDMAN: 25 Q Do you recognize this document? Or what

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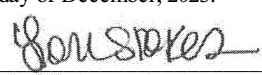
41 1 is shown in this document? 2 A Yeah. It appears to be a printout from 3 the Mentor website. 4 Q And what are the entries here, for 5 example, on the first page? 6 A Yeah. It looks to be a list of some of 7 the contributions to -- this would have been Task 8 Group N from 2005. 9 Q Okay. And if you'll look about halfway 10 down the page, there's a date there, 19 March 2005. 11 Do you see that? 12 A Yes, uh-huh. 13 Q And you see the title of that entry? 14 A Yes, uh-huh. 15 Q That's the same title as the WWiSE 16 proposal we've been discussing; is that correct? 17 A Right. It's the same as in the Exhibit 1. 18 Q So would that date have been the 19 submission date of that particular proposal? 20 MR. MAKKER: Objection. Vague. Calls for 21 speculation. Lack of foundation. 22 THE WITNESS: Right. So this would be -- 23 my understanding is this would be the date that this 24 particular document was uploaded to the file server 25 and then made available to, you know, everyone	43 1 We'll take a quick break. 2 MR. HINDMAN: Yeah. Do you want to take a 3 break? 4 THE WITNESS: Yeah. 5 THE VIDEOGRAPHER: Okay. We're going off 6 the record. The time is 11:01 a.m. 7 (Recess taken from 11:00 a.m. 8 to 11:03 a.m.) 9 THE VIDEOGRAPHER: We're going back on the 10 record. The time is 11:04 a.m. 11 12 EXAMINATION 13 BY MR. MAKKER: 14 Q Just a handful of questions. 15 Do you have a consulting relationship with 16 Dell or any Dell entity? 17 A Not at the present time. I've done some 18 work with attorneys for Dell in the past. 19 Q Was that -- that was related to 20 litigation? 21 A No, it was not. 22 Q But with attorneys, you said? 23 A With attorneys. 24 Q Was that in patent prosecution? 25 A Yeah, I can't answer that question.
42 1 accessing the website. 2 BY MR. HINDMAN: 3 Q Okay. And for the record, what is that 4 date? 5 A This one here is March 19th, 2005. 6 Q So the original dates of submissions to 7 the TGn have been retained in this Mentor website; 8 isn't that correct? 9 MR. MAKKER: Objection. Lack of 10 foundation. 11 THE WITNESS: Yes. I believe they've 12 retained the date -- the dates that the documents 13 were uploaded. 14 BY MR. HINDMAN: 15 Q All right. 16 Final question: Would members of the 17 public who created an account on the Wireless World 18 website have been able to access the WWiSE proposal 19 after that submission date? 20 MR. MAKKER: Objection. Lack of 21 foundation. Calls for speculation. 22 THE WITNESS: Yes. I believe they could. 23 MR. HINDMAN: Okay. Well, sir, I 24 appreciate your time. Thank you so much. 25 MR. MAKKER: I might have just a few.	44 1 Q Say that again. 2 A I can't answer that question. 3 Q But you don't have a current consulting 4 relationship with Dell? 5 A No, I don't believe I do -- no, I don't. 6 Q What about with Lenovo? 7 A I don't believe I've done any work with 8 Lenovo. 9 Q What about with HP? 10 A Yeah, I was retained as an expert witness 11 by HP, but I haven't done any work -- I think the 12 case ended. I haven't done any work on that. 13 Q Do you know which case that was? 14 A I don't recall off the top of my head. 15 Q But your understanding is that case is 16 over? 17 A Yes, yeah. 18 Q So it's not related to this case or this 19 plaintiff, AX Wireless? 20 A No, it's not related. 21 Q Do you have a consulting relationship with 22 Intel? 23 A I have done work with Intel in the past, 24 but not currently, no. 25 Q What about with MediaTek?

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45 1 A No, I -- I don't believe I've done any 2 work with MediaTek. 3 Q What about Qualcomm? 4 A No, I don't believe I've done any work 5 with Qualcomm. 6 Q Is there any consulting relationship or 7 work you've done in connection with the case for 8 which you've been subpoenaed for here today? 9 A No. I -- no, there hasn't. 10 Q Have you met Mr. Hindman before today? 11 A No, I don't believe so. 12 Q Did you have any conversations with him 13 before today? 14 A I don't recall. 15 Q You don't know if you've spoken with him 16 before today? 17 A I don't recall -- yeah, I don't recall 18 specifically having any. 19 Q What about attorneys from his law firm 20 Perkins Coie? 21 A I have spoken with attorneys from Perkins 22 Coie in the past. 23 Q In the past. Was that related to this 24 subpoena? 25 A For scheduling the subpoena, yes.	47 1 I think in your previous testimony you 2 used the word "complete" with respect to this 3 proposal, but then you also described that maybe a 4 first revision might have been from the August 2004 5 time frame. 6 Do you recall that testimony? 7 MR. HINDMAN: Objection. Form. 8 THE WITNESS: Yes, I -- yes. 9 BY MR. MAKKER: 10 Q And so I guess my question is: The 11 proposal evolved over time; is that fair? 12 A Yes. 13 Q Things were added to it? 14 A That's correct, yes. 15 Q Things were removed from it? 16 A I don't recall if anything was removed 17 from it. 18 Q Okay. But at any period of time, if we 19 looked at a revision, that probably wasn't a 20 finished product. 21 Is that fair? 22 MR. HINDMAN: Objection. Form. 23 THE WITNESS: Well, there were -- yeah, 24 I'm not sure I understand what you mean by 25 "finished." But it was a proposal, and the
46 1 Q Do you mean just for scheduling today, or 2 what do you mean by that? 3 A Right. Scheduling this meeting today. 4 Q Did you discuss the substance of your 5 testimony today with anyone before today? 6 A No. 7 Q Are you being compensated for your time 8 today? 9 A No. 10 Q Have you provided any documents in 11 connection with the subpoena? 12 A No, no. 13 Q How many subpoenas did you receive for 14 this case? 15 A I received one subpoena. 16 Q Okay. Have you done any -- you're not 17 aware of the patents-in-suit in this case, are you? 18 A No. 19 Q You've never reviewed them? 20 A I don't know. 21 Q You've never reviewed any arguments raised 22 by Defendants or Intel in connection with this case? 23 A I don't believe I have. 24 Q Okay. I want to look at Exhibit 1 for a 25 second. So that's the WWiSE proposal.	48 1 proposals were under development. 2 BY MR. MAKKER: 3 Q So let me give you an example. So you 4 mentioned, I think, August 2004 as a first revision 5 maybe; is that right? 6 A Right. So the way 802.11n task group 7 worked was there was a call for proposals, and a 8 deadline was set in August of 2004 to upload and 9 have those proposals available. 10 And so that's -- and so -- right, the 11 original WWiSE proposal was submitted at that time. 12 Q Is that something that you would consider 13 complete? 14 A Yes, yeah. Those were -- so the -- the 15 term "complete proposal" was used in the 802.11n 16 task group to describe proposals that would cover -- 17 let me word this correctly -- all of the -- in other 18 words, there was a set of -- or all of the features 19 of 802.11 -- we wanted to have an 802.11n, including 20 MAC features and PHY features, so that's what was 21 meant by "complete proposal." 22 (Reporter clarification.) 23 BY MR. MAKKER: 24 Q So that you called something "complete" 25 doesn't mean that it wasn't changed later, right?

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49 1 A Complete -- complete meant that it would 2 cover all of those features. It doesn't mean -- 3 yeah, things could still be added to the proposals. 4 And that was part of the process as well, proposals 5 could be changed. 6 Q You mentioned in your previous testimony 7 something referred to as a "draft standard." 8 Do you recall that? 9 A Yes. 10 Q Exhibit 1 is not a draft standard, 11 correct? 12 A That's correct. This is a proposal; it's 13 not a draft. 14 Q This proposal, Exhibit 1, was never 15 adopted by the IEEE; is that correct? 16 A That's correct. 17 Q At what point in time during the 18 development -- or I should say during TGn -- did you 19 realize that the WWiSE proposal would not be 20 adopted? 21 MR. HINDMAN: Objection. Form. 22 THE WITNESS: Yeah. It would be hard to 23 pin down an exact date. Probably sometime in the 24 fall of -- autumn of 2005, I think so. 25 ///	51 1 Q You never worked for a company that 2 maintained either of those websites, right? 3 A That's correct. 4 Q You didn't work on or help with the 5 transition from 802 Wireless World to the Mentor 6 website, right? 7 MR. HINDMAN: Objection. Form. 8 THE WITNESS: Yeah. I did not participate 9 in that transition. 10 BY MR. MAKKER: 11 Q Looking at Exhibit 1, I believe 12 Mr. Hindman directed you to the date field there 13 toward the top. I think it says "Date: 2005-03-18." 14 Do you see that? 15 A Yes, uh-huh. 16 Q And then I think, if we look at Exhibit 3, 17 Mr. Hindman directed you to a line with the date 18 19 March 2005 and asked you if the title was the 19 same as Exhibit 1. 20 Do you recall that? 21 MR. HINDMAN: Objection. Mischaracterizes 22 testimony. 23 THE WITNESS: Right. I see that there. 24 Yeah, I see the -- I believe he asked me about that 25 particular line there, yes.
50 1 BY MR. MAKKER: 2 Q Prior to the fall or autumn of 2005, TGn 3 had held a number of votes on which proposal would 4 go forward; is that right? 5 A That's correct. 6 Q And in each of those votes before the fall 7 of 2005, the TGnSync proposal garnered the most 8 votes; is that right? 9 A I think that's correct, yes. 10 Q You're not an IEEE employee, right? 11 A That's correct, I don't work for the IEEE. 12 Q You never worked for the IEEE? 13 A No, I've never worked for the IEEE. 14 Q You discussed a number of websites in your 15 testimony, I believe 802.11 Wireless World and 16 Mentor. 17 Do you recall that? 18 A Yes, uh-huh. 19 Q You were never responsible for maintaining 20 either of those websites, right? 21 A That's correct, yeah. I have not 22 maintained those websites. 23 Q You were never an admin of one of those 24 websites, right? 25 A That's correct, I've never been an admin.	52 1 BY MR. MAKKER: 2 Q Did you testify -- was your testimony that 3 the date shown in Exhibit 3 then is when Exhibit 1 4 was uploaded? 5 A Yeah, I don't recall exactly what I 6 testified earlier, but I believe the date -- the 7 date in here would correspond to when this 8 particular -- this particular document was uploaded. 9 Q So are you saying that -- you're pointing 10 at Exhibit 3 for the record? 11 A Yeah, I'm pointing at Exhibit 3. 12 Q And so you're talking about the document 13 Exhibit 3; you're not talking about Exhibit 1? 14 A Yeah. I see here that, yeah, they may not 15 be the same document. 16 Q And in Exhibit 1, the dates shown on the 17 face of Exhibit 1, or on subsequent pages in the 18 header, those dates could be anything, right? 19 They're not auto-populated? 20 A Right. So as I recall, the 802.11 21 documents had a template, where you could put in the 22 date for a particular document, uh-huh. 23 Q Yeah. The date on Exhibit 1 doesn't 24 necessarily reflect the upload date, correct? 25 A That's correct, yeah.

53 1 Q Has anyone discussed trial in this matter 2 with you? 3 A No. 4 MR. MAKKER: Okay. I don't have any other 5 questions at this time. 6 THE VIDEOGRAPHER: If that's everything -- 7 THE STENOGRAPHER: Do you have anything 8 else, Counsel? 9 MR. HINDMAN: No. 10 THE VIDEOGRAPHER: Okay. I'll take us off 11 the record. 12 This marks the end of the deposition of 13 Christopher J. Hansen. The time is 11:18 a.m. 14 THE STENOGRAPHER: Counsel, do you want a 15 rough? 16 MR. HINDMAN: Yeah, sure, but there's no 17 rush on it. 18 MR. MAKKER: I don't have any specific -- 19 I don't think I need one. 20 THE STENOGRAPHER: Okay. Thank you. 21 (Time noted 11:18 a.m.) 22 23 ---o0o--- 24 25	
54 1) STATE OF CALIFORNIA) 2) CERTIFICATE OF REPORTER 3 4 I, LORI STOKES, do hereby certify that the 5 witness in the foregoing deposition was by me duly 6 affirmed to tell the truth, the whole truth and 7 nothing but the truth in the within-entitled cause; 8 that said deposition was taken at the time and place 9 therein stated; that the testimony of said witness 10 was reported by me and was thereafter transcribed 11 under my direction and supervision; that the 12 foregoing is a full, complete and true record of 13 said testimony; that the witness was given an 14 opportunity to read and, if necessary, correct said 15 deposition and to subscribe the same. 16 I further certify that I am not of counsel or 17 attorney for either or any of the parties in the 18 foregoing deposition and caption named, or in any 19 way interested in the outcome of the cause named in 20 said caption. 21 IN WITNESS WHEREOF, I have hereunto set my hand 22 this 10th day of December, 2023. 23  24 _____ 25 LORI STOKES, CSR No. 12732	

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