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Transcript of Daniel Foty, Ph.D.

Date: April 4, 2025

Case: Mianyang BOE Optoelectronics Tech. Co., et al -v- Samsung Display Co.
(PTAB)

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1 (1 to 4)

1	1	3
2	1	A P P E A R A N C E S
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2	2	4
3	1	A P P E A R A N C E S C O N T I N U E D
4	2	ALSO PRESENT:
5	3	KYLAN BARRY, Video Specialist
6	4	DOMINIC MERLO, A/V Technician
7	5	
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2 (5 to 8)

5	7
1 C O N T E N T S	1 Depos.
2 EXAMINATION OF DANIEL P. FOTY, Ph.D. PAGE	2 The witness will now be sworn.
3 By Mr. Andros 7	3 DANIEL FOTY, Ph.D.,
4	4 having been duly sworn, testified as follows:
5 EXHIBITS MARKED IN TODAY'S SESSION	5 EXAMINATION BY COUNSEL FOR PATENT OWNER
6 (None Marked)	6 BY MR. ANDROS:
7	7 Q Good morning, Dr. Foty.
8 EXHIBITS MARKED IN PRIOR SESSIONS	8 A Good morning, Counselor.
9 (Not Attached)	9 Q So I'll just, since I didn't get a chance
10 PETITIONER DEPOSITION EXHIBIT PAGE	10 to tell you, I am dealing with a cold. So I
11 Exhibit 1004 15	11 apologize for my voice. If anything is unclear as
12 Exhibit 1025 12	12 I'm asking you questions today, please just ask
13	13 for clarification, and we'll muddle through.
14	14 A I appreciate the heads up on that. If
15	15 you have any issues, you need to take a longer
16	16 break to go get some meds or anything, I will
17	17 accommodate that for you.
18	18 Q Thank you.
19	19 Would you please now state your name, for
20	20 the record?
21	21 A My name is Daniel Foty.
22	22 Q And you've been deposed before, including
6	8
1 P R O C E E D I N G S	1 once for this IPR. Correct?
2 VIDEO SPECIALIST: Here begins Media	2 A That's correct. And you took the
3 Number 1 in the videotaped deposition of Daniel	3 deposition then as well in early December.
4 Foty, Ph.D.; in the matter of Mianyang BOE	4 Q Yes. Nice to see you again.
5 Optoelectronics Technology Co., et al., V Samsung	5 A Thank you, Counselor.
6 Display Co.; in the United States Patent and	6 Q I'll be asking you questions today, and
7 Trademark Office; Case Number IPR2024-00620.	7 if you don't understand one of my questions,
8 Today's date is April 4, 2025. The time	8 including because of my voice, please let me know.
9 on the video monitor is 9:02 a.m. eastern standard	9 I'll try to clarify. All right?
10 time. The remote videographer today is Kylan	10 A We'll do our best.
11 Barry, representing Planet Depos. All parties of	11 Q And if you answer a question, I'll
12 this video deposition are attending remotely.	12 understand -- I'll assume that you've understood
13 Would counsel please voice-identify	13 my question.
14 themselves and state whom they represent.	14 Is that fair?
15 MR. ANDROS: Derek Andros, Covington &	15 A That's as usual, yes, it is.
16 Burling, on behalf of patent owner. And with me	16 Q And we're remote today, but you
17 is my colleague Jared Frisch.	17 understand that this will be treated the same as
18 MR. HERMAN: Patrick Herman from Orrick,	18 if it were in person. Right?
19 Herrington & Sutcliffe, here on behalf of	19 A That's correct.
20 petitioners.	20 Q And where are you located this morning?
21 VIDEO SPECIALIST: The court reporter	21 A I am located at my residence in Fletcher,
22 today is Debbie Whitehead, representing Planet	22 Vermont.

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9 1 Q And is anyone else there with you? 2 A Just cats. I will note by the way, 3 Federal Express is due to show up some time this 4 morning, so I will have to, you know, do a time 5 out and deal with that very briefly when it 6 happens. 7 Q Okay. We can handle that, I'm sure. 8 Do you have any communication tools open 9 on your computer other than the Zoom platform that 10 we'll be using today for the deposition? 11 A No, I do not. 12 Q And do you have any folders saved on your 13 computer with any documents for this deposition? 14 A I have folders on my computer, but I 15 don't anticipate needing them. 16 Q Do you have any hard-copy documents? 17 A I have a paper copy of my declaration and 18 a little help here from staff. And I also have 19 a -- some blank sticky notes in case I need to 20 make marks, it makes it a little easier than 21 shuffling sometimes. 22 Q Are any of the documents that you have	11 1 him -- he may ask me why I'm dressed so fancy 2 today, and I'll tell him why. That may be all I 3 need to communicate with Shane. 4 Q And is there any reason that you can't 5 give full and accurate testimony today? 6 A Not that I'm aware of. 7 Q So what did you do to prepare for your 8 deposition today? 9 A I reviewed the documents available, such 10 as my declaration from, I think it was filed on 11 March 6, and reviewed some of the exhibits with 12 that and some of the older materials. And I had a 13 meeting with counsel. 14 Q And who was that that you met with? 15 A Mr. Herman. 16 Q Did you meet with anyone else? 17 A No, I did not. 18 Q When did you meet with counsel? 19 A Yesterday. 20 Q How long was the meeting, roughly, would 21 you say? 22 A About an hour.
10 1 annotated in any way? 2 A No, they're not. 3 I also have my declaration and exhibits 4 from the earlier thing to my right here on a -- on 5 a chair if I need it. 6 Q So as we're working with documents today, 7 I'll try to drop them in the chat and have them up 8 on the screen. You can use paper copies, whatever 9 is easiest for you to sort of follow along. 10 Is that all right? 11 A Yes. And if necessary, I'll ask for 12 control of the document and move around inside it 13 myself. 14 Q And then during the deposition I would 15 ask that you not communicate with anyone other 16 than through this Zoom. 17 Is that all right? 18 A That is correct, yes. 19 Q And if someone attempts to communicate 20 with you while we're taking the deposition, you'll 21 let me know, for the record? 22 A If the FedEx gent comes up -- I know	12 1 Q And in preparing, did you speak with 2 anyone other than counsel? 3 A No, I did not. 4 Q And I think you said you reviewed your 5 declaration as part of your preparation for today. 6 Is that right? 7 A Yes, the declaration that I put in about 8 a month ago, it is the purpose of today's 9 deposition. 10 Q Let's start with that. 11 (Petitioner Exhibit 1025, previously 12 marked, not attached.) 13 Q I dropped it in the chat and we can 14 hopefully get pulled up on the screen -- and I see 15 we have sparked some attention -- Exhibit 1025, 16 which should be that declaration you were just 17 mentioning. 18 A I see -- 19 Q Do you see that? 20 A I see -- sorry. Someone else was talking 21 I thought in there, that's why I was ... 22 Yeah, I see the exhibit in the chat. And

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13 1 this appears to be -- this appears to be the 2 declaration that I put in about a month ago, and 3 it appears to be the same one that I have in a 4 paper copy here. 5 Q Great. And if we can turn to the last 6 page, which I think is Page 51. Waiting to get 7 there. 8 Is that your signature? 9 A Yes, it is. 10 Q And so you signed this on, I think you 11 said the 6th of March, 2025. 12 Is that right? 13 A Yes, that was the due date for submitting 14 it to the PTAB, and that's when it was executed 15 and signed and submitted. 16 Q And that's when you -- so that's when you 17 finished working on this declaration? 18 A Yes, it was. 19 Q Do you recall when you started working on 20 this declaration? 21 A Oh, probably about a month earlier, I 22 would say, but that's a rough guess. I know there	15 1 on the screen as well, that would be great. 2 Q But, Dr. Foty, are you there? 3 A I'm on my paper copy, yes, if that helps 4 you. 5 Q Great. And there on Page 20, there is a 6 flow chart, let's call it, with a number of 7 different figures. 8 Do you see that? 9 A Yes, I do. 10 Q And these are figures from the Kimura 11 reference. Correct? 12 A That is correct. With annotations. 13 MR. ANDROS: So let's drop in here, just 14 to have it, I've dropped in here what's marked as 15 Exhibit 1004, which should be the Kimura 16 reference. 17 (Petitioner Exhibit 1004, previously 18 marked, not attached.) 19 A I see it in the -- in the chat. 20 Q And can you let me know if that is the 21 Kimura that you were discussing in your 22 declaration that is also the reference where these
14 1 was, you know, an extended period from when you 2 folks got your materials in. 3 Q And can you roughly say how much time you 4 spent working on this declaration? 5 A I'd have to consult my invoices, but I'll 6 throw a number of 40 hours out there, something 7 like that. 8 Q And you wrote the declaration yourself? 9 A Yes, I did. 10 Q Did anyone else help write it? 11 A I received feedback from -- of course 12 from counsel, as per the usual. It went back and 13 forth. But I wrote the declaration and, of 14 course, I'm responsible for it, I signed it. 15 Q And are there any specific sections of 16 the declaration that were written by others? 17 A As I said, I got help and comments back 18 and everything, but I don't think there's any 19 specific section that was written by others. 20 Q Let's turn to Page 20 of Exhibit 1025. 21 So here -- 22 MR. ANDROS: And if we can pull that up	16 1 figures came from? 2 A Let me -- I guess I'll have to open it 3 here to see. 4 MR. ANDROS: Can we get this one up on 5 the screen just generally? 6 A That would be helpful. If I click on any 7 stuff in the chat it wants to download it, then I 8 have to open it separately. That will take time. 9 I also should have a copy of it here in paper from 10 our last go-round. 11 (Discussion off the record; technical 12 difficulty.) 13 VIDEO SPECIALIST: We are going off the 14 record. The time is 9:12 a.m. 15 (A recess was taken.) 16 VIDEO SPECIALIST: We are going back on 17 the record at 9:17 a.m. 18 BY MR. ANDROS: 19 Q All right. So we have up on the screen 20 now what's been marked as Exhibit 1004, which 21 should be the Kimura reference. 22 Dr. Foty, can you please take a look at

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17 1 that and confirm that that is the Kimura reference 2 that you discuss in your declaration? 3 A That appears to be the case, yes. 4 Q And if I refer to this exhibit today as 5 Kimura, you'll understand what I'm referring to? 6 A Yes. There's only one Kimura reference 7 here, so that should work out. 8 Q Great. So now if we turn back to Exhibit 9 1025 on Page 20, and the flow chart that we were 10 looking at. 11 So each of these figures is from Kimura. 12 Correct? 13 A Yes, that is correct. 14 Q And if we start here, top left, you've 15 got Figure 1A. Right? 16 A Yes, in the top left. 17 Q And if we zoom in on that figure, what 18 is -- what does Figure 1A show? 19 A It shows a circuit. 20 Q It's got -- you've got five transistors 21 highlighted in red. 22 Is that right?	19 1 Sorry about that, I was digging out my old 2 declaration which I had more information on -- 3 Q Oh, sure. 0104. 4 MR. ANDROS: Can we get that up on the 5 screen. 6 A I have it on the paper as well in my copy 7 of Kimura. 8 Q Okay. So Paragraph 0104 says that, "A 9 signal IN1 is input to the Wiring 112." 10 Do you see that? 11 A I see that, yes. 12 Q So 112 is an input signal to this 13 circuit? 14 Is that correct? 15 A 112 is the wiring which receives an input 16 signal. 17 Q And then carrying down there, the next 18 wiring is 113. 19 Do you see that? 20 A I see that, yes. 21 Q And what is 113? 22 A 113 is wiring which receives another
18 1 A Yes, that is correct. 2 Q Then you've got those are labeled 1001 3 through 1005. Right? 4 A Actually, 101 through 105. Those are the 5 annotations. And those are -- by the way, those 6 are Kimura's numbers. That's not an annotation 7 that I added. 8 Q That's right, 101 through 105. Thank 9 you. 10 Then it also has some additional wirings. 11 Correct? 12 A Yes, there's wiring between the various 13 transistors. 14 Q What is Wiring 112? 15 A I have to consult Kimura to see what that 16 is. I don't know off the top of my head. Kimura 17 identifies what 112 is in the specification. 18 Q Let's look at Kimura. Let's turn to 19 Paragraph 104 of Exhibit 1004. 20 MR. ANDROS: Can we bring that up on the 21 screen. 22 A Which paragraphs? I beg your pardon?	20 1 input signal. 2 Q And which input signal is that? 3 A I believe somebody moved to Paragraph 113 4 and shouldn't have. You should be back in 5 Paragraph 104. I can't see Paragraph 104 right 6 now, that's why I asked. There we go. 7 Kimura identifies 113 as receiving the 8 input signal IN2. Of course, the apparatus could 9 receive signals in a different way. 10 Q What do you mean, "the apparatus could 11 receive signals in a different way"? 12 A My understanding is that the apparatus -- 13 the apparatus can be used in a particular way, but 14 the apparatus is not restricted to being used in 15 the way the patent specifies. So the input 16 signals could be applied differently. 17 I don't know if they are or not off the 18 top of my head, but before -- (inaudible.) 19 (Discussion off the record; technical 20 difficulty.) 21 A Why don't we do this, Counselor. If you 22 just repeat the question I can try to answer it

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21 1 again, and I'll speak more loudly this time. 2 Q All right. I think the question was, you 3 had said that the apparatus could receive signals 4 in a different way. And my question was, what do 5 you mean by that? 6 A My understanding is that an apparatus 7 could receive signals in a different way. The 8 apparatus doesn't necessarily have to receive them 9 in the exact way it's specified here. I do not 10 know off the top of my head if we make reference 11 to them differently. But the apparatus is 12 identifying here that there are signal inputs to 13 these three wirings. 112, 113, and 114 are 14 identified as receiving input signals. 15 Q Okay. And when you say "the apparatus," 16 just to be clear, you're talking about the circuit 17 that we're looking at? 18 A Yes, I am. I regard that as being an 19 apparatus. 20 Q And you're saying that the apparatus in 21 Figure 1 could -- 1A, you understand that it could 22 receive the input signals differently than the way	23 1 A Again, I just have to go see exactly how 2 we identified them. For example, if Kimura refers 3 to a first input signal or a first input terminal 4 or something like that, and we decide to call it a 5 third input terminal, we number them. That's the 6 way we would do that, that's my understanding. 7 Q I'm just asking about Figure 1A, and just 8 trying to understand this, this circuit. 9 So as Kimura describes its Figure 1A, 10 what is your understanding of Wiring 112? 11 A Wiring 112 receives an input signal, and 12 Kimura specifically identifies it as a clock 13 signal. 14 Q Wiring 112 is connected to a number of 15 different transistors in this figure. Correct? 16 A Yes, it's connected to one of the 17 terminals of Transistor 104 and one of the 18 terminals of Transistor 101. 19 Q We were looking at Wiring 113. Wiring 20 113 provides an input signal as well. Correct? 21 A Yes, 113 provides an input to one of the 22 terminals of Transistor 105 and Transistor 103.
22 1 that it's shown in Figure 1A? 2 MR. HERMAN: Objection. Form. 3 A My understanding is that, for example, if 4 someone took and applied IN2 to Wiring 112, it 5 would not change status of the apparatus. That's 6 just my understanding of things. 7 Q Okay. So you're saying that 112 -- when 8 we were looking at Paragraph 104, it says that I 9 think IN1 goes to 112. You're saying that another 10 signal could be provided to 112? 11 A I'm saying that I'm not sure how the 12 analysis unfolded. I have to go review that. But 13 I'm just saying that I'd like to see the analysis 14 for what signals apply to what lines, because 15 clock signals are being applied as described here. 16 So that's all I'm saying. I'd have to go through 17 the specifics of how each signal is applied in the 18 analysis we did. 19 Q So looking at the figures, the input 20 signals may or may not be applied to these 21 figures, depending on different analysis? 22 MR. HERMAN: Objection. Form.	24 1 Q And if we look at Paragraph 104 of 2 Kimura. 3 MR. ANDROS: If you can pull that up. 4 Q It says, "A signal IN2 is input to the 5 wiring 113." 6 Do you see that? 7 A Yes, I see that. 8 Q Then going back to Figure 1A, there is 9 another wiring, 114. 10 Do you see that? 11 A Yes, I see that. 12 Q And that also provides an input signal to 13 the circuit. Correct? 14 A Kimura identifies it as an input terminal 15 in the circuit, and it connects to one of the 16 terminals -- 17 (Discussion off the record; technical 18 difficulty.) 19 A -- of Transistor 102. 20 Q So then looking back at the flow chart on 21 Page 20 of your reply declaration, from Figure 1A 22 we move to Figure 14A with a red arrow.

25 1 Do you see that? 2 A That's correct, yes. 3 Q And here in Figure 14A we have all of the 4 same elements that we were just talking about from 5 Figure 1A, then there's an added transistor which 6 you've highlighted in light green, which is 7 Transistor 201. 8 Do you see that? 9 A I see that. And this is again another 10 circuit from Kimura. 11 Q And so in this circuit of Kimura we've 12 got Wiring 112. Right? 13 A Yes, we have -- we have 112. Sorry. I 14 thought you were continuing. My apologies. 15 Q And Wiring 112 provides an input signal 16 to this circuit. Correct? 17 A I presume it still does. I'd have to 18 consult the specification to see if it makes any 19 changes, but I believe it does. It's in the same 20 way. This is building from 1A to a subsidiary 21 circuit. 22 Q And it's -- again, Wiring 112 is	27 1 the circuit. Correct? 2 A Yes, it does. 3 Q Then it's connected to the transistors in 4 the circuit in the same manner as it is in Figure 5 1A. Correct? 6 A That appears to be the case, yes. 7 Q And then Figure 14A also has Wiring 114, 8 which provides an input signal to the circuit. 9 Correct? 10 A That is correct. 11 Q And it is again connected in the same way 12 as in Figure 1A. Right? 13 A That appears to be the case, yes. 14 Q If we're looking back at Page 20 of your 15 reply declaration, from the Figure 14A circuit at 16 the top of the page, there's a green arrow going 17 to Figure 17A. 18 Do you see that? 19 A Yes. There are actually lime green 20 arrows going to Figure 16A and Figure 17A. This 21 one had -- this one had at least two. 22 Q So if we look at 17A, here we've got the
26 1 connected to a number of transistors in the 2 circuit just like in Figure 1A. Correct? 3 A Generically, yes, 112 is connected, as we 4 see here, to various -- I won't enumerate this 5 time in the interest of time. So yes, it does 6 connect to the transistors. 7 Q Do you believe that there are any 8 differences in the way that the wiring 112 is 9 connected to the transistors in Figure 14A 10 relative to Figure 1A? 11 A Sorry. Thank you. I appreciate that. 12 Q Sorry? 13 A I was going to ask to see 1A again, but 14 someone read my mind. Thank you. Whoever did 15 that, thank you. 16 Q Okay. 17 A It appears to be the same. The way the 18 connection to the gate of Transistor 104 is drawn 19 differently, but it's the same thing. It's the 20 equivalent being the same circuit. 21 Q So the same question with Wiring 113. In 22 Figure 14A, Wiring 113 provides an input signal to	28 1 same five transistors highlighted again in red. 2 Correct? 3 A Yes, that appears to be the case. 4 Q And you've got a transistor 203 which is 5 highlighted in blue and a transistor 201 which is 6 highlighted in green. 7 Is that correct? 8 A That appears to be the case, yes. 9 Q And so we also have Wiring 112 again. 10 Right? 11 A Yes, we do. 12 Q Wiring 112 is again providing an input 13 signal to the circuit? 14 A That's my understanding, yes. 15 Q Then we have Wiring 113 again, and it is 16 also providing the input signal to the circuit. 17 Right? 18 A That is correct. 19 Q But here we don't have Wiring 114? 20 A That is correct. 21 Q Instead there's Node 13. Right? 22 A Yes, there's an input signal 13.

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29 1 Q And 13 is connected to the gate of 2 Transistor 102? 3 A Among other things, yes. 4 Q And so in that sense Node 13 is like 5 Wiring 114 in Figure 14A which was connected to 6 the gate of Transistor 102. Right? 7 A Can I see that figure -- oh, did someone 8 say something? 9 MR. HERMAN: Oh, sorry. Yeah. 10 Objection. Form. 11 MR. ANDROS: Yeah, let's pull up Page 20 12 and focus on Figure 14A. 13 A Thank you. The page, it was just -- it 14 was just I couldn't -- I could only see one Fig 15 17A there. So let's see. 16 Q Okay. 17 A Yes, it appears that essentially the 18 label 114 has been replaced by the label 13, which 19 goes to Transistor 102 as it did before. But it 20 also goes to the gate of Transistor 203. 21 Q So in this figure it's the potential of 22 the Node 13 that's the signal that goes to the	31 1 blue or maybe turquoise arrows, one of which goes 2 to Figure 20A? 3 Do you see that? 4 A Yes, I see there are three turquoise 5 lines, and one of them goes to Figure 20A. 6 Q So here in Figure 20A of Kimura, we again 7 have Wiring 112. Right? 8 A That's correct. 9 Q And it's the same with respect to the 10 same five red shaded transistors, it's connected 11 in the same way as the other figures we've been 12 looking at? 13 Is that right? 14 A That appears to be correct. The 15 numbering has changed, but the IN3 signal he 16 identifies going in through Wiring 113 to 17 Transistor 102, and it also goes to Transistor 18 203. 19 Q So I was asking about Wiring 112. 20 A Oh, sorry. 21 Q So does Wiring 112 appear to be connected 22 in the same way as with respect to the other
30 1 gate of 102, not the Wiring 114. Right? 2 A Well, there is still an input signal 3 going there. He's renumbered it for whatever 4 reason. We'd have to consult the specification. 5 Q Let's look at Paragraph 249 of Exhibit 6 1004. 7 MR. ANDROS: Will you be able to pull 8 that up on the screen? 9 A I have the paper copy as well. What I'm 10 doing is bringing the page up rather than 11 disappearing out of the screen here and people 12 wonder where I went. 13 Yes, and Kimura says, as he says at the 14 very end of that paragraph, which is not on the 15 screen but I have it in front of me, "Therefore, a 16 potential node 13, (V13) can be used as the signal 17 IN3." 18 So you put the IN3 signal in through the 19 13 input terminal. 20 Q So let's go back to Page 20 of Exhibit 21 1025. 22 From Figure 17A there are a number of	32 1 circuits we were looking at? 2 A That appears to be the case, yes. 3 Q And then same for Wiring 113. 4 Is that right? 5 A That also appears to be the case, yes. 6 Q And then for Node 13, I think you had 7 just said it appears to be connected again to the 8 gate of Transistor 102 and the gate of Transistor 9 203. 10 Is that right? 11 A That is correct, yes. 12 Q And so again we've got Node 13 as the 13 signal IN3 connected to the gate of the Transistor 14 102. 15 Is that right? 16 A Kimura so identifies it, yes. 17 Q So the voltage at that node is an input 18 signal to this Figure 20A. Correct? 19 A Kimura describes using it to receive that 20 input signal to that Wiring 13, yes. 21 Q So if we look back to Figure 14A at the 22 top of Page 20. I want to look at that green

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33 1 transistor, if I can call it that. 2 A I call it lime green because we have two 3 greens there. So I'll call it lime green, if 4 that's okay with you. 5 Q That's fair. You're straining your voice 6 more than me. 7 A I'm not sick, so we're just -- we 8 have got the -- we both have to go to the ER after 9 the deposition ends, I believe. But it's just 10 very dry here this time of here, so my voice is a 11 little rough. But I have got some cough drops I 12 will be using. I'll do my best. I'm sure you 13 will, too, Counselor. 14 Q Yeah. 15 A I'm okay with lime green, if you are. 16 Q So you've labeled -- or you've 17 highlighted that transistor in lime green because 18 it's what was different relative to the 1A 19 circuit. Right? 20 A Yes. I describe that at Page 34. And 21 also, for what it's worth, I refer at Paragraph 34 22 to that as light green. So perhaps we should just	35 1 Kimura up, but whatever would be the most helpful 2 to Dr. Foty. 3 A What I have here, Counselor, I have my 4 declaration, which refers to three different -- 5 three other paragraphs besides 222. And I have 6 the paper copy of Kimura as well. So I have 7 everything I need right now to look at it on my 8 own volition here, at least we have that. 9 So anyway, we can return. If there's a 10 question pending, I'll have to ask for it to be 11 reasked, probably. 12 Q Sure. Kimura describes in Paragraph 0222 13 the function of Transistor 201. Correct? 14 A He has a rather lengthy description where 15 the word "alternatively" appears several times. 16 But then he also has a further description down in 17 Paragraph 228. 18 Q Looking at Paragraph 0222 it begins, "The 19 function of the transistor 201 is described." 20 Right? 21 A That's what it says, yes. 22 Q And then it continues, The transistor 201
34 1 refer to it as light green so as not to cause 2 confusion. I apologize for injecting even more 3 confusion. But as per -- I'll try to use my 4 declaration color coding as a guide. I'll call 5 that light green, so ... 6 Q All right. So the light green transistor 7 in -- it's labeled 201 in Kimura's Figure 14A, 8 that transistor is added to the circuit -- the 9 five red transistors in Figure 14A. Correct? 10 A Yes, the -- the light green Transistor 11 201 is added to the circuitry with the five red 12 transistors of Figure 1A. 13 Q And Kimura describes why the figure -- or 14 the -- excuse me, the Transistor 201 is added to 15 that circuit. Correct? 16 A Yes, he does. 17 Q And so if we turn to Paragraph 2 -- 0222 18 in Kimura. And you let me know when you're there. 19 (Discussion off the record with the A/V 20 technician.) 21 MR. ANDROS: I was going to say, for this 22 part it may be best just to have the disclosure of	36 1 has a function of controlling conduction between 2 the wiring 115 and the wiring 211." 3 Do you see that? 4 A He says that, yes. 5 Q As you mentioned it continues, 6 "Alternatively, the transistor 201 has a function 7 of controlling timing of supplying the potential 8 of the wiring 115 to the wiring 211." 9 Did I read that right? 10 A I believe that you did. 11 Q So how would Transistor 201 do that? 12 A Can we have 14A up again, please, the ... 13 I mean, actually, can we have the circuit 14 back up, please. There we go. Thank you. It's 15 hard to -- hard to analyze the circuit without the 16 circuit in front of you. 17 Well, generically from reading this -- I 18 didn't do this analysis, by the way. I'm trying 19 to do it here for you as best I can. 20 But if you apply a clock signal to 201, 21 then you'll be turning 201 on and off. And if 22 it's on, the potential of Line 115 will be passed

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37 1 through to Node 211, to the wire 211. 2 So that's how I would do that. 3 Q How would you apply a clock signal to 4 Transistor 201? 5 A It would be applied to 201 by turning on 6 either Transistor 101 or Transistor 103. 7 Q How would you turn on either Transistor 8 101 or Transistor 103? 9 A I probably would come in through 112. So 10 you could turn on 113 -- turn on 103 by turning on 11 113. Or more clearly you could turn on 101 by 12 turning on -- 101 could be turned on by having 112 13 go high, which would apply a high bias to 101, 14 which would turn on 101 and would pass the clock 15 signal on 112 through the gate of Transistor 201. 16 (Clarification by the court reporter.) 17 A Let me start over, just in case. I don't 18 know when I dropped out again. I apologize, I'm 19 having dry voice problems today. 20 If 112 is pulled high, that would cause 21 Transistor 104 to turn on, which would turn on -- 22 which would pull Node 11 high, which would turn on	39 1 A Well, as I said a moment ago, 112 is a 2 clock signal, which would go high and low. So 3 that will turn 201 on and off. And when 201 is 4 on, the potential at 115 is passed to 211. And 5 when 201 is off, it is blocked from doing so. 6 Q So if we look at Paragraph 222 again and 7 continue it says, "Alternatively, the transistor 8 201 has a function of controlling timing of 9 supplying a signal or voltage which is to be input 10 to the wiring 115 to the wiring 211 when the 11 signal or voltage is input to the wiring 115." 12 Do you see that? 13 A I see that, yes. 14 Q And how does transistor -- how can 15 Transistor 201 perform that function? 16 A It's essentially the same function I just 17 described. All that has changed here is Kimura 18 says instead of just saying generically, as he 19 says at the top, it's supplying the potential, 20 which is the voltage of 115, he now says that 115 21 is a signal. So it's the same functionality; it's 22 just he's changing what he has put on 115 from
38 1 Transistor 101, which would pass the clock signal 2 on Wire 112 to the gate of Transistor 201. 3 Q And if you were to do -- if you were to 4 instead use or go through Transistor 103, how 5 would you do that? 6 A Whatever signal, if 113 was pulled high, 7 then it would pull -- would pull the gate of 103 8 high, which would pass any signal on 115 through 9 to gate of 201. I'm not sure how he identifies 10 115. He just calls it a potential. So you don't 11 know what signal you're going to have there, 12 whether it's going to be high or low. 13 So the obvious way to do that 14 functionality would clearly be, it's preferred to 15 do it from the passing 112. We know that's a 16 clock signal. And passing that through to the 17 gate of 201. 18 (Clarification by the court reporter.) 19 Q And how does that have -- how would that 20 operation have the function of controlling timing 21 of supplying the potential of the wiring 115 to 22 the wiring 211?	40 1 generic to be a potential being -- of being a 2 signal or voltage. 3 So it's essentially the same thing. It's 4 just the same thing, different wording. 5 Q So the operation -- you think that the 6 operation we were just describing would perform 7 that same function, provided that it was a voltage 8 or a signal input to the wiring 115? 9 MR. HERMAN: Objection. Form. 10 A Yes. If you look at what he says above, 11 he refers to the potential of Wiring 115. And 12 here he refers to 115 receiving an input that is a 13 signal or a voltage. 14 So basically he's just describing a 15 different -- possibly different voltage or form of 16 voltage being on 115, but otherwise the circuit 17 functionality is the same. Both of them involve 18 connecting the wiring 115 through Transistor 201, 19 to the wiring 211, in order to pass whatever 20 potential is on 115 at that time over the wiring 21 211. 22 Q Can you scroll down -- or if you continue

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41 1 down a little bit, still in Paragraph 0222, it 2 says, Alternatively, the transistor 201 has a 3 function -- I lost my -- of lowering a potential 4 of -- I apologize. Let me start over. 5 If you continue in Paragraph 0222 it 6 says, "Alternatively, the transistor 201 has a 7 function of controlling timing of lowering a 8 potential of the" -- I think it says wing 211. 9 I'll trust that to be wiring 211. 10 A I believe actually you skipped a line 11 there, Counselor. I believe you mucked it up 12 again. Sorry. 13 Q Yeah, my PDF is maybe giving us issues. 14 But let's just look at the piece of 222 15 that says, "Alternatively, the transistor 201 has 16 a function of controlling timing of lowering a 17 potential of the wing 211." 18 Do you see that in Paragraph 0222? 19 A Yes. And I apologize for the confusion. 20 You actually skipped over one of the 21 Alternatively's, that's why I got lost, because I 22 was reading the one immediately after.	43 1 down. Essentially it's a continuation of what's 2 above, the one above that we skipped over. 3 Q Let's look at that one, then. 4 It also says, "Alternatively, the 5 transistor 201 has a function of controlling 6 timing of supplying an L-level signal or the 7 voltage V1 to the wiring 211." 8 How would Transistor 201 perform that 9 function? 10 A Well, again, it's the same thing that I 11 described earlier. The turning on -- turning on 12 or turning off the gate of that -- I'm having 13 trouble -- I'm losing track of numbers here, 14 that's what's going on. That's Transistor 201. 15 Okay. 211 is the wiring, 201 is the transistor. 16 Since I can't see the diagram, I got lost for a 17 minute. 18 But again, Transistor 201, when you turn 19 it on or off, it's able to lower the potential on 20 the wiring 211 based on what the potential on 21 Wiring 115 is. If it's low, it will pass that 22 through and pull 211 low.
42 1 Q I see. 2 A So did you skip over that by intent? I 3 just want to know, because we've had such trouble 4 with this. 5 There is one that has, it says, Timing of 6 supplying an L-level signal. Are you 7 intentionally skipping that or is that an 8 oversight? 9 Q Not intentionally skipping it, but let's 10 focus on the one I just read first. Apologies for 11 the confusion. 12 So the question would be how would 13 Transistor 201 perform that, that function? 14 A Well, the first thing I want to note is I 15 believe that the word "wing" is a typo, and that 16 should be wiring. Hopefully we can all agree on 17 that, since wing is a -- doesn't make much sense 18 there. 19 Again, this is more or less the same 20 thing. It's the same thing that you turn 21 Transistor 201 on and off, and you can -- if 115 22 has a low potential, it will -- it will pull that	44 1 Q Then it says at the end of the list of 2 alternatives, "Note that the transistor 201 does 3 not need to have all of the above functions." 4 Do you see that? 5 A I see that, yes. 6 Q So Transistor 201 might perform some but 7 not all of these listed functions? 8 Is that right? 9 A It would depend on what the signal inputs 10 are doing. 11 For example, 115, it would depend on if 12 it's a DC potential or a clock signal, things like 13 that. I believe all he's saying here is that 201 14 will not perform certain functions if the inputs 15 being provided to it do not meet the conditions 16 that he described above. He describes a wide 17 variety of conditions. And there may be others. 18 It's just simply a matter of using transistors. 19 You turn something -- you turn the transistor on, 20 and it passes the potential on one side of the 21 transistor to the other side. 22 Q So what would be some examples of not

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45 1 meeting the conditions that we -- that he 2 described above? 3 A Well, I think if you see at the very top 4 of that paragraph, as I said a moment ago -- I'll 5 repeat it maybe a little more clearly -- he 6 describes how the wiring 115 could have a simple 7 potential, just some potential, or it could have a 8 signal. And so the type of signal that would be 9 passed on would be either one or the other. 10 So if you have a clock signal, then you 11 would not pass a DC potential from 115 to the 12 wiring 211. It would simply pass what's there. 13 So it would be not needing the -- the not 14 performing certain functions would depend, for 15 example, on what is going on over on 115. 16 Q Are there any other examples that would 17 determine which of those functions Transistor 201 18 would perform in this circuit, other than the -- 19 whether it's a simple potential, or a signal on 20 Wiring 115 I mean? 21 A Sorry, could you repeat that question? 22 I'm not sure it was a positive or a negative	47 1 same. The question is what type of signal is 2 being passed, the different functionalities Kimura 3 describes here are the different signals on 115 is 4 what makes them different. 5 MR. ANDROS: I don't know that we have 6 been going quite an hour with the technical issue, 7 but I could use a short reprieve for my voice. 8 THE WITNESS: Get some cough drops, 9 Counselor. Get some cough drops. 10 VIDEO SPECIALIST: We are going off the 11 record at 10:04. 12 (A recess was taken.) 13 VIDEO SPECIALIST: We are going back on 14 the record at 10:21 a.m. 15 BY MR. ANDROS: 16 Q Welcome back, Dr. Foty. 17 A Welcome back. 18 Q So before the break we were talking about 19 the different functions that Kimura describes for 20 Transistor 201. 21 Do you remember that? 22 A I recall that, yes.
46 1 question when you asked it. 2 Q Sure. Well, you said that -- a little 3 earlier you said that Kimura describes a wide 4 variety of conditions, I believe. And then you 5 mentioned an example being whether -- or I guess 6 what signal is being provided on Wiring 115. 7 And my question is, are there other 8 examples that would determine which of the listed 9 functions Transistor 201 would perform in the 10 circuit? 11 A Well, I didn't consider this in my 12 analysis, this level of detail. But again, it 13 would just be what Kimura is saying here is that 14 functionality provided would depend on the exact 15 nature of signals that are being provided. 16 So again, if 115, which is the node that 17 would be connected to 211, the functionality that 18 it provides, whether it's passing a clock signal 19 or passing just a DC potential, would depend on 20 what the signal on 115 is. 21 So the basic functionality the transistor 22 is performing from a circuit point of view is the	48 1 Q You had told me that the question is what 2 type of signal is being passed, the different 3 functionalities Kimura describes are dependent on 4 the different input signals that might be provided 5 to the circuit. Right? 6 A That appears to be the case. I'd have to 7 see the circuit diagram to confirm it, because 8 the -- which circuit are we looking at here is it 9 now? It's -- 10 Q It was Figure 14A. We were looking at 11 Paragraph 0222. 12 A Okay. The -- I just wanted to see this. 13 Because basically as you can see here, 102 -- 14 sorry, 201, if 201 is turned on, whatever is at 15 115 will be passed to the wiring 211. Kimura 16 clearly says differences there. 17 201 could also be turned on and off, 18 obviously, by what's going on on the wiring 12. 19 Q Right. And so Kimura envisions that 20 different input signals -- or depending on the 21 different possible input signals, Transistor 201 22 may perform those different functions that it

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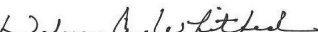
49 1 describes. Right? 2 MR. HERMAN: Objection. Form. 3 A Yes, there are obviously more than one 4 way to control the gate of 201. But if 201 turns 5 on, it's going to equalize the voltage between 115 6 and 211. So essentially it will pass, if you 7 think of 115 as an input and 211 as an output, it 8 will pass the 115 whatever is on -- potential is 9 on that at the time onto the wiring 201. Minus, 10 of course, the threshold voltage drop. 11 Q So depending on the different possible 12 signals that could be on Wiring 115, that will 13 determine which of the listed functions Transistor 14 201 is performing. Right? 15 A Well, again, the caveat is there's more 16 than one way to turn 201 on or off. But the only 17 connection from 201's lower side is to Line 115, 18 which just disappeared. 19 (Discussion off the record; technical 20 difficulty.) 21 VIDEO SPECIALIST: We are going off the 22 record. The time is 10:24 a.m.	51 1 whatever is on 115 when 201 is on, minus the 2 threshold voltage drop that occurs in that 3 situation. 4 Q That will be the case for each of the 5 circuits in Kimura. Right? The functionalities 6 will change based on the signals on the various 7 inputs? 8 MR. HERMAN: Objection. Form. 9 A Well, Kimura chooses to call it 10 functionalities because he's referring to the 11 functionalities of the circuitry based on the 12 signals being received. 13 The functionality associated with 14 Transistor 201 does not change, because all 201 15 can do in Figure 14A is either block or connect 16 115 to -- the node 115 to the node 211. 17 Q But in the context of those various 18 functions that we were looking at, if we go back 19 to Paragraph 0222, and we were talking about each 20 of these functions that Transistor 201 performs. 21 Do you remember that? 22 A Yes. And he refers each of them to
50 1 (A recess was taken.) 2 VIDEO SPECIALIST: We are going back on 3 the record at 10:29 a.m. 4 BY MR. ANDROS: 5 Q Dr. Foty, we were in the middle of a 6 question. I'll just repeat the question. It was, 7 Depending on the different possible signals that 8 could be on Wiring 115, that will determine which 9 of the listed functions Transistor 201 is 10 performing. Right? 11 MR. HERMAN: Objection. Form. 12 A And we're referring to Figure 17A, 13 correct, just to reset on that after the little 14 interruption? 15 Q 14A. 16 A Oh, sorry, 14A. Okay. Sorry. 17 Well, as Kimura describes, he describes a 18 bunch of different functionalities that would 19 depend, there is some dependence, of course, as I 20 said a moment ago, of what is going on at the gate 21 of 201 to turn it on or off. 22 What will be passed to Wiring 211 will be	52 1 what's happening as a result of what's going on at 2 201 to what's going on at Node 211. 3 Q Right. And you had told me that which 4 of -- which of these alternative functions, as 5 Kimura calls them, Transistor 201 will perform, 6 will depend on the type of signal or signals 7 provided to the circuit. Right? 8 A He describes a number of functionalities, 9 but they -- they all depend on turning 201 on or 10 off, and that will either block from or connect to 11 what's ever at 115 node to Node 211. 12 Q Right. And you had told me that whether 13 or not 201 provides -- or performs certain of 14 these functions depends on, for example, what's 15 the signal on Wiring 115. Right? 16 A The actual signal pass will depend on 17 what's on 115 at the time 201 is on. And as I 18 said earlier, there's multiple ways that the gate 19 of 201 could be controlled to turn it on or off. 20 Q Right. And so in the way that Kimura 21 describes these different alternative functions of 22 Transistor 201, whether or not it performs a

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53 1 specific one of these depends on what the type of 2 signal on 115 is. Correct? 3 MR. HERMAN: Objection. Form. 4 A Kimura states that as a -- as one of the 5 functionalities he describes there. That if 201 6 is on, it will, with the subtracting the threshold 7 voltage impact, 115 will be -- the 115 node state 8 will be passed to the 211 state. 9 Q Let's go to Page 23 of your reply 10 declaration. 11 Do you have that? 12 A Okay. Again, with the caveat here that 13 I'm not looking at the Zoom chat when I do this. 14 So if I need to be back there, let me know. But I 15 have the -- there's a figure on Page 23 and some 16 text below it. 17 Q Yes. And we do for a moment have it up 18 on Zoom, so I defer to you which is most 19 convenient. 20 A I've got that, I've got the paper, and 21 I've got my own. And probably my own will be the 22 best because I can zoom it as I see fit as	55 1 IN4, that you do not highlight. Correct? 2 A That is correct. 3 Q And then in Figure 25B, you've then got 4 IN1 and IN2 highlighted. Correct? 5 A Yes; in the same way they're the two 6 opposing clock signals. 7 Q And then there's another input signal, 8 IN5, which you have not highlighted. Correct? 9 A No, I have not highlighted the pulse 10 signal IN5. 11 MR. ANDROS: I have no other questions. 12 MR. HERMAN: I also don't have any 13 questions. So amazingly, that probably means that 14 we're done, which hopefully will save everyone's 15 voices and technical difficulties from further -- 16 MR. ANDROS: Thank you very much for your 17 time, Dr. Foty. 18 (A discussion was held off the record.) 19 VIDEO SPECIALIST: This marks the end of 20 the deposition of Dr. Foty. We're going off the 21 record. The time is 10:37 a.m. 22 (Off the record at 10:37 a.m. EDT.)
54 1 necessary. Zoom meaning, you know, the size of 2 the figure. 3 Q Okay. So on Page 23 you've got a number 4 of circuit diagrams and timing diagrams. Right? 5 A Yes, I have various circuits from I 6 believe they're in the flow chart we were looking 7 at a moment ago, and various timing diagrams. 8 Q And if we look at the top left, in the 9 Figure 15A timing diagram, you've got IN1 and IN2 10 highlighted in yellow? 11 A Yes, I highlighted the two anti-posing 12 clock signals. 13 Q And there's another input signal in 14 Figure 15A labeled IN3 that you do not highlight. 15 Correct? 16 A I do not highlight that. And as you can 17 see, it does nothing. 18 Q If we look at Figure 21B, you've got IN1 19 and IN2 highlighted again. Correct? 20 A Yes; the same clock signals are 21 highlighted in the same way with yellow. 22 Q And then there is another input signal,	56 1 ACKNOWLEDGMENT OF DEPONENT 2 I, DANIEL P. FOTY, Ph.D., do hereby 3 acknowledge that I have read and examined the 4 foregoing testimony, and the same is a true, 5 correct and complete transcription of the 6 testimony given by me, and any corrections appear 7 on the attached Errata sheet signed by me. 8 9 _____ 10 (DATE) (SIGNATURE) 11 12 13 14 15 16 17 18 19 20 21 22

Transcript of Daniel Foty, Ph.D.
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15 (57 to 60)

57 1 CERTIFICATE 2 I, Debra Ann Whitehead, E-Notary Public in and for 3 the Commonwealth of Virginia, do hereby certify: 4 5 That DANIEL P. FOTY, Ph.D., the witness 6 whose deposition is hereinbefore set forth, was duly 7 sworn by me before the commencement of such 8 deposition and that such deposition was taken 9 virtually and is a true record of the testimony 10 given by such witness. 11 12 I further certify that the adverse 13 parties, MIANYANG BOE OPTOELECTRONICS TECHNOLOGY 14 CO., LTD.; WUHAN CHINA STAR OPTOELECTRONICS 15 SEMICONDUCTOR DISPLAY TECHNOLOGY CO., LTD; TIANMA 16 MICROELECTRONICS CO., LTD.; and VISIONIX TECHNOLOGY, 17 were represented by counsel at the deposition. 18 19 I further certify that the deposition of 20 DANIEL P. FOTY, Ph.D., occurred virtually, on 21 Friday, April 4, 2025, from 9:02 a.m. to 10:37 a.m. 22 EDT.	
58 1 I further certify that I am not related to 2 any of the parties to this action by blood or 3 marriage, I am not employed by or an attorney to any 4 of the parties to this action, and that I am in no 5 way interested, financially or otherwise, in the 6 outcome of this matter. 7 8 IN WITNESS WHEREOF, I have hereunto set my 9 hand this 15th day of April, 2025. 10 11 My commission expires: 12 October 31, 2027 13 14 15 16   17 E-NOTARY PUBLIC IN AND FOR THE 18 COMMONWEALTH OF VIRGINIA 19 20 21 22	

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