

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

PICTIVA DISPLAYS)
INTERNATIONAL LTD.,)
ET AL.,)
Plaintiffs,) Civil Action Nos.
vs.) 2:23-cv-00945-JRG
SAMSUNG ELECTRONICS CO.,)
LTD., SAMSUNG ELECTRONICS)
AMERICA, INC.,)
Defendants.)

** CONFIDENTIAL **

** ATTORNEYS' EYES ONLY PURSUANT TO PROTECTIVE ORDER **

REMOTE VIDEOTAPED DEPOSITION
OF

IOANNIS KYMISSIS, Ph.D.
Saturday, June 14, 2025
San Francisco, California

Reported by: B. Suzanne Hull, CSR No. 13495

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Exhibit 3	PM Manual, October 11, 2023, Bates Stamp Numbers SDC_00070979 through SDC_00070995, seventeen pages	25
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14	Exhibit 18	iRiver Clix2 OLED	120
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23		pages	
24	///		
25	///		

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4		published under the	
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13		hundred sixty-one pages	
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15		et al., Patent Number	
16		US 8,723,164 B2, date of	
17		patent May 13, 2014, thirteen	
18		pages	
19	Exhibit 4	Excel spreadsheet, Bates Stamp	177
20		Number SDC_00045424	
21	///		
22	///		
23	///		
24	///		
25	///		

1	EXHIBITS (Continued)		
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3	Exhibit 5	United States Patent, Schmid,	177
4		et al., Patent Number	
5		US 8,723,174 B2, date of	
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18		regarding the validity of U.S.	
19		Patent Numbers 8,558,223 and	
20		8,723,164, five hundred	
21		fifty-six pages	
22	///		
23	///		
24	///		
25	///		

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QUESTIONS INSTRUCTED NOT TO

ANSWER:

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1	San Francisco, California
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2 Saturday, June 14, 2025; 8:05 a.m.

3

4 THE VIDEOGRAPHER: Good morning.

5 We are going on the record on June 14, 2025, 08:05:50

6 | at 8:05 a.m. | 08:05:56

7 Please note that this deposition is being 08:05:58

8 conducted virtually.

9 Quality of recording depends on the quality
10 of camera and Internet connection of participants.

11 What is seen from the witness and heard on
12 screen is what will be recorded.

13 Audio and video recording will continue to
14 take place unless all parties agree to go off the
15 record. 08:06:12

16	This is media unit one of the video-recorded	08:06:12
17	deposition of Dr. Ioannis Kymissis, taken by counsel	08:06:23
18	for the plaintiffs in the matter of Pictiva Displays	08:06:27
19	International, et al., versus Samsung Electronics	08:06:27
20	Company, et al., filed in the United States District	08:06:36
21	Court, for the Eastern District of Texas,	08:06:36
22	Marshall Division, Case Number 2:24-cv-00532-JRG.	08:06:42

23	My name is Kim Smith, representing	08:06:46
24	Veritext Legal Solutions, and I am the videographer.	08:06:50

25	I am not related to any party in this	08:06:53
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1 action, nor am I financially interested in the 08:06:55
2 outcome. 08:06:58
3 If there are any objections to proceeding, 08:06:58
4 please state them at the time of your appearance. 08:07:01
5 Counsel will now state their appearances and 08:07:03
6 affiliations for the record, beginning with the 08:07:06
7 noticing attorney, and then the court reporter will 08:07:09
8 introduce herself and the witness will be sworn. 08:07:12
9 MR. SHEASBY: Jason Sheasby, for plaintiffs. 08:07:15
10 MR. SNYDER: Gavin Snyder, with 08:07:17
11 Quinn Emanuel, on behalf of the defendants. 08:07:19
12 And then also with me is Melissa Baily, from 08:07:21
13 Quinn Emanuel. 08:07:25
14 THE REPORTER: My name is Suzanne Hull. 08:07:25
15 I am a certified shorthand reporter representing 08:07:25
16 Veritext Legal Services. My CSR number is 13495. 08:07:37
17 Raise your right hand, please, Dr. Kymissis. 08:07:37
18 Do you solemnly swear or affirm that the 08:07:43
19 testimony you shall give shall be the truth, the 08:07:43
20 whole truth, and nothing but the truth. 08:07:45
21 THE WITNESS: I do. 08:07:47
22
23 IOANNIS KYMISSIS, Ph.D.,
24 called as an expert witness by counsel for
25 Plaintiffs, being first duly sworn, testified as

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1	follows:	
2		08:07:49
3	THE REPORTER: Thank you.	08:07:49
4	Mr. Sheasby.	08:07:50
5		08:07:50
6	EXAMINATION	08:07:52
7	BY MR. SHEASBY:	08:07:52
8	Q. Good morning, sir.	08:07:53
9	Can you state your full name for the record.	08:07:54
10	A. Good morning.	08:07:57
11	My name is Ioannis Kymissis.	08:07:57
12	Q. You have been retained by Samsung in this	08:07:59
13	matter; is that correct?	08:08:02
14	A. That is correct.	08:08:04
15	Q. As an expert; is that correct?	08:08:04
16	A. That is correct.	08:08:06
17	Q. You have a preexisting relationship with	08:08:07
18	Samsung; is that correct?	08:08:10
19	A. That is correct.	08:08:11
20	Q. You consult for Samsung; is that correct?	08:08:12
21	A. I have not had any consulting relationship	08:08:22
22	with Samsung, but Samsung has sponsored research	08:08:23
23	within my group through the university.	08:08:26
24	Q. How much -- since when has Samsung sponsored	08:08:28
25	your work?	08:08:33

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1 A. So I have had two projects with Samsung, and 08:08:34
2 one of those projects was about five years ago, and 08:08:38
3 another project started about a year ago. 08:08:43
4 Q. And you -- so you have an ongoing project 08:08:45
5 with them? 08:08:50
6 A. There is a current project in my group which 08:08:51
7 is with Samsung Electronics, yes. 08:08:54
8 Q. What was the value of the project that was 08:08:56
9 five years ago? 08:08:58
10 A. That project was [REDACTED] 08:08:59
11 [REDACTED]. 08:09:05
12 Q. And the project that is ongoing right now? 08:09:07
13 A. That project is [REDACTED] 08:09:10
14 [REDACTED] 08:09:14
15 Q. For how -- and how long will that continue? 08:09:15
16 A. That project is -- [REDACTED] 08:09:18
17 [REDACTED]. 08:09:22
18 Q. And what is the total amount of grant 08:09:26
19 funding your laboratory receives? 08:09:29
20 A. So at my time at Columbia I have raised 08:09:31
21 about [REDACTED], and so those projects represent 08:09:34
22 about [REDACTED] of the funding in my group. 08:09:38
23 Q. Not the question I asked. 08:09:41
24 On a yearly basis, what is the funding at 08:09:42
25 your -- in your laboratory? 08:09:46

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1	MR. SNYDER: Objection to form.	08:09:47
2	THE WITNESS: Yeah.	08:09:48
3	So I have seven Ph.D. students and one post	08:09:48
4	doc right now; so, roughly speaking, you know, my	08:09:53
5	group is somewhere around [REDACTED] of	08:09:57
6	funding and expenditure.	08:10:02
7	BY MR. SHEASBY:	08:10:04
8	Q. Great.	08:10:05
9	Does Samsung contribute other funds to the	08:10:05
10	school that you are a part of? I know that you	08:10:12
11	are -- you -- you have a -- a deanship that relates	08:10:14
12	in the engineering school.	08:10:23
13	MR. SNYDER: Objection to form.	08:10:24
14	THE WITNESS: I am not aware of any other --	08:10:25
15	I'm sorry.	08:10:27
16	Are you -- are you asking about research	08:10:28
17	contributions or any unrestricted contributions or --	08:10:30
18	BY MR. SHEASBY:	08:10:34
19	Q. Anything. Any money, any sort of income	08:10:34
20	benefit provided to your laboratory by Samsung or to	08:10:39
21	your school by Samsung?	08:10:43
22	MR. SNYDER: Objection to form.	08:10:44
23	THE WITNESS: Yeah.	08:10:45
24	So I am not sure I have a lot of visibility	08:10:45
25	into the other research groups in my school or at the	08:10:48

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1	university. Samsung supports research across all	08:10:52
2	areas, and so there are certainly other faculty that	08:10:58
3	have research projects with Samsung; so I'm not sure	08:11:02
4	that I can answer that with specificity. But I'm not	08:11:05
5	aware of any other either in kind or financial	08:11:07
6	support that Samsung provides to the school separate	08:11:11
7	from -- from research funding.	08:11:14
8	BY MR. SHEASBY:	08:11:16
9	Q. To the faculty?	08:11:16
10	A. To the -- I'm sorry.	08:11:18
11	Can you be clearer about that question?	08:11:21
12	Q. Research funding to the faculty.	08:11:23
13	A. Again, research funding flows first to the	08:11:26
14	school, and then it is expended by the school; so	08:11:28
15	that is not funding that comes directly to the	08:11:32
16	faculty, if that makes sense.	08:11:35
17	Q. It does make sense.	08:11:37
18	In addition to -- do you have any business	08:11:38
19	relationship with Samsung?	08:11:41
20	A. No.	08:11:42
21	I do not.	08:11:43
22	Q. Do you work for a company that was acquired	08:11:44
23	by Samsung?	08:11:46
24	A. So I was the first employee at a company	08:11:47
25	called QD Vision, and I worked there as a full-time	08:11:51

1 employee for one year and then as a consultant for 08:11:55
2 a few years. And about twelve years after I left, 08:11:59
3 that company was acquired by Samsung Electronics. 08:12:02
4 Q. And did you have any stock interest or 08:12:04
5 obtain any economic advantage from that? 08:12:09
6 A. No. 08:12:11
7 I did not. My -- I had [REDACTED] 08:12:12
8 [REDACTED] 08:12:16
9 [REDACTED] [REDACTED] 08:12:20
10 [REDACTED] 08:12:23
11 [REDACTED] [REDACTED] 08:12:28
12 [REDACTED] 08:12:32
13 [REDACTED] 08:12:36
14 Q. That acquisition, was the company 08:12:38
15 a commercial success? 08:12:43
16 A. That's a difficult question to answer. I'm 08:12:46
17 sorry. If you could be more specific, I can try to 08:12:51
18 answer it. 08:12:54
19 Q. Sure. 08:12:54
20 Was this company that Samsung acquired able 08:12:54
21 to launch a commercial product? 08:12:57
22 MR. SNYDER: Objection to form. 08:13:00
23 THE WITNESS: The company did have several 08:13:00
24 commercial products. They were able to release the 08:13:03
25 first QD-enabled television in a collaboration with 08:13:08

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1 Sony. There were also other products that were 08:13:12
2 introduced by the company, and -- and the company's 08:13:16
3 technology is the basis for what Samsung today and 08:13:19
4 other companies as well call QD LED. 08:13:22

5 And so with respect to whether a commercial 08:13:26
6 product was launched, yes. QD Vision did launch 08:13:31
7 several commercial products both in the television 08:13:34
8 space, and there were also several products in the 08:13:37
9 lighting space. There was a high CRI -- light 08:13:39
10 color-rendering index -- lamp that QD Vision 08:13:42
11 developed, and that was also commercially sold. 08:13:48

12 BY MR. SHEASBY: 08:13:50

13 Q. And what was the acquisition price for 08:13:50
14 QD Vision? 08:13:52

15 MR. SNYDER: Objection to form. 08:13:54

16 THE WITNESS: So my understanding is that 08:13:54
17 the acquisition was for about \$70 million. 08:13:58

18 BY MR. SHEASBY: 08:14:02

19 Q. And you said that this technology from 08:14:06
20 QD Vision is the foundation for the quantum dot 08:14:11
21 technology that is used by Samsung; is that correct? 08:14:15

22 MR. SNYDER: Object to the form. 08:14:18

23 THE WITNESS: So there are a number of 08:14:19
24 quantum dot technologies that Samsung is pursuing; so 08:14:23
25 I would not characterize my statement that way. I'm 08:14:28

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1	sorry.	08:14:32
2	If you could ask the question again, I could	08:14:32
3	try to answer more precisely.	08:14:35
4	BY MR. SHEASBY:	08:14:37
5	Q. Sure.	08:14:37
6	Are you the named inventor on any QD Vision	08:14:38
7	patents?	08:14:42
8	A. Yes.	08:14:42
9	I am the named inventor on several patents	08:14:42
10	that were issued to QD Vision.	08:14:46
11	Q. Have you done an element-by-element analysis	08:14:48
12	to determine if Samsung's accused products in this	08:14:49
13	case use any of those patents?	08:14:50
14	A. So I have not offered any opinion on whether	08:14:54
15	any of my patents were involved in any of the accused	08:14:59
16	products.	08:15:02
17	Q. Sure.	08:15:03
18	Have you identified -- have you done an	08:15:03
19	element-by-element analysis to identify any	08:15:06
20	third-party patent or Samsung patent that is used by	08:15:09
21	any of the accused products?	08:15:13
22	A. So I have not offered an opinion on any	08:15:14
23	patents, other than the patents that are at issue in	08:15:18
24	this case.	08:15:20
25	Q. Okay. How many hours have you spent on this	08:15:20

1	project?	08:15:25
2	A. So if we count the background research	08:15:25
3	collection of references, writing the report, editing	08:15:32
4	the report, reviewing the report, and other	08:15:36
5	preparation, it is several hundred hours.	08:15:39
6	Q. You wrote the report yourself?	08:15:41
7	A. So the report contains my opinions.	08:15:44
8	Q. Did you write the report yourself?	08:15:47
9	A. So I generally don't do the typing for my	08:15:49
10	writing. You know, I produce about twenty papers	08:15:54
11	a year, for example, in my research; so I provided my	08:15:58
12	opinions and the structure that I recommended, but	08:16:02
13	I asked for assistance in the typing from the legal	08:16:06
14	team.	08:16:09
15	I, however, then also -- some of those were	08:16:10
16	delivered in writing, some in discussion, and then	08:16:14
17	I also reviewed and approved and edited the final	08:16:16
18	report document. But the actual typing I asked for	08:16:22
19	assistance with.	08:16:25
20	Q. What portion of the report did you actually	08:16:26
21	write yourself?	08:16:28
22	A. I can't say. I was involved in all of the	08:16:28
23	parts of the report, but it is difficult for me to	08:16:32
24	come up with specific sections or numbering.	08:16:35
25	Q. Did you write more than 5 percent of the	08:16:37

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1	report yourself?	08:16:39
2	A. Again, I can't say specifically exactly what	08:16:40
3	percentage.	08:16:44
4	Q. How about more than 3 percent?	08:16:44
5	A. Again, I can't offer an opinion on the exact	08:16:47
6	percentage.	08:16:50
7	Q. Okay. So I have added a number of	08:16:50
8	documents.	08:16:55
9	By the way, do you have your reports in	08:16:55
10	front of you?	08:16:59
11	A. I have a paper copy, but it would be very	08:17:00
12	helpful if you could introduce the electronic reports	08:17:03
13	into the exhibits so I can do searches, which may	08:17:06
14	speed up some of our discussion.	08:17:08
15	Q. I am happy to do that.	08:17:09
16	Have you ever designed a commercial OLED?	08:18:26
17	A. So I was involved in designing a number of	08:18:49
18	organic light-emitting diodes while I was at	08:18:55
19	QD Vision, but I -- none of those went into	08:19:01
20	commercial production without further modifications.	08:19:04
21	Q. And since you have left -- so the answer	08:19:06
22	is -- have you ever designed a commercial OLED?	08:19:09
23	A. So I have not designed any unmodified	08:19:13
24	commercial organic light-emitting diodes.	08:19:17
25	Q. And since you have been a faculty member,	08:19:20

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1 have you published any papers -- peer-reviewed papers 08:19:23
2 on OLED design? 08:19:29
3 A. So I -- give me a second to think about it. 08:19:31
4 I have published about 150 peer-reviewed papers, and 08:19:37
5 so I -- I can't say whether I published any 08:19:42
6 specifically out of OLED design. I have published 08:19:50
7 a number on organic light-emitting diodes and 08:19:53
8 particularly a number of transport and charge 08:19:58
9 injection issues, but some of that is in the context 08:20:01
10 of organic affordable tank devices, which have some 08:20:05
11 similar and some different issues; so I'm not sure 08:20:10
12 exactly how to answer that question. 08:20:14
13 Q. All right. I will -- let me try to be 08:20:15
14 crisp. 08:20:19
15 Have you published any paper on an OLED 08:20:19
16 design? 08:20:23
17 MR. SNYDER: Object to the form. 08:20:23
18 THE WITNESS: So I have not published any 08:20:24
19 papers exclusively on the design of organic 08:20:29
20 light-emitting diodes. 08:20:33
21 BY MR. SHEASBY: 08:20:34
22 Q. Okay. Why don't we -- I have now uploaded 08:20:34
23 Exhibit 1 through 9 to the Exhibit Share. Just for 08:20:37
24 the sake of good order and efficiency, why don't you 08:20:40
25 go ahead and download all of those. 08:20:43

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1	A. Okay. Great.	08:20:46
2	Q. One through ten, actually.	08:20:47
3	A. All right. I see ten now. It is	08:20:49
4	alphabetically.	08:20:52
5	Okay. I think I have them all downloaded.	08:20:54
6	Q. Great.	08:21:32
7	Let's turn to Exhibit -- Exhibit 1.	08:21:39
8	(Deposition Exhibit Number 1	08:21:39
9	was marked for identification.)	08:21:39
10	THE WITNESS: (Witness complies.)	08:22:00
11	BY MR. SHEASBY:	08:22:00
12	Q. Let's go ahead and open that up.	08:22:00
13	A. Okay. I'm at Exhibit 1 now.	08:22:11
14	Q. I'll put it on the screen, actually, and	08:22:13
15	we'll do this -- I will make a PowerPoint so we can	08:22:28
16	annotate it.	08:22:38
17	Great.	08:23:02
18	So I have marked a page from Exhibit A1,	08:23:02
19	just so we can work with it on the screen, but you	08:23:07
20	have the full .pdf of it.	08:23:09
21	Do you recognize this document?	08:23:12
22	A. Yes.	08:23:13
23	I recognize at least the figures in the	08:23:13
24	document.	08:23:15
25	Q. Uh-huh.	08:23:16

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1	A. There were a lot of documents. I don't	08:23:17
2	remember the structure exactly.	08:23:19
3	Q. And did you analyze this document before	08:23:22
4	preparing your opinion?	08:23:25
5	A. I do remember seeing this document and so,	08:23:26
6	yes. I offered some analysis based on the device	08:23:29
7	stacks and this figure as well.	08:23:33
8	Q. And you see the reference to G EML and	08:23:35
9	G prime?	08:23:45
10	A. Yes, I do.	08:23:47
11	Q. And the reference between R EML and R prime?	08:23:49
12	A. Yes, I do.	08:23:55
13	Q. What are those layers?	08:23:56
14	A. So the -- the G EML is the emissive layer or	08:23:58
15	the green subpixel; so that is the region in which	08:24:05
16	the holes are injected on one side, the electrodes	08:24:09
17	are injected on the other. Those carriers then form	08:24:13
18	an exciton, which gets transferred to the green	08:24:17
19	lumiphore, and then that is the region that generates	08:24:22
20	the light which is emitted.	08:24:24
21	Q. And do you see the Korean characters in red	08:24:26
22	that are on the surface of the R EML, B EML, and	08:24:30
23	G EML layer?	08:24:36
24	A. I do, but sorry. If I can just complete my	08:24:37
25	explanation before of what the prime layer is.	08:24:42

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1 Oh, sorry. You had asked what the EML and 08:24:45
2 the prime layers are. 08:24:48
3 Q. Okay. Well, we'll get back to that. 08:24:50
4 Do you see the -- what box? 08:24:53
5 A. I do, yes. 08:24:59
6 Q. That is a Korean character; correct? 08:25:01
7 A. That is. 08:25:03
8 Q. Have you had that Korean character 08:25:03
9 translated for you? 08:25:06
10 MR. SNYDER: Objection to form. 08:25:07
11 THE WITNESS: Yes, I have. 08:25:10
12 BY MR. SHEASBY: 08:25:11
13 Q. Who translated it for you? 08:25:13
14 A. I believe this came up in a discussion with 08:25:15
15 Mr. Jo, in an interview with him. 08:25:21
16 Q. All right. Does Mr. Jo speak English? 08:25:24
17 A. That conversation was through a translator. 08:25:27
18 Q. The -- if you go to Exhibit 3, which is the 08:25:32
19 Seo transcript. 08:25:46
20 (Deposition Exhibit Number 3 08:25:46
21 was marked for identification.) 08:25:51
22 THE WITNESS: Sorry. I think Exhibit 3 -- 08:25:53
23 oh, sorry. 08:25:56
24 MR. SHEASBY: It is -- the Seo transcript 08:25:56
25 will be Exhibit 2. 08:25:59

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1	(Deposition Exhibit Number 2	08:25:59
2	was marked for identification.)	08:26:11
3	THE WITNESS: Okay. I have it open now.	08:26:11
4	BY MR. SHEASBY:	08:26:13
5	Q. And if you turn to 163-20 to 164-3.	08:26:15
6	A. (Witness complies.)	08:26:28
7	Okay. I see that section.	08:26:44
8	Q. And if we actually turn to 162-20 to 160- --	08:26:46
9	162-22 to 163-1, you'll see that Mr. Seo, Samsung's	08:26:59
10	corporate representative, testified that those three	08:27:11
11	Korean characters transmit as light-emitting surface;	08:27:14
12	correct?	08:27:16
13	MR. SNYDER: Objection to form.	08:27:17
14	THE WITNESS: I see that statement in the	08:27:20
15	transcript.	08:27:22
16	BY MR. SHEASBY:	08:27:22
17	Q. And did you speak to Mr. Seo in preparing	08:27:22
18	your opinions?	08:27:26
19	A. I actually can't remember if I interviewed	08:27:26
20	Mr. Seo. I spoke with a number of Samsung employees,	08:27:35
21	and I believe I did. Give me one second to just	08:27:39
22	check because I made a list in my report.	08:27:43
23	I believe that I did.	08:28:08
24	Q. Did you access any experimental data that	08:28:11
25	contradicts that [REDACTED]	08:28:27

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1	[REDACTED]	08:28:30
2	MR. SNYDER: Objection to form.	08:28:34
3	THE WITNESS: So sorry. I'm not exactly	08:28:38
4	sure what you are asking.	08:28:41
5	BY MR. SHEASBY:	08:28:43
6	Q. Well, if you are not sure what I am asking,	08:28:44
7	you should just say I am not sure what you are	08:28:46
8	asking, and I will reask the question.	08:28:49
9	A. Yeah.	08:28:50
10	I am not sure what you are asking.	08:28:51
11	Q. Okay. Did you look at any Samsung	08:28:52
12	experimental data that contradicts the statements on	08:28:54
13	this page of the document that [REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED]	08:29:08
16	MR. SNYDER: Objection to form.	08:29:08
17	THE WITNESS: So there are a number of	08:29:08
18	reasons -- and I discuss some of these in my	08:29:12
19	report -- [REDACTED]	[REDACTED]
20	[REDACTED]	[REDACTED]
21	[REDACTED]	[REDACTED]
22	[REDACTED]	[REDACTED]
23	[REDACTED]	[REDACTED]
24	[REDACTED]	[REDACTED]
25	[REDACTED]	[REDACTED]
26	[REDACTED]	08:29:37

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1	[REDACTED]	08:29:39
2	MR. SHEASBY: Objection to form.	08:29:41
3	BY MR. SHEASBY:	08:29:43
4	Q. I am asking you, did you see any	08:29:44
5	experimental data that contradicts [REDACTED]	[REDACTED]
6	[REDACTED]	08:29:51
7	MR. SNYDER: Objection to form.	08:29:54
8	THE WITNESS: So, again, the -- whether we	08:29:55
9	describe this as an experiment or not, you see the	08:29:58
10	spectrum of the light that is emitted from the	08:30:01
11	organic light-emitting diodes, and the spectrum of	08:30:05
12	that light is consistent with the emission of the	08:30:08
13	light only occurring within the emissive layer.	08:30:10
14	MR. SHEASBY: Objection to form.	08:30:16
15	BY MR. SHEASBY:	08:30:16
16	Q. I'm asking you can you identify any	08:30:17
17	experimental data generated at Samsung that [REDACTED]	[REDACTED]
18	[REDACTED]	[REDACTED]
19	[REDACTED]	08:30:25
20	MR. SNYDER: Objection to form.	08:30:27
21	THE WITNESS: So, again, the --	08:30:28
22	BY MR. SHEASBY:	08:30:29
23	Q. Give me the name of the document. Give me	08:30:32
24	its Bates number. That is what I'm looking for.	08:30:33
25	MR. SNYDER: Objection to form.	08:30:36

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1	THE WITNESS: If you give me a minute, we	08:30:37
2	can look at the spectrum as an example of the emitted	08:30:42
3	light from the organic light-emitting diode. I'll	08:30:44
4	see if, for example, this exhibit has that spectrum.	08:30:47
5	Just give me one moment.	08:30:52
6	So if we look, for example, on the page	08:31:52
7	after this one in the document, you know, it has	08:31:55
8	a spectrum of the -- of one of the emitted -- one --	08:31:57
9	one of the organic light-emitting diodes.	08:32:06
10	And, again, one of the pieces of evidence	08:32:10
11	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]. Now, in an	08:32:24
15	organic light-emitting diode, the exciton, when it	08:32:27
16	recombines, emits light corresponding to the energy	08:32:32
17	of that HOMO-LUMO gap. And so if light was being	08:32:35
18	emitted from the prime layers, we would see light	08:32:39
19	escaping from the OLED with a shorter wavelength than	08:32:42
20	the wavelength of the lumiphore, which is present in	08:32:48
21	the EML.	08:32:51
22	And so although it is not an explicit	08:32:52
23	experiment in which we attempt to create some	08:32:57
24	different structure, [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	08:33:03

1	[REDACTED]	[REDACTED]
2	[REDACTED]	08:33:14
3	MR. SHEASBY: Objection. Form.	08:33:18
4	BY MR. SHEASBY:	08:33:19
5	Q. I'm actually asking you if there has been	08:33:19
6	any -- would -- have you run any experiments that	08:33:22
7	contradict the assertion that [REDACTED]	[REDACTED]
8	[REDACTED]	08:33:29
9	MR. SNYDER: Objection to form.	08:33:33
10	THE WITNESS: So, again, [REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	08:33:40
13	MR. SHEASBY: Objection.	08:33:44
14	THE WITNESS: -- which is the emissive	08:33:45
15	layer.	08:33:46
16	MR. SHEASBY: Objection to form.	08:33:47
17	BY MR. SHEASBY:	08:33:48
18	Q. I asked you if you have run any experiments	08:33:48
19	to determine [REDACTED]	[REDACTED]
20	[REDACTED]	[REDACTED]
21	[REDACTED]	08:33:59
22	MR. SNYDER: Objection to form.	08:34:00
23	THE WITNESS: So, again, in every OLED the	08:34:02
24	wavelength of light being emitted is measured. And	08:34:07
25	that next page, actually in this very document, shows	08:34:10

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1 the spectrum, for example, of one of the red OLEDs. 08:34:13
2 [REDACTED] [REDACTED]
3 [REDACTED] [REDACTED]
4 [REDACTED] [REDACTED]
5 [REDACTED] 08:34:31
6 MR. SHEASBY: So objection. Form. 08:34:39
7 BY MR. SHEASBY: 08:34:40
8 Q. I asked you if you had run any experiments. 08:34:40
9 Did you or did you not? It is a yes-or-no 08:34:44
10 question. 08:34:47
11 MR. SNYDER: Objection to form. 08:34:47
12 THE WITNESS: I'm sorry. 08:34:50
13 Is your question whether I personally 08:34:51
14 conducted any experiments -- 08:34:53
15 BY MR. SHEASBY: 08:34:55
16 Q. That's correct. 08:34:56
17 A. -- or that I was viewing data? 08:34:56
18 Q. That's correct. 08:34:58
19 I asked you if you had run any experiments. 08:34:59
20 MR. SNYDER: Objection to form. 08:35:02
21 THE WITNESS: So to answer your question, 08:35:03
22 I am reviewing the data, which is provided by 08:35:05
23 Samsung, and I did not personally make any of the 08:35:08
24 devices or measure the graphs which are there; 08:35:12
25 however, your exhibit -- again, on the very next 08:35:16

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1	page, if you would like to look at the spectrum, we	08:35:19
2	can walk through its shape --	08:35:22
3	MR. SHEASBY: Objection. Form.	08:35:24
4	THE WITNESS: -- and provide the evidence	08:35:26
5	that I am using to answer your question.	08:35:27
6	MR. SHEASBY: Objection. Form.	08:35:29
7	BY MR. SHEASBY:	08:35:30
8	Q. I asked you if you had run any experiments,	08:35:30
9	and the answer is either a yes or a no.	08:35:33
10	A. I don't --	08:35:36
11	MR. SNYDER: Objection to form.	08:35:36
12	THE WITNESS: I did not personally make any	08:35:37
13	of the devices which are described in that document.	08:35:39
14	BY MR. SHEASBY:	08:35:39
15	Q. Did you perform any simulations for any of	08:35:43
16	the devices that are at issue in this case?	08:35:47
17	MR. SNYDER: Objection to form.	08:35:50
18	THE WITNESS: I did not personally simulate	08:35:51
19	any of the devices that are at issue in this case.	08:35:54
20	BY MR. SHEASBY:	08:36:09
21	Q. Okay. Now -- so what is the -- so if we	08:36:09
22	turn to the second page of the document we were	08:36:38
23	looking at, which is Exhibit 1, you are referring to	08:36:41
24	the bottom left-hand graph; is that correct?	08:36:45
25	A. I'm sorry.	08:36:52

1 Just so that we are clear, are you speaking 08:36:54
2 about the page after this page or the second page of 08:36:57
3 the document in its totality? 08:37:00
4 Q. The page after this page, which is SDC_00 -- 08:37:02
5 00007-1267. 08:37:08
6 A. That is correct. 08:37:13
7 So that would be then, just to be clear, 08:37:14
8 that -- this page. 08:37:18
9 Q. And you believe that that bottom left-hand 08:37:19
10 graph corresponds to the devices on the previous 08:37:23
11 page? 08:37:27
12 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 08:37:36
15 Q. And you believe this corresponds to the red 08:37:37
16 pixel that was from the previous page? 08:37:42
17 A. Yes. 08:37:46
18 That is -- that is my understanding. 08:37:47
19 Q. And did you get the document translated to 08:37:49
20 have confidence in that? 08:37:52
21 A. The -- I did not have a certified 08:37:54
22 translation of the document. 08:38:00
23 Q. Okay. Let me ask you this. 08:38:02
24 Does this generally reflect the design of 08:38:04
25 the blue -- if we turn to this page of Exhibit 1, 08:38:07

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1 does this generally reflect the design of the blue, 08:38:10
2 green, and red pixels that are used in the accused 08:38:13
3 devices? 08:38:17

4 MR. SNYDER: Objection to form. 08:38:18

5 THE WITNESS: This is the general design of 08:38:18
6 the organic light-emitting diodes that are used by 08:38:21
7 Samsung. 08:38:25

8 BY MR. SHEASBY: 08:38:26

9 Q. Okay. Let me ask you the next question, 08:38:26
10 which is now if we go down, this is a shift from red 08:38:28
11 to -- red to green in the -- what you think is the 08:38:33
12 red pixel; is that correct? 08:38:40

13 A. So the red pixel is involved in that change 08:38:42
14 that this is showing a difference in the spectrum as 08:38:47
15 a function of the viewing angle. 08:38:50

16 Q. Okay. And now I want to dig into your -- 08:38:52
17 you had some logic, and now that we have gotten it 08:38:56
18 cleaned up, the red EML -- what is the wavelength of 08:38:59
19 the red EML? 08:39:03

20 A. I'll have to check. If you just give me 08:39:05
21 a second, there is additional documentation of the 08:39:11
22 red peak wavelength. Sorry. I would have to check 08:39:14
23 on that to give you an exact answer. 08:40:24

24 Q. Okay. Well -- 08:40:26

25 A. Is that -- yeah. 08:40:28

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1	Q. So....	08:40:29
2	A. There is possible weights of pixel, so....	08:40:30
3	Q. I'm sorry.	08:40:34
4	Go ahead. Say that again.	08:40:34
5	A. No.	08:40:35
6	I'm sorry. Go ahead.	08:40:35
7	Q. Okay. So you -- what is your logical basis	08:40:36
8	for why the interface between EML and HTL is not	08:40:40
9	a light-emitting surface?	08:40:45
10	MR. SNYDER: Objection to form.	08:40:50
11	THE WITNESS: So if we look specifically at	08:40:51
12	a red pixel on -- or a green pixel, again, the	08:40:53
13	exciton is confined within the emissive layer. And	08:40:58
14	the light that we see from those subpixels is only	08:41:02
15	the light which is from the -- the lumiphores, which	08:41:05
16	are within the emissive layer.	08:41:10
17	BY MR. SHEASBY:	08:41:11
18	Q. Yes.	08:41:11
19	I understand you said that.	08:41:12
20	What is the experimental evidence that shows	08:41:13
21	that?	08:41:15
22	MR. SNYDER: Objection to form.	08:41:17
23	THE WITNESS: I didn't conduct any	08:41:19
24	experiments in order to determine that personally.	08:41:21
25	And, you know, we would need to review, again, the --	08:41:24

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1 the color quality and the wavelength of light coming 08:41:28
2 out. That is only one of several pieces of evidence, 08:41:33
3 however. 08:41:36
4 BY MR. SHEASBY: 08:41:36
5 Q. Okay. So let's dig into that one. 08:41:36
6 So what is the -- what is the experimental 08:41:39
7 data that you can point to right now that supports 08:41:41
8 the assertion you just made? 08:41:44
9 MR. SNYDER: I would just like to remind the 08:41:46
10 witness, you can finish your answer. 08:41:49
11 THE WITNESS: Great. 08:41:51
12 There is other evidence as well in addition 08:41:52
13 to experimental data. And, again, right now, at this 08:41:54
14 moment, I don't have it in this exhibit. This 08:41:58
15 document also contains other information. But if we 08:42:01
16 have a little bit of time, I can look at other more 08:42:06
17 detailed documents examining that since you were 08:42:09
18 asking for a specific -- for a specific reference. 08:42:12
19 But in addition to the -- the spectrum of 08:42:19
20 the light that is emitted from the single-color 08:42:24
21 pixels, additional information that we can use is 08:42:28
22 a simulation, which, again, I did not personally 08:42:30
23 conduct but has been conducted by many others. 08:42:35
24 And it is also something that is well known 08:42:39
25 from the -- a person of ordinary skill in the art, 08:42:42

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1 specifically because the prime layers have a wider 08:42:47
2 HOMO-LUMO gap and, as a consequence, again, if there 08:42:51
3 was recombination happening in the prime layers, we 08:42:56
4 would then see that in the spectrum of each of the 08:42:58
5 individual pixels. 08:43:00

6 Now, this -- sorry. Go ahead. 08:43:01

7 BY MR. SHEASBY: 08:43:02

8 Q. Okay. So now let's dig in. 08:43:02

9 So the first reason you gave is because of 08:43:05
10 the spectrum of light that is being emitted by the 08:43:07
11 pixel; is that correct? 08:43:10

12 A. That is correct. 08:43:11

13 Q. Okay. 08:43:12

14 A. And the -- 08:43:13

15 Q. Let's just do it in pieces. I will give you 08:43:14
16 an opportunity to speak about all three. 08:43:17

17 In your report, do you cite any -- any 08:43:20
18 experimental data that indicates that the spectrum of 08:43:22
19 light does not include the interface layer between 08:43:26
20 the HTML and -- HTL and R EML layer? 08:43:28

21 MR. SNYDER: Objection to form. 08:43:35

22 THE WITNESS: So in my report I did not do 08:43:37
23 any specific experimental analysis of the emission 08:43:44
24 from the -- the prime layer. And, again, I see no 08:43:50
25 evidence in any of the documentation that that 08:43:54

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1	emission exists.	08:43:55
2	BY MR. SHEASBY:	08:43:56
3	Q. So I just asked you --	08:43:57
4	MR. SHEASBY: Objection. Form.	08:44:00
5	BY MR. SHEASBY:	08:44:01
6	Q. -- in your report do you identify any	08:44:02
7	experimental evidence that [REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	08:44:18
11	MR. SNYDER: Objection to form.	08:44:20
12	THE WITNESS: [REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED] and	08:44:35
16	so I did not see any need to personally conduct any	08:44:38
17	experiments in order to support that -- that -- that	08:44:41
18	conclusion.	08:44:45
19	MR. SHEASBY: Objection. Form.	08:44:47
20	BY MR. SHEASBY:	08:44:47
21	Q. I asked you in your report do you cite any	08:44:48
22	evidence that [REDACTED]	[REDACTED]
23	[REDACTED]	[REDACTED]
24	[REDACTED]	08:44:57
25	MR. SNYDER: Objection to form.	08:44:59

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1 THE WITNESS: [REDACTED] [REDACTED]
[REDACTED]
[REDACTED], and I did not 08:45:09
4 cite any specific experimental evidence examining 08:45:12
5 that, given the -- again, the -- the reasons that 08:45:16
6 I -- I had described earlier. 08:45:20
7 MR. SHEASBY: Objection. Form. 08:45:21
8 BY MR. SHEASBY: 08:45:22
9 Q. I asked you whether you cite any evidence 08:45:22
10 about [REDACTED] [REDACTED]
[REDACTED]
[REDACTED] 08:45:34
13 MR. SNYDER: Objection to form. 08:45:35
14 THE WITNESS: [REDACTED] [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] 08:46:06
22 MR. SHEASBY: So objection. Form. 08:46:06
23 BY MR. SHEASBY: 08:46:07
24 Q. This document, you agree, is [REDACTED] [REDACTED]
[REDACTED] 08:46:10

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1	[REDACTED]	08:46:12
2	A. I see that notation in this document, but	08:46:16
3	I disagree that this is a light-emitting surface, and	08:46:19
4	that light-emitting surface --	08:46:22
5	MR. SHEASBY: Objection.	08:46:22
6	BY MR. SHEASBY:	08:46:23
7	Q. Go ahead.	08:46:24
8	A. [REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]
11	[REDACTED]	08:46:36
12	MR. SHEASBY: Objection. Form.	08:46:38
13	BY MR. SHEASBY:	08:46:39
14	Q. We have this document that [REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]
16	[REDACTED] correct? You see	08:46:45
17	this document?	08:46:50
18	A. I see this document, yes.	08:46:50
19	Q. Okay. In your report, do you cite any	08:46:51
20	experimental evidence to the contrary?	08:46:57
21	MR. SNYDER: Objection to form.	08:47:00
22	THE WITNESS: So, again, I disagree that	08:47:01
23	that surface is a light-emitting surface. [REDACTED]	[REDACTED]
24	[REDACTED]	[REDACTED]
25	[REDACTED]	08:47:12

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1	[REDACTED]	[REDACTED]
2	[REDACTED]	08:47:20
3	MR. SHEASBY: Objection. Form.	08:47:20
4	BY MR. SHEASBY:	08:47:21
5	Q. In your report do you cite any experimental	08:47:21
6	evidence contradicting this statement on this	08:47:24
7	document [REDACTED]	[REDACTED]
8	[REDACTED]	08:47:30
9	MR. SNYDER: Objection to form.	08:47:33
10	THE WITNESS: [REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	08:47:41
13	BY MR. SHEASBY:	08:47:43
14	Q. Right.	08:47:43
15	MR. SHEASBY: Let's take a break. I'm going	08:47:44
16	to suspend this, I think, and we're going to -- I'm	08:47:47
17	going to call the court on Monday morning.	08:47:49
18	THE VIDEOGRAPHER: Do we have an agreement	08:47:51
19	to go off the record?	08:47:53
20	MR. SHEASBY: We can go off.	08:47:55
21	MR. SNYDER: Yes.	08:47:55
22	We can go off the record.	08:47:55
23	THE VIDEOGRAPHER: This marks the end of	08:47:57
24	media number one.	08:47:59
25	The time is 8:47 a.m.	08:48:00

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1	And we are off the record.	08:48:02
2	(Short recess taken.)	09:07:37
3	THE VIDEOGRAPHER: This marks the beginning	09:07:37
4	of media unit number two.	09:07:38
5	The nine is -- time is the 9:07 a.m.	09:07:40
6	We are on the record.	09:07:42
7	BY MR. SHEASBY:	09:07:45
8	Q. What is the wavelength that is emitted at	09:07:45
9	the interface between EML and HTL?	09:07:51
10	MR. SNYDER: Objection to form.	09:07:56
11	THE WITNESS: [REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	09:08:19
17	BY MR. SHEASBY:	09:08:21
18	Q. And what is the experimental evidence that	09:08:21
19	you have cited in your report that supports that	09:08:23
20	assertion?	09:08:26
21	A. So I do discuss this question of the	09:08:29
22	interface in my report. If you go to my rebuttal	09:08:31
23	report, Paragraph 246, I have some discussion of	09:08:37
24	that.	09:08:42
25	MR. SHEASBY: Objection. Form.	09:08:54

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1	BY MR. SHEASBY:	09:08:55
2	Q. What is the experimental evidence you cite	09:08:56
3	to support the assertion you just made?	09:08:58
4	MR. SNYDER: Objection to form.	09:09:01
5	THE WITNESS: So there -- there are a few --	09:09:02
6	again, there are a few reasons that I cite. You	09:09:07
7	know, the first is, you know, that particular	09:09:13
8	document that was an interview with -- with a Samsung	09:09:19
9	engineer [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED] And so that -- she agrees with me	09:09:29
12	there.	09:09:33
13	And, also, you know, Mr. Humphrey,	09:09:34
14	I understand, in his -- in his declarations, has	09:09:38
15	stated -- but, again, without any evidence on his	09:09:43
16	side or any scientific explanation -- how that light	09:09:47
17	could be -- could be generated. Now --	09:09:51
18	MR. SHEASBY: Objection to form.	09:09:53
19	THE WITNESS: Okay.	09:09:55
20	BY MR. SHEASBY:	09:09:55
21	Q. Do you cite any experimental evidence for	09:09:56
22	your assertion that what is stated on this Samsung	09:09:58
23	document is incorrect? [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]?	09:10:23

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1	MR. SNYDER: Objection to form.	09:10:24
2	THE WITNESS: So yeah.	09:10:25
3	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]:49
9	BY MR. SHEASBY:	09:10:50
10	Q. What is the wavelength of those lumiphores?	09:10:51
11	A. I don't have it at my fingertips.	09:10:54
12	I would -- I would need to -- to look more closely at	09:10:57
13	those documents. It will --	09:11:01
14	Q. [REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]:07
16	A. [REDACTED]	[REDACTED]
■	[REDACTED]	09:11:13
18	Q. And do you cite in your experimental	09:11:15
19	evidence that [REDACTED]	[REDACTED]
■	[REDACTED]	09:11:23
21	MR. SNYDER: Objection to form.	09:11:27
22	THE WITNESS: [REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]:40

1	[REDACTED]	09:11:45
2	MR. SHEASBY: Objection. Form.	09:11:45
3	BY MR. SHEASBY:	09:11:47
4	Q. I said do you cite any evidence?	09:11:47
5	MR. SNYDER: Objection to form.	09:11:49
6	THE WITNESS: I'm sorry. If you could be	09:11:50
7	a little clearer.	09:11:52
8	The OLEDs themselves are structured with	09:11:53
9	these discrete layers. If you are asking if the --	09:12:00
10	I'm sorry.	09:12:05
11	If you could ask that question again.	09:12:05
12	BY MR. SHEASBY:	09:12:07
13	Q. Yes.	09:12:08
14	[REDACTED]	[REDACTED]
15	[REDACTED], and there	09:12:10
16	is --	09:12:16
17	A. That is correct.	09:12:17
18	[REDACTED]	[REDACTED]
19	[REDACTED]	09:12:22
20	Q. And I'm saying do you cite any evidence that	09:12:24
21	[REDACTED]	[REDACTED]
22	[REDACTED]	09:12:31
23	MR. SNYDER: Objection to form.	09:12:32
24	BY MR. SHEASBY:	09:12:33
25	Q. Any experimental evidence.	09:12:33

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1 A. Again, [REDACTED] [REDACTED]
[REDACTED] [REDACTED] and I have not done any experiments to 09:12:41
3 examine that question specifically. 09:12:49
4 Q. Is there any simulations? 09:12:53
5 MR. SHEASBY: So objection to form. 09:12:55
6 BY MR. SHEASBY: 09:12:57
7 Q. Have you done any simulations to examine 09:12:57
8 [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:13:02
10 MR. SNYDER: Objection to form. 09:13:07
11 THE WITNESS: [REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:13:28
17 MR. SHEASBY: Objection. Form. 09:13:29
18 BY MR. SHEASBY: 09:13:30
19 Q. I asked you have you done any simulation to 09:13:31
20 see [REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED] :40
23 MR. SNYDER: Objection to form. 09:13:42
24 THE WITNESS: So if your question is whether 09:13:44
25 I, personally, have done any such simulation, I have 09:13:46

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1	not.	09:13:49
2	BY MR. SHEASBY:	09:13:50
3	Q. Okay. Now -- so this is page two of	09:13:50
4	Exhibit A1, which is an excerpt from Exhibit 1, and	09:16:21
5	there is Korean characters between the EML and the	09:16:26
6	HTL layer.	09:16:30
7	Do you see those Korean characters?	09:16:32
8	A. I see those Korean characters, yes.	09:16:35
9	Q. And I will mark them with a black box.	09:16:37
10	Those Korean characters translate as	09:16:48
11	light-emitting surface.	09:16:52
12	Were you aware of that fact?	09:16:52
13	MR. SNYDER: Objection to form.	09:16:54
14	THE WITNESS: Yes.	09:16:55
15	I am aware of that fact, and I discuss this	09:17:00
16	in my report.	09:17:02
17	BY MR. SHEASBY:	09:17:04
18	Q. Okay. Let me ask you the next question,	09:17:04
19	which is what is the HTL layer?	09:17:06
20	A. So the HTL layer in -- in organic	09:17:11
21	light-emitting diode is the whole transport layer.	09:17:21
22	It is one of the layers in which the holes which are	09:17:24
23	injected from the anode travel towards the emissive	09:17:27
24	layer, and then the electrons from the other side	09:17:31
25	travel in, and they meet at the emissive layer.	09:17:35

1 Q. And so it is the point at which the holes 09:17:38
2 in the electrons meet that the light transmission 09:17:47
3 occurs -- light transmission occurs? 09:17:50

4 A. So it is a multistep process. The holes and 09:17:55
5 the electrons both have to meet on an organic 09:17:57
6 semiconductor and form an excited state. That 09:18:02
7 excited state then diffuses some distance in order to 09:18:05
8 find its lowest potential energy, which is generally 09:18:10
9 structured to be on the light-emitting doping. And 09:18:13
10 then when it combines, we get the HOMO-LUMO gap 09:18:20
11 energy of that light emitter, and that is where the 09:18:25
12 light is generated. 09:18:28

13 Q. And did you do any experimental studies as 09:18:29
14 to whether photons and electrons meet at the 09:18:37
15 interface between the EXR holes and electrons meet at 09:18:41
16 the interface between the EML and HTL layer? 09:18:44

17 A. Sorry. 09:18:48

18 If your question is whether I, personally, 09:18:49
19 went into the lab and did any experiments, I did not 09:18:51
20 personally conduct any experiments. 09:18:56

21 Q. And did you do any simulations? 09:18:58

22 A. If you are asking if I, personally, did any 09:19:02
23 simulations, I, personally, did not do any 09:19:05
24 simulations. 09:19:08

25 Q. Okay. What is a functional layer? 09:19:09

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1	MR. SNYDER: Objection to form.	09:19:19
2	THE WITNESS: So a functional layer is	09:19:20
3	something which is discussed in the patents, and	09:19:24
4	I also discuss this in my reports. Give me a second,	09:19:26
5	and I will just use the exact language that I used,	09:19:30
6	which is from the specification from the patent.	09:19:34
7	So the -- the functional layer is the layer	09:19:54
8	of the device which has a discrete and specific	09:19:59
9	function.	09:20:03
10	BY MR. SHEASBY:	09:20:04
11	Q. Can a layer be made up of sublayers?	09:20:50
12	A. I don't offer an opinion on whether a layer	09:20:53
13	could be made up of sublayers. Each layer is	09:20:59
14	a layer, as understood to a person of ordinary skill	09:21:03
15	in the art, and, again, that can deliver that -- that	09:21:08
16	function.	09:21:12
17	Q. Yeah.	09:21:12
18	But my question is can a layer be made up of	09:21:13
19	sublayers?	09:21:17
20	MR. SNYDER: Objection to form.	09:21:18
21	THE WITNESS: So -- and I haven't offered an	09:21:21
22	opinion on whether a layer can consist of sublayers.	09:21:23
23	BY MR. SHEASBY:	09:21:27
24	Q. Is there anything in the patent that	09:21:27
25	excludes a layer from consisting of sublayers?	09:21:30

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1 A. So if we look at the text of the patent, 09:21:33
2 the -- the '164 patent, I'll -- I'll read the section 09:21:42
3 which discusses this. And -- 09:21:47

4 Q. You don't need to read the section. You can 09:21:50
5 just tell me the section you are referring to. 09:21:53

6 A. If we go to column three, line fifty-three. 09:21:55

7 THE REPORTER: What line, please? 09:22:04

8	THE WITNESS: Sorry.	09:22:06
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9 It is line fifty-three in the '164 patent. 09:22:08

10 BY MR. SHEASBY: 09:22:23

11	Q. Yes.	09:22:23
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12	Okay. So back to my question.	09:22:23
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13	Can a functional layer be made up of	09:22:26
14	sublayers?	09:22:30

15	MR. SNYDER: Objection to form.	09:22:31
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16	THE WITNESS: So, again, each layer is	09:22:34
17	a layer, and so I don't offer an opinion on whether	09:22:37
18	it can be made from sublayers. But, again, each	09:22:45
19	layer needs to be a layer which has a specific	09:22:48
20	function.	09:22:51

21	BY MR. SHEASBY:	09:22:52
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22	Q. And in layer means one or more layers in	09:22:52
23	patentese; correct?	09:22:56

24	MR. SNYDER: Objection to form.	09:22:57
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25	THE WITNESS: I'm not speaking as if I am	09:22:59
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1	writing a patent. I'm answering the question as it	09:23:01
2	would be viewed by a person of ordinary skill in the	09:23:05
3	art.	09:23:09
4	BY MR. SHEASBY:	09:23:09
5	Q. I understand that.	09:23:09
6	But do you understand that the patent says	09:23:10
7	at least one organic functional layer? Do you see	09:23:13
8	that?	09:23:17
9	A. I do. And right after that it lists several	09:23:18
10	possible examples, for example, an emissive layer, an	09:23:23
11	electronic transport layer, and so on. And so the	09:23:29
12	fact that it says an organic functional layer and	09:23:33
13	then enumerates those layers tells us that the layer	09:23:39
14	envisioned in the specification of the patent is one	09:23:42
15	of those layers, such as the emissive layer or one of	09:23:45
16	the transport layer.	09:23:49
17	Q. And is it known in the art that an emissive	09:23:50
18	layer can, itself, be made up of sublayers?	09:23:54
19	MR. SNYDER: Objection to form.	09:23:58
20	THE WITNESS: Again, the -- I don't offer an	09:23:59
21	opinion on whether there are sublayers. The emissive	09:24:01
22	layer is a layer of the device, and -- and it is the	09:24:05
23	layer which offers that specific function of being	09:24:08
24	emitted.	09:24:13
25	///	

1	BY MR. SHEASBY:	09:24:13
2	Q. I know.	09:24:15
3	I'm asking you in the art was it understood	09:24:15
4	that an emissive layer to the -- can be made up of	09:24:18
5	sublayers?	09:24:22
6	A. Yeah.	09:24:23
7	I'm sorry. I am not sure exactly how I can	09:24:25
8	clarify my answer further.	09:24:28
9	Q. Sir, you purport to be a person of ordinary	09:24:31
10	skill in the art at the time of the patent, at least.	09:24:35
11	Persons of ordinary skill in the art understood that	09:24:35
12	functional layers, like emission layers, could be	09:24:37
13	made up of multiple layers.	09:24:39
14	MR. SNYDER: Objection to form.	09:24:41
15	THE WITNESS: So, again, I think we may be	09:24:42
16	getting into somewhat of a semantic discussion. But	09:24:46
17	the emissive functional layer is a layer, and if you	09:24:49
18	have a specific context in which I can offer a more	09:24:55
19	nuanced opinion, I would be happy to discuss that	09:25:01
20	more.	09:25:05
21	BY MR. SHEASBY:	09:25:05
22	Q. Sure.	09:25:05
23	In the context of OLED, would it rec- -- was	09:25:05
24	it recognized that emission -- emissive layers could	09:25:05
25	be made up of multiple sublayers?	09:25:10

1	MR. SNYDER: Objection to form.	09:25:14
2	THE WITNESS: So, again, the -- the emissive	09:25:15
3	layer is a layer of the device, and there is, again,	09:25:19
4	a compositional structure to it that helps it	09:25:23
5	function. And that -- that structure makes it,	09:25:27
6	itself, a layer.	09:25:33
7	Now -- yeah. I'll -- I'll leave my answer	09:25:35
8	there.	09:25:39
9	BY MR. SHEASBY:	09:25:39
10	Q. Okay. And can that emission layer be laid	09:25:39
11	down in multiple steps?	09:25:42
12	A. The emissive layer can be laid out in	09:25:46
13	multiple steps where, for example, we can have the	09:25:49
14	deposition of components that make the emissive	09:25:52
15	layer, and where they are deposited, say, in sequence	09:25:58
16	or, you know in -- in the evaporator, in many cases	09:26:06
17	for structural balance reasons, the first part, and	09:26:11
18	a second part may be made in different chambers even	09:26:15
19	if they have the same composition; so there could be	09:26:16
20	multiple steps.	09:26:20
21	Q. And can the emissive layer have different	09:26:21
22	composition of different depths?	09:26:25
23	A. So there can be some differences in the	09:26:27
24	composition in different parts of the emissive layer.	09:26:30
25	Q. Okay. I'm going to ask you the next	09:26:34

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1	question, which is a functional layer for light	09:26:36
2	emission is a layer that emits light; is that	09:26:41
3	correct?	09:26:44
4	MR. SNYDER: Objection to form.	09:26:44
5	You can finish your previous answer.	09:26:46
6	THE WITNESS: Well, I didn't get to finish	09:26:49
7	my previous answer, but that's okay. I can answer	09:26:52
8	the new question.	09:26:55
9	Oh, I'm sorry. Can you ask your question	09:26:57
10	again? I lost my train of thought because I was	09:26:59
11	thinking about the composition question.	09:27:02
12	BY MR. SHEASBY:	09:27:04
13	Q. Oh, sure.	09:27:04
14	So my question was -- well, let's actually	09:27:04
15	have it -- I'll -- I'll withdraw it, and I'll reask	09:27:08
16	it in a different way. That is probably the easiest	09:27:11
17	way of doing it.	09:27:15
18	A. Okay.	09:27:16
19	MR. SHEASBY: And just for the good order,	09:27:20
20	I'm going to go ahead and mark A1 and A2 as exhibits,	09:27:22
21	just so we have them.	09:27:28
22	(Deposition Exhibit Number A1	09:27:28
23	was marked for identification.)	09:27:30
24	(Deposition Exhibit Number A2	09:27:30
25	was marked for identification.)	09:29:43

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1	BY MR. SHEASBY:	09:29:43
2	Q. Okay. I have just added the PowerPoints A1	09:29:43
3	and A2 to the exhibit list.	09:29:46
4	So a light-emitting functional layer is the	09:29:50
5	material that emits light in the pixel.	09:30:05
6	A. So the light-emitting functional layer, the	09:30:10
7	EML, the emissive layer, is the layer in the device	09:30:14
8	that emits light in an organic light-emitting diode.	09:30:18
9	Q. Different question.	09:30:22
10	The -- the -- the -- the functional layer	09:30:23
11	that performs light emission -- so if a functional --	09:30:26
12	so a light emission functional layer, it would be	09:30:29
13	a layer that emits light; correct?	09:30:35
14	MR. SNYDER: Objection to form.	09:30:38
15	THE WITNESS: I would not use those words to	09:30:40
16	describe that layer, and a person of ordinary skill	09:30:43
17	in the art would not use those words to describe it	09:30:45
18	that way.	09:30:47
19	BY MR. SHEASBY:	09:30:47
20	Q. Okay. What is the function of a light	09:30:48
21	emission layer?	09:30:51
22	MR. SNYDER: Objection to form.	09:30:53
23	THE WITNESS: Again, I -- the -- the -- that	09:30:53
24	expression, light emission layer, is not a phrase	09:30:56
25	that would normally be used by a person of ordinary	09:30:59

1	skill in the art; so, again, there -- I hesitate to	09:31:02
2	offer an opinion. I really want to be precise in my	09:31:07
3	description of where the light is generated and in	09:31:13
4	the description of the layers using the standard	09:31:16
5	terminology that is used in the organic	09:31:20
6	light-emitting diode community.	09:31:27
7	BY MR. SHEASBY:	09:31:27
8	Q. And that is emission layer?	09:31:30
9	A. EML, the emissive layer specifically.	09:31:37
10	Q. Well, in the patent it says the organic	09:31:40
11	functional layer can be an emission layer. That is	09:31:40
12	at column three, line sixty through sixty-three.	09:31:44
13	Do you see that?	09:31:49
14	A. I -- I see that, yes.	09:31:49
15	And that is the EML, as I would describe it	09:31:51
16	in -- in English that it is translated from German,	09:31:55
17	so....	09:31:59
18	Q. Well, the organic functional layer can be an	09:31:59
19	emission layer and be doped with at least one emitted	09:31:59
20	material.	09:32:05
21	Do you see that?	09:32:05
22	A. I see that, yes.	09:32:06
23	Q. And what is the function of the emission	09:32:07
24	layer in that passage?	09:32:10
25	MR. SNYDER: Objection to form.	09:32:12

1	THE WITNESS: Again, I -- that layer is the	09:32:12
2	emissive layer, the EML, which is doped with the	09:32:15
3	light-emitting component, and that generates the	09:32:20
4	light that is inside the organic light-emitting	09:32:23
5	diode.	09:32:26
6	BY MR. SHEASBY:	09:32:26
7	Q. The organic functional layer can be an	09:32:26
8	emission layer.	09:32:31
9	That is the layer that generates the light	09:32:32
10	within the OLED?	09:32:34
11	A. So, again, I, personally, would not use that	09:32:37
12	word. But the emissive layer, the EML, is the region	09:32:39
13	of AMBI polar semiconductor in which the light is	09:32:43
14	generated.	09:32:49
15	Q. Right.	09:32:49
16	In the patent it just says emission layer,	09:32:50
17	though.	09:32:51
18	It doesn't say EML; right?	09:32:51
19	A. The patent uses the words emission layer.	09:32:54
20	Q. Yes.	09:32:56
21	And the purpose of the function emission	09:32:56
22	layer is to emit light; is that correct?	09:33:00
23	MR. SNYDER: Objection to form.	09:33:03
24	THE WITNESS: So, again, as described	09:33:03
25	specifically in the patent, it is the region which	09:33:05

1	I am describing as the EML, which is doped with the	09:33:08
2	lumiphore, which is where the light is generated, as	09:33:12
3	I mentioned.	09:33:16
4	BY MR. SHEASBY:	09:33:16
5	Q. All right.	09:33:16
6	MR. SHEASBY: Objection. Form.	09:33:18
7	BY MR. SHEASBY:	09:33:19
8	Q. The emission light emits light; correct?	09:33:19
9	A. So, again, I disagree with the use of that	09:33:24
10	term emission layer. And, again, the patent	09:33:27
11	describes the various layers in the device. And in	09:33:32
12	my explanation, I am just describing that EML, which	09:33:35
13	is that emissive layer, which is doped with the	09:33:40
14	dopings, is, indeed, where the light is emitted.	09:33:44
15	Q. So the emission layer is where the light is	09:33:47
16	emitted; correct?	09:33:50
17	A. So, again, I wouldn't use those words	09:33:51
18	personally, but the patent is mapping to the EML,	09:33:54
19	which is the region where the device is doped and	09:33:58
20	where the excitons are then transferred to the	09:34:02
21	lumiphores in order to shine out of the organic	09:34:07
22	light-emitting diode.	09:34:18
23	Q. Right.	09:34:18
24	In other -- any excitons transferred to	09:34:18
25	lumiphores at the interface between the R prime and	09:34:18

1	the EML layer?	09:34:20
2	A. So, yeah.	09:34:21
3	They are -- the dopings are inside the EML,	09:34:23
4	and so to the degree that the EML extends that	09:34:27
5	interface, of course, there can be -- of course,	09:34:30
6	there is nothing special about that interface, and	09:34:34
7	the -- the excitons have a relatively large diffusion	09:34:37
8	length, something like twenty nanometers within the	09:34:42
9	device, and so they are not intending to go to any	09:34:46
10	specific spot. They diffuse and recombine throughout	09:34:49
11	the volume of the emissive layer.	09:34:53
12	MR. SHEASBY: So objection to form. That is	09:34:57
13	not the question I asked.	09:34:59
14	THE WITNESS: If you could ask it again.	09:35:00
15	MR. SHEASBY: And I'll actually just say	09:35:02
16	objection to form.	09:35:07
17	BY MR. SHEASBY:	09:35:07
18	Q. The question I ask when lumiphores recombine	09:35:07
19	with excitons, you say there was a twenty nanometer	09:35:12
20	range in which they can be located; correct?	09:35:16
21	A. So yeah.	09:35:18
22	So just to rephrase that, the -- the	09:35:20
23	excitons are formed on the host typically, not	09:35:24
24	always. And then they diffuse and recombine on the	09:35:28
25	lumiphores. And so that -- there is a whole fostered	09:35:35

1	diffusion process that we can get into in which the	09:35:41
2	excitons can move some distance within the organic	09:35:45
3	light-emitting diode. But if that happens, it has to	09:35:50
4	be energetically downhill; so that only happens	09:35:53
5	within the EML, which is where those -- the dopings	09:35:57
6	exist that give us the light from the organic	09:36:01
7	light-emitting diode.	09:36:04
8	Q. And what if there is any dopings at the	09:36:04
9	interface between 700 angstroms and 800 angstroms?	09:36:08
10	A. I'm sorry.	09:36:14
11	Are we speaking about wavelength or	09:36:16
12	sometimes, like -- are -- you are talking about in	09:36:22
13	the cross section of the device --	09:36:24
14	Q. Yes.	09:36:26
15	A. -- specific?	09:36:26
16	Q. Yes.	09:36:28
17	A. So --	09:36:29
18	MR. SNYDER: Objection to form.	09:36:30
19	THE WITNESS: -- if there are dopings within	09:36:30
20	the diffusion length, then it is possible for the	09:36:32
21	exciton to diffuse there as long as the energy of the	09:36:36
22	doping is equal to or smaller than the energy of the	09:36:41
23	parent exciton.	09:36:46
24	BY MR. SHEASBY:	09:36:46
25	Q. [REDACTED]	09:36:48

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1 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:36:55
3 Q. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:36:59
5 A. So there is some discussion of this in my 09:37:03
6 report, and, actually, we have some testimony. If 09:37:05
7 you just give me a moment, I will bring it up. 09:37:09
8 So one of the discussions -- and I did not 09:38:54
9 personally conduct this interview, [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:39:11
13 And the -- the second testimony we have 09:39:12
14 from -- from Samsung is with Mr. Noh, again, also 09:39:23
15 from a deposition taken there. And so Mr. Noh 09:39:30
16 never -- and, apparently, [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] And I described in my 09:39:46
20 analysis of this in my report as well. 09:39:51
21 Q. Okay. So let's split it into pieces. 09:39:53
22 [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:40:02
25 A. I don't believe that I personally brought up 09:40:03

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1	that issue in any of my discussions with Samsung	09:40:06
2	engineers.	09:40:10
3	Q. Okay. [REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	09:40:17
6	A. I did not think it was necessary, given the	09:40:18
7	strength of the evidence, and so I did not request	09:40:24
8	for any additional study to be performed.	09:40:26
9	MR. SHEASBY: Objection. Form.	09:40:28
10	BY MR. SHEASBY:	09:40:29
11	Q. I asked you if you had asked for any data	09:40:29
12	that had been generated by Samsung [REDACTED]	[REDACTED]
13	[REDACTED]	09:40:36
14	MR. SNYDER: Objection to form.	09:40:38
15	THE WITNESS: I'm sorry.	09:40:40
16	I believe I already answered that question.	09:40:41
17	But just to be clear, I did not believe it to be	09:40:43
18	necessary and so I did not ask for any additional	09:40:46
19	data beyond the testimony from the two employees and,	09:40:49
20	again, some of the other evidence of that.	09:40:56
21	BY MR. SHEASBY:	09:40:56
22	Q. And did you ask -- you said that Ms. Seo	09:40:56
23	testified [REDACTED]	[REDACTED]
24	[REDACTED]; is that correct?	09:41:07
25	A. That is correct. That was her testimony.	09:41:08

1 Q. You understand that [REDACTED] [REDACTED]
[REDACTED] [REDACTED]; correct? 09:41:10
3 MR. SNYDER: Objection to form. 09:41:13
4 THE WITNESS: [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:41:33
10 BY MR. SHEASBY: 09:41:34
11 Q. Great. 09:41:35
12 So now here is the question: [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:41:40
15 A. So I -- again, I did not think it to be 09:41:45
16 necessary. I have made many OLEDs in my lifetime and 09:41:50
17 have studied questions of doping placement and layer 09:41:54
18 formation in -- in great detail. We can talk about 09:42:01
19 those if you are interested. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 09:42:18
24 MR. SHEASBY: Objection. Form. 09:42:21
25 ///

1	BY MR. SHEASBY:	09:42:22
2	Q. I asked you whether you requested any data	09:42:22
3	from Samsung. That is all I asked.	09:42:25
4	A. Okay. I will repeat my answer, which is	09:42:28
5	I did not think it to be necessary; so I did not	09:42:31
6	request any additional data from Samsung on that	09:42:34
7	point.	09:42:38
8	Q. Did you request any simulations from Samsung	09:42:38
9	on that point?	09:42:42
10	A. Similarly, I did not believe it to be	09:42:43
11	necessary; so I did not request any simulations from	09:42:46
12	Samsung on that point of the diffusion specifically.	09:42:49
13	Q. Okay. Let's talk about did you measure the	09:42:53
14	HOMO or LUMO levels of the materials that are present	09:43:06
15	in the pixels in the light-emitting functional	09:43:11
16	layers?	09:43:18
17	A. Sorry.	09:43:18
18	Can you be more specific? Are we speaking	09:43:19
19	about my experience in general or about any specific	09:43:23
20	devices that are at question in any of my report.	09:43:26
21	Q. Devices that are at issue in this case.	09:43:29
22	A. So for the specific devices accused at	09:43:32
23	issue, I did not personally go in the laboratory and	09:43:35
24	measure the HOMO or the LUMO levels of those	09:43:38
25	semiconductor materials.	09:43:42

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1 Q. Did you ask Samsung for the data they had in 09:43:44
2 the HOMO or LUMO levels? 09:43:47

3 A. So Samsung provided extensive data and 09:43:50
4 analysis regarding the HOMO and LUMO levels of the 09:43:57
5 materials that I cite in my report, and so I was able 09:44:01
6 to use that information as provided by Samsung. Any 09:44:04
7 missing data I was at liberty to request. 09:44:10

8 Q. I asked you if you requested any data from 09:44:13
9 Samsung on the subject. 09:44:17

10 A. I don't recall having to ask for any data 09:44:20
11 beyond what was already supplied to me. I believe 09:44:25
12 I had a complete set for the discussion and analysis 09:44:28
13 that I have in my report. 09:44:32

14 MR. SHEASBY: Okay. I have marked the -- 09:44:34
15 Humphrey's report Exhibit A. 09:44:59
16 (Deposition Exhibit Number 7 09:44:59
17 was marked for identification.) 09:45:03

18 BY MR. SHEASBY: 09:45:03

19 Q. Why don't you open that up. And that would 09:45:04
20 be Exhibit A to the Humphrey's report, which would be 09:45:10
21 Exhibit 7. 09:45:13

22 A. Seven. I will put it up. 09:45:20
23 Okay. I have the report open. 09:45:35

24 Q. Okay. And why don't we turn to 09:45:43
25 Paragraph 189. 09:45:46

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1	A. Okay. I am there now.	09:46:13
2	Q. The patents don't require actual LUMO and	09:46:15
3	HOMO values.	09:46:26
4	They just require relative LUMO and HOMO --	09:46:28
5	LUMO-HOMO values in comparison to the first, second,	09:46:31
6	and third matrix; correct?	09:46:33
7	A. That is correct.	09:46:35
8	The patent only requires relative	09:46:35
9	positioning of the HOMO and LUMO values.	09:46:38
10	Q. And if we go to Paragraph 192, it talks	09:46:42
11	about blue host, blue doping, and blue prime	09:46:49
12	materials.	09:46:53
13	Do you see that?	09:46:54
14	A. I see that, yes.	09:46:55
15	Q. And what is a matrix material?	09:46:56
16	MR. SNYDER: Objection to form.	09:47:01
17	THE WITNESS: So -- matrix material is	09:47:02
18	a disputed term; so give me one second just to bring	09:47:12
19	up my discussion there.	09:47:17
20	So, you know, there is some dispute and --	09:48:10
21	you know, I understand that Pictiva and Samsung have	09:48:12
22	different proposed constructions. And my	09:48:17
23	understanding is also that there is not yet a claim	09:48:20
24	construction order; so if that is issued, we probably	09:48:24
25	need to follow that specifically.	09:48:29

1	Now, my understanding is Samsung has	09:48:31
2	proposed the construction, a continuous phase of the	09:48:34
3	mixture of matrix materials, which I agree with. And	09:48:39
4	that Pictiva has proposed the construction plain and	09:48:43
5	ordinary meaning, which they proclaimed as the phrase	09:48:47
6	does not need to be construed.	09:48:53
7	BY MR. SHEASBY:	09:48:55
8	Q. And what is a continuous phase?	09:48:55
9	A. So a continuous phase would be, again,	09:48:58
10	a block of material or a region of material which	09:49:02
11	is -- which is continuous, which is not interrupted.	09:49:06
12	Q. What does it mean for material to be not	09:49:10
13	interrupted?	09:49:19
14	A. So what -- I -- I don't want to invent a new	09:49:20
15	term here, but it would mean that the material is in	09:49:31
16	a single -- I want to use the word continuous, but	09:49:34
17	that it is in a single region, and that -- that	09:49:42
18	material is all a -- simply connected through --	09:49:46
19	through the layer of material.	09:49:52
20	Q. And let's go to Paragraph 205 in Humphrey	09:49:54
21	Exhibit A.	09:50:31
22	A. (Witness complies.)	09:50:41
23	205, okay. I am there now.	09:50:56
24	Q. In the chart he lists the first matrix	09:50:59
25	material, second matrix material, and a third matrix	09:51:04

1	material.	09:51:09
2	Do you see that?	09:51:09
3	A. I see that, yes.	09:51:10
4	Q. Are those matrix materials?	09:51:11
5	MR. SNYDER: Objection to form.	09:51:13
6	THE WITNESS: So, again, Humphrey describes	09:51:15
7	them as matrix materials. Now, whether they are	09:51:20
8	matrix materials in the meaning of the -- of the	09:51:27
9	patent, I disagree that those are matrix materials	09:51:33
10	because they are not all continuous in one layer.	09:51:37
11	BY MR. SHEASBY:	09:51:41
12	Q. Which ones -- you say they are not all	09:51:41
13	continuous in one layer.	09:51:44
14	Is that what you said?	09:51:45
15	A. Yes. That is correct.	09:51:46
16	Q. Okay. Is the first matrix material he	09:51:47
17	listed a matrix material?	09:51:50
18	A. [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	09:52:28
24	Q. [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	09:52:38

1	Is that what you are saying?	09:52:40
2	A. That is correct.	09:52:41
3	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]
11	[REDACTED]	09:53:23
12	Q. So you consider a matrix in the layer to	09:53:25
13	be -- mean the same thing?	09:53:28
14	MR. SNYDER: Objection to form.	09:53:31
15	THE WITNESS: So a matrix is that mixture of	09:53:32
16	materials in a layer, and so I'm not sure that the	09:53:38
17	reverse is necessarily true. But if we describe	09:53:42
18	a matrix as I have described in my construction	09:53:46
19	before, the proposed construction, it would be	09:53:49
20	a mixture of the materials in a layer.	09:53:52
21	BY MR. SHEASBY:	09:53:54
22	Q. What is the -- let's go back to Exhibit 1 at	09:54:27
23	.pdf page seven.	09:54:41
24	A. Give me a minute to bring it up.	09:54:42
25	Okay. I am there now.	09:55:04

1	Q. What is the HOMO and LUMO values in the ETL	09:55:09
2	layer?	09:55:19
3	A. I don't have those in memory. I would have	09:55:20
4	to see if they are present in another part of the	09:55:29
5	document, but this -- this page does not tell us what	09:55:31
6	the ETL HOMO and LUMO layers are.	09:55:36
7	Q. Did you ask Samsung's engineers if the	09:55:39
8	HOMO-LUMO values in the ETL, EML, and HTL layers,	09:55:42
9	respectively, satisfy the limitation of claim one	09:55:48
10	that talks about a first matrix material, a second	09:55:53
11	matrix material, and a third matrix material that	09:55:57
12	have various comparative amounts of LUMO and HOMO?	09:56:01
13	MR. SNYDER: Objection to form.	09:56:06
14	THE WITNESS: So the EML and the ETL are	09:56:07
15	different layers, and so I just -- I'm not sure	09:56:13
16	I understand your question because the ETL and the	09:56:19
17	EML are not part of the same matrix.	09:56:25
18	BY MR. SHEASBY:	09:56:27
19	Q. I understand that.	09:56:27
20	A. I'm not sure how one would consider those to	09:56:28
21	then meet the requirements of -- of the -- patent	09:56:33
22	claim.	09:56:38
23	Q. Is there a matrix within the ETL?	09:56:39
24	A. I would say yes.	09:56:44
25	Q. Okay. Is there a matrix within the EML?	09:56:45

1	A. Yes.	09:56:49
2	I would -- I would agree with that	09:56:49
3	statement.	09:56:51
4	Q. Is there a matrix within the HTL?	09:56:51
5	A. Yes.	09:56:55
6	I agree with that statement.	09:56:55
7	Q. What are the various HOMO-LUMO values of	09:56:56
8	those three matrices?	09:57:00
9	A. In looking separately, I don't have it	09:57:03
10	committed to memory. But, again, the -- you can look	09:57:07
11	up -- if you would like, I can pull up more	09:57:14
12	documentation. That analysis is available to us for	09:57:18
13	those layers separately. And then we can -- we can	09:57:21
14	find what those HOMO-LUMO levels are.	09:57:27
15	Q. And you --	09:57:31
16	A. I don't have those memorized. I'm sorry.	09:57:32
17	Q. Did you put that in your report?	09:57:35
18	A. The HOMO and LUMO level specifically of all	09:57:37
19	the layers, I did not specifically enumerate those in	09:57:41
20	my report, no.	09:57:45
21	Q. Do you know if they satisfy the comparative	09:57:45
22	requirements of the claim limitation?	09:57:49
23	A. So, again, I -- I disagree that those layers	09:57:52
24	are all part of the same matrix, in which case I can	09:57:57
25	confidently say that they don't satisfy the claim	09:58:02

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1	limitation, which requires all of those to be	09:58:05
2	intermixed into a single layer.	09:58:09
3	Q. So you believe the claims require the first	09:58:12
4	matrix, the second matrix, and the third matrix to	09:58:14
5	be -- yeah. I understand what you are saying.	09:58:18
6	I am actually specifically asking is the	09:58:21
7	matrix material in the ETL, what is its LUMO and HOMO	09:58:27
8	relative to the matrix material in the EML and the	09:58:34
9	HTL?	09:58:38
10	MR. SNYDER: Objection to form.	09:58:39
11	THE WITNESS: So that is knowable, and if	09:58:40
12	you would like, we can -- unfortunately, this	09:58:43
13	document doesn't have those details. I don't	09:58:47
14	remember it from memory. But we -- we could	09:58:50
15	certainly look separately and -- and enumerate what	09:58:54
16	those layers are. Those are -- those are known	09:58:57
17	values. I apologize. I just don't have them	09:59:00
18	committed to memory.	09:59:03
19	MR. SHEASBY: All right. Let's take our	09:59:09
20	break.	09:59:11
21	THE VIDEOGRAPHER: This marks the end of	09:59:13
22	media unit number two.	09:59:15
23	The time is 9:59 a.m.	09:59:16
24	We are off the record.	09:59:18
25	(Short recess taken.)	10:03:59

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1	THE VIDEOGRAPHER: This marks the beginning	10:18:00
2	of media unit number three.	10:18:05
3	The time is 10:18 a.m.	10:18:08
4	We are on the record.	10:18:09
5	BY MR. SHEASBY:	10:18:10
6	Q. Looking back at Exhibit 1, and we're looking	10:18:11
7	at the -- the EML layer.	10:18:14
8	Now, you said that for there to be	10:18:17
9	emissions, there has to be a conduction of electrons	10:18:19
10	in the transport of -- of holes; correct?	10:18:26
11	MR. SNYDER: Objection to form.	10:18:33
12	THE WITNESS: That is correct.	10:18:34
13	So for the emissive layer to do its work,	10:18:38
14	both the hole and an electron have to meet on the	10:18:42
15	semiconductor to form the excited state, and so both	10:18:45
16	electrons and holes need to meet and be injected into	10:18:50
17	one of the components of the EML.	10:18:56
18	BY MR. SHEASBY:	10:18:59
19	Q. There is no conduction of electrons in the	10:18:59
20	EML layer; correct?	10:19:01
21	A. So I disagree with that characterization.	10:19:05
22	The electrons do not flow all the way through the	10:19:09
23	EML, but the electrons need to be able to access the	10:19:12
24	EML in order to form the exciton.	10:19:16
25	Q. Sir, there is no conduction of electrons in	10:19:19

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1	the EML layer; correct?	10:19:26
2	A. I disagree.	10:19:29
3	Q. The conduction of electrons is not required	10:19:31
4	for the emission of light in the EML layer?	10:19:48
5	A. I disagree. I'm sorry. I'm not exactly	10:19:58
6	sure what you are asking.	10:20:04
7	Q. Sure.	10:20:06
8	There is -- the EML layer emits light;	10:20:06
9	correct?	10:20:10
10	A. That is correct.	10:20:12
11	The EML is the emissive layer of the -- of	10:20:13
12	the -- of the OLED, and that is where the light is --	10:20:18
13	is generated and is emitted from that.	10:20:22
14	Q. And there is no conduction of electrons in	10:20:25
15	the EML layer because that is not necessary for	10:20:28
16	emission?	10:20:30
17	A. So electrons need to reach and enter the	10:20:32
18	EML, and so I disagree with the statement that there	10:20:36
19	is no conduction of electrons, as I mentioned before.	10:20:42
20	Q. Okay. Let me -- let me ask you another	10:20:47
21	question, which is about the -- why don't we go to --	10:20:50
22	oooh, I'm going to have to mark some more exhibits.	10:21:01
23	Why don't we go back to SDC_000709.	10:21:04
24	Let's go back to some of the exhibits.	10:21:10
25	Let's go to Exhibit 3.	10:23:06

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1 A. (Witness complies.) 10:23:15

2 Okay. I'm there now. 10:23:19

3 Q. And let's turn to Page 70993. 10:23:20

4 A. (Witness complies.) 10:23:44

5 Q. [REDACTED] [REDACTED]

6 [REDACTED] [REDACTED]

7 [REDACTED] 10:24:09

8 MR. SNYDER: Objection to form. 10:24:10

9 THE WITNESS: [REDACTED] [REDACTED]

10 [REDACTED] [REDACTED]

11 [REDACTED] [REDACTED]

12 [REDACTED] 10:24:26

13 BY MR. SHEASBY: 10:24:27

14 Q. And is -- are those forms of vaporization? 10:24:28

15 MR. SNYDER: Objection to form. 10:24:33

16 THE WITNESS: Yes. 10:24:34

17 [REDACTED] 10:24:35

18 [REDACTED] 10:24:42

19 BY MR. SHEASBY: 10:24:44

20 Q. And does that page depict the chambers in 10:24:44

21 which that -- that occurs? 10:24:47

22 A. So this document shows some of the structure 10:24:51

23 of the sources that are used, but -- but it does not 10:24:54

24 show the whole chamber generally. 10:24:58

25 Q. And what do you mean, the structure of the 10:25:01

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1 sources? 10:25:04

2 A. So the [REDACTED] -- 10:25:05

3 strictly speaking, evaporation is when the material 10:25:12

4 melts, and not all of it melts. But when that 10:25:17

5 process occurs, that happens out of a source out of 10:25:20

6 a small furnace, and sometimes it is linear, 10:25:24

7 sometimes it is circular. [REDACTED] [REDACTED]

8 [REDACTED] [REDACTED]

9 [REDACTED] [REDACTED]

10 [REDACTED] 10:25:40

11 There is the rest of the chamber, and there 10:25:42

12 are other structures also inside the system, which is 10:25:45

13 why I say it is just a section where the source 10:25:49

14 materials are stored and the schematic description of 10:25:53

15 how they are configured. 10:25:58

16 Q. [REDACTED] [REDACTED]

17 [REDACTED]? 10:26:01

18 MR. SNYDER: Object- -- 10:26:05

19 THE WITNESS: That is my understanding; [REDACTED] [REDACTED]

20 [REDACTED] [REDACTED]

21 [REDACTED] 10:26:20

22 BY MR. SHEASBY: 10:26:22

23 Q. And what materials are used in the METL 10:26:22

24 layer? 10:26:33

25 MR. SNYDER: Objection to form. 10:26:34

1 THE WITNESS: I'm not sure which ones are 10:26:36
2 used in -- in the general case. The document 10:26:38
3 describes what sources are loaded, but not all of 10:26:46
4 them are used in every device, and that depends upon 10:26:48
5 the recipe; so we have to look at the construction of 10:26:51
6 each individual device in order to say what is in the 10:26:55
7 ETL layer. 10:27:00

8 BY MR. SHEASBY: 10:27:01

9 Q. Are there any processes in which the E- -- 10:27:02
10 in which the ETL layer is manufactured and which the 10:27:05
11 materials that make up that ETL layer are not both 10:27:09
12 evaporated in the same chamber? 10:27:12

13 A. So our -- I'm sorry. 10:27:17

14 Are you asking the question in general or 10:27:22
15 are you asking about Samsung's process? 10:27:24

16 Q. The accused Samsung processes. 10:27:26

17 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED] 10:27:45

21 Q. [REDACTED] 10:27:47

22 MR. SNYDER: Objection to form. 10:27:50

23 THE WITNESS: [REDACTED] 10:27:52

24 [REDACTED] [REDACTED]
[REDACTED] 10:27:54

1	BY MR. SHEASBY:	10:28:05
2	Q. How do you jointly vaporize materials within	10:28:49
3	a chamber?	10:28:56
4	A. So the -- this question of joint	10:28:58
5	vaporization is a -- is a complicated one, and so	10:29:05
6	in -- one -- one way that material could be jointly	10:29:09
7	vaporized would be, for example, to mix the material	10:29:13
8	together into a single crucible and then evaporate it	10:29:15
9	from that single crucible.	10:29:22
10	Q. What are the other ways of joint	10:29:25
11	vaporization?	10:29:28
12	A. So I discussed this a little bit in my	10:29:28
13	report. There are some other examples, for example,	10:29:31
14	that are offered by -- in -- in Werner251. Let me	10:29:36
15	just figure those out. But for sure that is one	10:29:45
16	example where -- which has been discussed in the --	10:29:47
17	in the patent literature and in the literature. And,	10:29:50
18	you know, I -- there -- there may be other ways as	10:29:54
19	well.	10:29:57
20	Q. Have you ever performed joint vaporization	10:29:57
21	in a chamber?	10:30:00
22	A. So I have done codeposition of materials,	10:30:02
23	but I'm not certain that that would necessarily	10:30:10
24	qualify as joint vaporization because of the types of	10:30:13
25	systems that I was using.	10:30:17

1	Q. Why is codeposition not joint vaporization?	10:30:21
2	A. So joint vaporization -- if you just give me	10:30:27
3	a second and let me just pull up the -- the language	10:30:32
4	that I use.	10:30:35
5	Q. Let me ask it this way.	10:31:56
6	A. Sure.	10:31:58
7	Q. For the 2.- -- for the '223 patent, is there	10:31:58
8	any description of simultaneous vaporization through	10:32:09
9	comixing in the specification?	10:32:14
10	MR. SNYDER: Objection to form.	10:32:19
11	THE WITNESS: So the -- the '223 patent	10:32:20
12	describes the -- the benefits of the patent as	10:32:25
13	obtained by joint vaporization, and so it basically	10:32:28
14	is describing a process where there is substantial	10:32:36
15	mixing and coordination that occurs as part of that	10:32:39
16	joint vaporization process.	10:32:44
17	BY MR. SHEASBY:	10:32:45
18	Q. Right.	10:32:45
19	And that is what I am asking you.	10:32:45
20	Where is that? Where does it say in the	10:32:47
21	'223 patent that the -- the materials must be mixed	10:32:51
22	in advance for there to be joint vaporization?	10:32:53
23	A. That is just an example of one way that one	10:32:56
24	could consider creating a situation where there is	10:33:01
25	joint vaporization.	10:33:03

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1	MR. SHEASBY: Objection. Form.	10:33:05
2	BY MR. SHEASBY:	10:33:05
3	Q. Where does the patent talk about premixing	10:33:06
4	the materials are involved in joint vaporization?	10:33:09
5	A. Sorry. I was responding to your question	10:33:12
6	and example of how one could conduct joint	10:33:14
7	vaporization.	10:33:17
8	MR. SHEASBY: Objection. Form.	10:33:17
9	BY MR. SHEASBY:	10:33:18
10	Q. Where does the patent describe mixing in	10:33:19
11	advance the two materials that are involved in joint	10:33:21
12	vaporization?	10:33:25
13	MR. SNYDER: Objection to form.	10:33:25
14	THE WITNESS: So the -- the '223 patent does	10:33:26
15	not describe that mixing. That was --	10:33:28
16	BY MR. SHEASBY:	10:33:31
17	Q. So let me ask the next question, which is	10:33:31
18	where does the '223 patent describe that the -- the	10:33:33
19	substances in the joint vaporization process must be	10:33:37
20	simultaneously deposited?	10:33:41
21	MR. SNYDER: Objection to form.	10:33:43
22	THE WITNESS: So, again, the -- the '223	10:33:44
23	patent discusses joint vaporization and describes	10:33:52
24	that joint vaporization as providing the complex	10:33:57
25	agent and the other coordination processes that are	10:34:03

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1	the benefits of the patent.	10:34:05
2	MR. SHEASBY: Objection. Form.	10:34:07
3	BY MR. SHEASBY:	10:34:08
4	Q. Where does the '223 patent describe	10:34:08
5	simultaneous deposition through vaporization?	10:34:11
6	MR. SNYDER: Objection to form.	10:34:14
7	THE WITNESS: So the -- give me a moment,	10:34:15
8	and I'll -- I'll take a quick look at an example.	10:34:30
9	Sorry. Would it be -- I think the '223	10:35:06
10	patent is -- let's see. It is --	10:35:32
11	BY MR. SHEASBY:	10:35:34
12	Q. It is not.	10:35:34
13	A. If you would like me to refer specifically	10:35:36
14	to it, then it would be great if you could introduce	10:35:38
15	that.	10:35:44
16	MR. SHEASBY: This will be marked as	10:36:32
17	Exhibit 13.	10:36:34
18	(Deposition Exhibit Number 13	10:36:34
19	was marked for identification.)	10:36:53
20	BY MR. SHEASBY:	10:36:53
21	Q. Let me ask you a question.	10:36:53
22	If you evaporate something at the same time,	10:36:55
23	is that -- will that result in joint vaporization?	10:36:58
24	A. Not necessarily.	10:37:00
25	Q. All right.	10:37:01

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1 A. It really depends on the details of the 10:37:02
2 deposition, the pressure, the reactivity of the two 10:37:04
3 materials, the degree of intermixing. 10:37:08
4 Q. So what exactly -- what actually is required 10:37:11
5 for joint vaporization? 10:37:13
6 A. So as described in the patent, joint 10:37:15
7 vaporization is the -- the -- the -- the -- the final 10:37:21
8 outcome is that coordination process that the patent 10:37:26
9 describes. 10:37:31
10 MR. SHEASBY: Objection. Form. 10:37:34
11 BY MR. SHEASBY: 10:37:35
12 Q. What is joint vaporization? 10:37:36
13 MR. SNYDER: Objection to form. 10:37:38
14 THE WITNESS: The patent itself, again, 10:37:39
15 doesn't describe the -- you know, there is no line 10:37:52
16 specifically on what there is, but it is this 10:37:57
17 formation of complexes the -- the general definition 10:38:01
18 that the patent offers. 10:38:07
19 BY MR. SHEASBY: 10:38:09
20 Q. What is the common and ordinary meaning of 10:38:09
21 joint vaporization? 10:38:11
22 MR. SNYDER: Objection to form. 10:38:13
23 THE WITNESS: So the -- again, I -- in my -- 10:38:14
24 in my report I describe -- if you go to paragraph 10:38:48
25 fifty-two in my noninfringement report, I provide 10:38:54

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1	that, you know, at least a POSITA would understand	10:39:02
2	that joint vaporization required that the metal	10:39:04
3	compound and the organic compound could be	10:39:07
4	coevaporated so that they are present together in the	10:39:07
5	vapor phase. And so, again, it also depends on the	10:39:10
6	pressure because that determines how much interaction	10:39:15
7	the two materials will have in the vapor phase. If	10:39:19
8	the pressure is very low, then the mean free path is	10:39:22
9	long. If the pressure is high, they have more	10:39:25
10	opportunity to interact.	10:39:29
11	But it also depends on the structure of the	10:39:30
12	evaporation sources and whether the plumes are	10:39:32
13	allowed to interact in a way that permits that	10:39:35
14	reaction to occur in the vapor phase; so it is not	10:39:39
15	a simple understanding, but that is generally what	10:39:42
16	a person of ordinary skill in the art would recognize	10:39:47
17	as joint vaporization.	10:39:50
18	BY MR. SHEASBY:	10:39:54
19	Q. Is any of that described in the patent?	10:39:54
20	Does the patent say anything about immediately	10:39:59
21	present in the same vapor phase?	10:40:01
22	A. So the -- the -- the patent states joint	10:40:07
23	vaporization. It offers cotton, for example, as an	10:40:13
24	example. It does not have a strict definition of	10:40:17
25	what is or is not joint vaporization.	10:40:22

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1	MR. SHEASBY: Objection. Form.	10:40:25
2	BY MR. SHEASBY:	10:40:26
3	Q. Does the patent describe that there must be	10:40:26
4	coevaporation such that both the -- the meta complex	10:40:30
5	and the organic compound are immediately present in	10:40:35
6	the same vapor phase?	10:40:39
7	A. So I'm sorry. I think I have already	10:40:46
8	answered that. The -- the -- the patent does not	10:40:49
9	specifically describe what joint vaporization is or	10:40:50
10	is not.	10:40:53
11	Q. It is not the question I asked.	10:40:53
12	MR. SHEASBY: Objection. Form.	10:40:55
13	BY MR. SHEASBY:	10:40:56
14	Q. Does the patent ever describe an embodiment	10:40:56
15	in which there is coevaporation such that both the	10:40:59
16	complex and the compound are immediately present in	10:41:03
17	the same vapor phase?	10:41:06
18	MR. SNYDER: Objection to form.	10:41:08
19	THE WITNESS: I have to take a quick look	10:41:19
20	one more time at the patent. Just give me a moment.	10:41:21
21	If we go to column fourteen, for example, in	10:42:02
22	line fifteen it describes the situation that	10:42:07
23	I described earlier as an example in which the two	10:42:12
24	components are mixed together in one -- in one -- in	10:42:15
25	one vessel, one crucible, and then are vaporized from	10:42:20

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1	a joint vessel as one possible way to conduct that	10:42:25
2	joint vaporization.	10:42:30
3	BY MR. SHEASBY:	10:42:31
4	Q. It also discusses joint vaporization by	10:42:32
5	using two separate vessels; correct?	10:42:34
6	MR. SNYDER: Object to the form.	10:42:40
7	THE WITNESS: So there is a sentence before	10:42:40
8	that except for with the phrase however.	10:42:46
9	BY MR. SHEASBY:	10:42:46
10	Q. Right.	10:42:51
11	A. So I -- that might be a counterexample --	10:42:52
12	Q. Well --	10:42:57
13	A. -- saying that that may or may not be joint	10:42:57
14	vaporization. But there is a sentence there that	10:43:02
15	also describes using two different vessels. Again,	10:43:05
16	joint vaporization is a complicated issue, and it	10:43:09
17	depends on the details of the interaction after the	10:43:12
18	material was evaporated as well.	10:43:15
19	Q. So this describes two options in the patent,	10:43:17
20	one in which the metal complex in the organic	10:43:20
21	compound can be vaporized from two different vessels,	10:43:24
22	which are stationed separated from each other.	10:43:28
23	Do you see that?	10:43:30
24	MR. SNYDER: Objection to form.	10:43:30
25	THE WITNESS: I see that.	10:43:31

1	It is also, however, followed by however,	10:43:32
2	and then that describes another option, which is the	10:43:36
3	joint vessel option.	10:43:41
4	BY MR. SHEASBY:	10:43:42
5	Q. Right.	10:43:42
6	So it describes separate vessels and joint	10:43:42
7	vessels; correct?	10:43:45
8	MR. SNYDER: Objection to form.	10:43:46
9	THE WITNESS: Both of those options are --	10:43:47
10	are listed in that paragraph.	10:43:55
11	BY MR. SHEASBY:	10:43:56
12	Q. And are joint vessels required necessarily	10:43:56
13	for joint vaporization?	10:43:59
14	A. So as I mentioned before, it is not	10:44:02
15	a requirement that joint vessels be used for joint	10:44:08
16	vaporization.	10:44:13
17	Q. Let me ask you the next question --	10:44:13
18	A. I'm sorry.	10:44:15
19	Q. -- which is -- let me ask you another	10:44:15
20	question.	10:44:17
21	Have you ever done joint vaporization?	10:44:18
22	A. Okay.	10:44:21
23	MR. SNYDER: You can finish your previous	10:44:22
24	answer to the question.	10:44:24
25	THE WITNESS: Okay.	10:44:25

1	BY MR. SHEASBY:	10:44:25
2	Q. Have you ever done joint vaporization?	10:44:26
3	A. Can I finish my previous answer or at least	10:44:27
4	make a note that I didn't get to finish?	10:44:31
5	Q. Sure.	10:44:33
6	Have you ever done joint vaporization?	10:44:34
7	A. So I will just say I didn't get to finish my	10:44:35
8	previous answer. Sorry.	10:44:42
9	So I have performed joint vaporization using	10:44:43
10	the method where we have mixed materials together and	10:44:48
11	evaporated them together in an attempt to get them to	10:44:53
12	react. But when making OLEDs, I -- generally, the	10:44:56
13	type of equipment I have used personally, those	10:45:02
14	codeposition in the way in which the vapor plumes do	10:45:05
15	not overlap.	10:45:08
16	Q. Separate vessels?	10:45:09
17	A. So in those cases, yes. Those were separate	10:45:11
18	vessels and separated by baffle, which prevents the	10:45:16
19	material from redepositing. There are a number of	10:45:21
20	functional reasons why you often don't want the	10:45:25
21	plumes to overlap.	10:45:29
22	Q. And that is how you have done it for OLEDs?	10:45:30
23	A. That is -- that is correct. That is my	10:45:36
24	usual approach in making OLEDs.	10:45:39
25	Q. Okay. [REDACTED]	10:45:42

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1	[REDACTED]	[REDACTED]
2	[REDACTED]	10:45:54
3	A. [REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]
9	[REDACTED].	10:46:19
10	MR. SHEASBY: And so objection. Form.	10:46:21
11	BY MR. SHEASBY:	10:46:22
12	Q. [REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]:35
16	MR. SNYDER: Objection to form.	10:46:37
17	THE WITNESS: [REDACTED]	[REDACTED]
18	[REDACTED]	10:46:42
19	BY MR. SHEASBY:	10:46:42
20	Q. [REDACTED]	[REDACTED]
21	[REDACTED]	10:46:49
22	MR. SNYDER: Objection to form.	10:46:50
23	THE WITNESS: [REDACTED]	[REDACTED]
24	[REDACTED]	[REDACTED]
25	[REDACTED]	10:46:57

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1	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED]	10:47:11
5	BY MR. SHEASBY:	10:47:14
6	Q. [REDACTED]	[REDACTED]
7	[REDACTED]	10:47:17
8	MR. SNYDER: Objection to form.	10:47:18
9	THE WITNESS: [REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]:33
14	BY MR. SHEASBY:	10:47:35
15	Q. [REDACTED]	[REDACTED]
16	[REDACTED]	10:47:39
17	MR. SNYDER: Objection to form.	10:47:39
18	THE WITNESS: I disagree with that	10:47:40
19	characterization.	10:47:42
20	BY MR. SHEASBY:	10:47:42
21	Q. Okay. Why don't we go to -- [REDACTED]	[REDACTED]
22	[REDACTED]	[REDACTED]
23	[REDACTED]	[REDACTED]:56
24	MR. SNYDER: Objection to form.	10:47:57
25	THE WITNESS: Again, I disagree with that	10:47:58

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1	statement. [REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED].	10:48:09
5	BY MR. SHEASBY:	10:48:11
6	Q. Why don't we -- why don't you download	10:48:23
7	Exhibit 12.	10:48:26
8	(Deposition Exhibit Number 12	10:48:26
9	was marked for identification.)	10:49:00
10	THE WITNESS: (Witness complies.)	10:49:00
11	Okay. I have it downloaded.	10:49:01
12	BY MR. SHEASBY:	10:49:03
13	Q. This is the testimony of Mr. Jo; correct?	10:49:20
14	A. That is correct.	10:49:26
15	Q. He testifies:	10:49:27
16	[REDACTED]	[REDACTED]
17	[REDACTED]	[REDACTED]
18	[REDACTED]	10:50:10
19	[REDACTED] [REDACTED] [REDACTED]	10:50:11
20	[REDACTED]	[REDACTED]
21	[REDACTED]	10:50:18
22	MR. SNYDER: Objection to form.	10:50:19
23	THE WITNESS: Sorry. Let me pull up the	10:50:21
24	section that you are referring to.	10:50:24
25	I'm sorry. Could you ask your question	10:50:38

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1	again?	10:50:41
2	BY MR. SHEASBY:	10:50:41
3	Q. Sure.	10:50:42
4	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED] 50:51
8	MR. SNYDER: Objection to form.	10:50:53
9	THE WITNESS: So, again, I disagree with	10:50:54
10	that as the characterization. The question that was	10:50:57
11	asked by the -- the -- by Ms. Zhong, she is --	10:51:02
12	BY MR. SHEASBY:	10:51:09
13	Q. Let me do it crisply.	10:51:09
14	He is testifying regarding the METL layer;	10:51:11
15	correct?	10:51:16
16	MR. SNYDER: Objection.	10:51:16
17	THE WITNESS: So sorry.	10:51:17
18	Are we asking about the -- the mixed ETL;	10:51:22
19	right? The METL?	10:51:27
20	BY MR. SHEASBY:	10:51:27
21	Q. Yeah.	10:51:28
22	I'm using the acronym, the METL.	10:51:28
23	A. The METL, great.	10:51:32
24	So -- because the next layer is metal.	10:51:34
25	Q. I understand.	10:51:37

1	A. No problem; so yes.	10:51:38
2	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED] [REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]
8	[REDACTED].	10:52:05
9	Q. All right. We'll do it in pieces.	10:52:08
10	Does the claim say simultaneous deposition?	10:52:10
11	A. So the claim says joint vaporization.	10:52:14
12	Q. Does it say simultaneous deposition?	10:52:17
13	A. So I do not believe that that phrase appears	10:52:20
14	in the patent.	10:52:25
15	Q. Okay. And Mr. Jo testifies:	10:52:26
16	[REDACTED] [REDACTED]	[REDACTED]
17	[REDACTED]	[REDACTED]
18	[REDACTED]	[REDACTED]
19	[REDACTED] [REDACTED] [REDACTED]	10:52:39
20	Do you see that testimony?	10:52:42
21	A. I see that testimony.	10:52:43
22	Q. And do you -- do you agree or disagree with	10:52:45
23	that testimony?	10:52:48
24	A. So I disagree that it produces the result	10:52:48
25	that you are describing. [REDACTED]	10:52:52

1	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED]	10:53:03
4	Q. Not the question I asked.	10:53:05
5	The question I asked is evaporation is	10:53:06
6	a form of vaporization; correct?	10:53:09
7	A. That is correct.	10:53:11
8	Q. [REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	10:53:20
11	A. So, again, in different areas the materials	10:53:21
12	are being heated and the materials are being	10:53:24
13	evaporated, and that does happen in the same chamber	10:53:27
14	at the same time.	10:53:31
15	Q. Okay. Let me ask the next question, which	10:53:32
16	is [REDACTED]	[REDACTED]
17	[REDACTED]	[REDACTED]
18	[REDACTED]	[REDACTED]
19	[REDACTED]	[REDACTED]
20	[REDACTED]	10:54:00
21	MR. SNYDER: Objection to form.	10:54:03
22	THE WITNESS: Sure.	10:54:08
23	I just -- I just want to finish my	10:54:09
24	qualification of the previous answer, which is --	10:54:11
25	///	

1	BY MR. SHEASBY:	10:54:14
2	Q. So, sir -- sir, just -- sir --	10:54:14
3	A. Okay. I just want to make it clear that	10:54:17
4	I had a qualification to make to what I said before,	10:54:19
5	and I --	10:54:24
6	Q. Your witness is -- your -- your -- your	10:54:26
7	attorney is just coaching you, and so I -- I don't	10:54:27
8	agree with that, but that is -- that is for another	10:54:29
9	day.	10:54:32
10	So if we go to the result -- what -- what is	10:54:32
11	the result of joint vaporization?	10:54:40
12	MR. SNYDER: Objection to form.	10:54:43
13	THE WITNESS: So I'll -- again, I'll just --	10:54:47
14	I want to make it clear on the record that I had	10:54:50
15	a further qualification to my statement in which	10:54:53
16	I disagree that that evaporation at the same time	10:54:56
17	is -- because it is happening temporally at the same	10:55:00
18	time means that the evaporation is happening on the	10:55:03
19	same parts of the substrate at the same time	10:55:07
20	together. And that is very clear both from the --	10:55:11
21	from my report, as well as from Samsung documents and	10:55:13
22	with the interview.	10:55:17
23	MR. SHEASBY: So objection. Form.	10:55:18
24	Nonresponsive.	10:55:19
25	///	

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1	BY MR. SHEASBY:	10:55:19
2	Q. I'm merely asking whether you disagree or	10:55:19
3	agree with the testimony of Mr. Jo [REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	10:55:29
6	Correct or incorrect?	10:55:31
7	MR. SNYDER: Objection.	10:55:34
8	THE WITNESS: So, again, it -- there is	10:55:34
9	a lot of other testimony that is also here describing	10:55:36
10	the details of how that deposition happens. [REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]
16	[REDACTED]	10:56:02
17	MR. SHEASBY: Objection. Form.	10:56:06
18	BY MR. SHEASBY:	10:56:07
19	Q. Is what Mr. Jo says at page forty, lines	10:56:07
20	eighteen through twenty-two, correct or incorrect?	10:56:12
21	MR. SNYDER: Object to the form.	10:56:17
22	THE WITNESS: So, again, it is technically	10:56:17
23	correct that [REDACTED]	[REDACTED]
24	[REDACTED]. But Mr. Jo -- there	10:56:25
25	is a lot of other testimony in which he qualifies	10:56:29

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1	that and explains why --	10:56:32
2	MR. SHEASBY: Objection.	10:56:35
3	THE WITNESS: Okay.	10:56:36
4	BY MR. SHEASBY:	10:56:36
5	Q. I'll ask it again.	10:56:36
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]
8	[REDACTED] [REDACTED]	[REDACTED]:44
9	MR. SNYDER: Objection to form.	10:56:49
10	THE WITNESS: [REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]56:54
13	BY MR. SHEASBY:	10:56:59
14	Q. Okay. Then let me ask you the next	10:56:59
15	question, which is what is the end result of joint	10:57:02
16	vaporization, as described in the patent, in terms of	10:57:05
17	the layer that is created?	10:57:07
18	A. Okay. I just want it to be clear that I had	10:57:09
19	an initial qualification, but --	10:57:12
20	Q. I don't know what you are talking about,	10:57:14
21	sir.	10:57:17
22	MR. SHEASBY: So objection. Form.	10:57:17
23	BY MR. SHEASBY:	10:57:19
24	Q. What is the end result of the joint	10:57:19
25	vaporization process that is described in the patent?	10:57:22

1 A. So the patent describes joint vaporization 10:57:24
2 as delivering the benefit of coordination in the 10:57:27
3 system. 10:57:31
4 Q. And what does coordination mean? 10:57:32
5 A. So coordination is another disputed term, 10:57:35
6 and I don't -- 10:57:39
7 Q. Okay. That is fine. It is disputed. 10:57:46
8 What does it mean to -- for -- to you? 10:57:48
9 A. So just give me a second. I have an 10:57:51
10 explanation that I just want to make sure I follow 10:57:57
11 exactly. 10:58:00
12 So one of the -- so there were two -- again, 10:59:03
13 there were two constructions that have been proposed, 10:59:06
14 and, you know, there is a claim construction that 10:59:10
15 comes down from the court, and I, of course, follow 10:59:13
16 that. But one -- the construction that is proposed 10:59:16
17 by Samsung is the formation of a dative bond in the 10:59:20
18 structure, and the construction that is proposed by 10:59:24
19 Pictiva is a bonding interaction. 10:59:28
20 Q. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 10:59:48
24 A. So no. 10:59:53
25 It is my opinion that [REDACTED] 10:59:54

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1	[REDACTED]	[REDACTED]
2	[REDACTED]	11:00:00
3	Could you ask the question again?	11:00:04
4	MR. SHEASBY: Objection. Form.	11:00:06
5	THE WITNESS: No problem. Yep.	11:00:07
6	BY MR. SHEASBY:	11:00:09
7	Q. [REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]
9	[REDACTED]	11:00:18
10	A. So it is my opinion that, again, [REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]
13	[REDACTED]	11:00:35
14	Q. Okay. Did you do any experimental studies	11:00:37
15	to determine if there was any bonding interaction?	11:00:41
16	A. So as I describe in my report, I,	11:00:45
17	personally, did not do any experiments, but I did	11:00:50
18	rely on a number of both experiments and models that	11:00:53
19	were performed by others, including the work that was	11:00:56
20	done by Dr. Miller. There was some experiments	11:01:00
21	performed by Professor Park, and we also had some	11:01:06
22	information from the air down of the mixed two that	11:01:10
23	provided some additional support and information.	11:01:13
24	Dr. Miller also did some modeling in order	11:01:16
25	to support the -- the conclusions that formed part of	11:01:20

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1	the basis of the conclusions I concluded as well.	11:01:23
2	MR. SHEASBY: Objection. Form.	11:01:26
3	BY MR. SHEASBY:	11:01:27
4	Q. I asked you if you had done any experiments	11:01:27
5	or simulations.	11:01:31
6	MR. SNYDER: Objection to form.	11:01:32
7	THE WITNESS: So I, personally, did not	11:01:33
8	conduct any experiments or simulation. I didn't see	11:01:34
9	it as necessary, given the -- the wealth of	11:01:38
10	information that was available to me.	11:01:40
11	MR. SHEASBY: Objection. Form.	11:01:41
12	BY MR. SHEASBY:	11:01:42
13	Q. I just asked you if you did any experiments	11:01:42
14	or simulations. I didn't ask you why.	11:01:45
15	Do you understand that?	11:01:47
16	MR. SNYDER: Objection to form.	11:01:48
17	THE WITNESS: I did not find it to be	11:01:49
18	necessary, and so I did not personally conduct any	11:01:54
19	experiments or simulations.	11:01:57
20	MR. SHEASBY: Objection. Form.	11:01:59
21	BY MR. SHEASBY:	11:02:00
22	Q. I did not ask you why. I just asked you if.	11:02:01
23	Do you understand that?	11:02:04
24	MR. SNYDER: Objection to form.	11:02:05
25	THE WITNESS: So I understand. I just want	11:02:06

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1	to make sure I am giving the clearest and most	11:02:08
2	accurate answer to your question.	11:02:10
3	BY MR. SHEASBY:	11:02:12
4	Q. So answer my question.	11:02:12
5	Did you do any experiments or simulations?	11:02:14
6	Yes or no?	11:02:16
7	MR. SNYDER: Objection to form.	11:02:18
8	THE WITNESS: I, personally, did not conduct	11:02:18
9	any experiments or simulation and, instead, relied on	11:02:21
10	others and the work that they did.	11:02:25
11	BY MR. SHEASBY:	11:02:27
12	Q. Did you ask Samsung if it had any internal	11:02:27
13	experiments or simulations on the subject?	11:02:31
14	A. I had a significant amount of data from	11:02:33
15	Samsung, including some results they had performed	11:02:37
16	based on XPS and other analysis, but I did not ask	11:02:41
17	for any additional measurements to be taken by	11:02:45
18	Samsung.	11:02:48
19	Q. Did you ask for any measurements to be taken	11:02:48
20	by Samsung?	11:02:53
21	A. I did not ask Samsung specifically to take	11:02:53
22	any measurements.	11:02:56
23	Q. Do the claims require a metal complex with	11:02:56
24	a high disposition and ability to provide free	11:03:35
25	electrons?	11:03:39

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1 A. So the claims specifically do not offer that 11:03:39
2 restriction. That is, however, one of the benefits 11:03:54
3 that is described in the specification. And the 11:03:59
4 specification is clear that the material that is 11:04:02
5 being deposited needs to have that ability to 11:04:05
6 coordinate. And having that in a high disposition, 11:04:08
7 the ability to reconfigure the bonding, as well as 11:04:13
8 the free electrons that can form the -- the -- the 11:04:16
9 reaction that is needed for coordination is required 11:04:20
10 by the patent in the light of the specification. 11:04:24
11 MR. SHEASBY: Objection. Form. 11:04:28
12 BY MR. SHEASBY: 11:04:28
13 Q. Do the claims require a high disposition and 11:04:29
14 ability to provide free electrons for the metal 11:04:33
15 complex? Yes or no? 11:04:37
16 MR. SNYDER: Objection to form. 11:04:38
17 THE WITNESS: Again, I'm just trying to give 11:04:39
18 the clearest answer and the most complete answer. 11:04:41
19 And so the claims are silent about the exact details 11:04:44
20 of the material that is required for the doping. 11:04:47
21 BY MR. SHEASBY: 11:04:52
22 Q. Okay. Do the claims require that the 11:04:52
23 central METL atom be able to coordinate with 11:05:10
24 additional ligands? 11:05:16
25 A. So yeah. 11:05:19

1	The claims describe the metal complex with	11:05:25
2	the central METL atom, and they require them to be	11:05:29
3	able to coordinate, and so it depends on the exact	11:05:34
4	situation that we're talking about. But that would	11:05:38
5	be one of the criteria that one could use to	11:05:41
6	establish whether that material can coordinate.	11:05:45
7	Q. Did the claims require being able to	11:05:49
8	coordinate with additional ligands?	11:05:53
9	MR. SNYDER: Objection to form.	11:05:56
10	THE WITNESS: So the -- it requires --	11:05:57
11	claims require that there be a central METL atom that	11:06:03
12	can coordinate, and so if it is not able to	11:06:07
13	coordinate, then it would not satisfy the claim	11:06:11
14	requirement.	11:06:16
15	BY MR. SHEASBY:	11:06:18
16	Q. Does claim two require that the coordination	11:06:51
17	occur in the gas phase?	11:06:54
18	A. So claim two says that the coordination	11:07:05
19	happens due to the joint vaporization, and so while	11:07:08
20	claim two only uses the phrase joint vaporization,	11:07:11
21	and it is understood by a person of ordinary skill in	11:07:15
22	the art that while the molecules are in the gas phase	11:07:18
23	is when they are the most reactive and, as	11:07:22
24	a consequence, I would say that in general for the	11:07:25
25	coordination to happen, claim two does -- does imply	11:07:30

1	that that is happening in the gas phase.	11:07:36
2	Q. Does -- claim eleven actually requires that	11:07:38
3	the coordination occur in the gas phase; correct?	11:07:42
4	A. So claim eleven uses a different term. It	11:07:45
5	uses the term simultaneous vaporization, and then it	11:07:50
6	says that that coordination happens in the gas phase.	11:07:54
7	My understanding of claim two comes from this phase	11:07:57
8	joint vaporization, which is defined earlier as being	11:08:00
9	a process which encourages that coordination	11:08:05
10	reaction, and that is the basis for my previous	11:08:08
11	answer.	11:08:12
12	Q. Is simultaneous vaporization the same as	11:08:12
13	joint vaporization?	11:08:16
14	A. No. Not necessarily.	11:08:16
15	Q. What is broader?	11:08:19
16	A. Simultaneous vaporization would be broader.	11:08:21
17	Q. And so you actually think there is -- in	11:08:25
18	a gas phase a limitation in claim two in place of it?	11:08:31
19	A. Again, I haven't offered a line on what is	11:08:36
20	or is not joint vaporization. But I do offer the	11:08:39
21	opinion earlier in my report that it is understood	11:08:42
22	that joint vaporization has that ability to react and	11:08:46
23	form whatever direction is associated with	11:08:52
24	coordination before condensation. And so, again, all	11:08:58
25	the examples that I discuss that involve vaporization	11:09:03

1	are -- are going to happen in that gas phase.	11:09:07
2	Q. So the claims -- claim two requires that the	11:09:12
3	coordination occur in the gas phase?	11:09:16
4	A. Again --	11:09:19
5	MR. SNYDER: Objection to form.	11:09:20
6	THE WITNESS: Yeah.	11:09:21
7	Claim two says that it is due to joint	11:09:22
8	vaporization, and the details there are then --	11:09:26
9	again, we need to understand the -- whether -- you	11:09:30
10	know, exactly how the deposition is happening when we	11:09:33
11	make that determination of whether or not joint	11:09:36
12	vaporization is occurring.	11:09:40
13	BY MR. SHEASBY:	11:09:41
14	Q. So it is your understanding that joint	11:09:51
15	vaporization requires coordination in the gas phase?	11:09:53
16	MR. SNYDER: Objection to form.	11:09:56
17	THE WITNESS: So joint vaporization requires	11:09:57
18	the formation of coordination. I had mentioned an	11:10:01
19	example before in which we could, for example, mix	11:10:05
20	the materials in the crucible. You can imagine if	11:10:08
21	the materials melt and react in the crucible and then	11:10:12
22	vaporize, the reaction can happen, in other words.	11:10:15
23	MR. SHEASBY: Objection. Form.	11:10:19
24	BY MR. SHEASBY:	11:10:21
25	Q. Does joint vaporization require coordination	11:10:21

1	in the gas phase? Yes or no?	11:10:23
2	MR. SNYDER: Objection to form.	11:10:25
3	THE WITNESS: It only requires coordination.	11:10:26
4	BY MR. SHEASBY:	11:10:26
5	Q. Okay. The -- what is a dative bond?	11:10:30
6	A. So a dative bond is a -- is a -- is	11:10:39
7	a molecular bond where both of the electrons are	11:10:42
8	donated by one of the atoms.	11:10:46
9	Q. In terms of your analysis of the technical	11:11:13
10	benefits of the patents-in-suit, did you discuss the	11:11:16
11	patents-in-suit with any Samsung engineers?	11:11:21
12	A. Yes.	11:11:23
13	I detailed in my report that I did have an	11:11:29
14	interview with three Samsung engineers to confirm	11:11:33
15	some points relating to the process of measurements.	11:11:36
16	Q. Not the question I asked.	11:11:39
17	Did you discuss the patents-in-suit with any	11:11:40
18	Samsung engineers?	11:11:43
19	A. I'm sorry.	11:11:44
20	Are you asking if that is separate from my	11:11:45
21	interviews which were conducted with counsel or	11:11:48
22	outside of -- outside of the case?	11:11:51
23	Q. Did you show Samsung engineers the patents	11:11:53
24	and discuss them with them?	11:11:56
25	A. I'm sorry.	11:11:58

1	I'm not sure I understand the question.	11:12:02
2	So all of the discussions I have had with	11:12:04
3	Samsung engineers related to these patents are only	11:12:07
4	those interviews that I -- that I disclosed in my	11:12:11
5	report.	11:12:13
6	Q. And did you actually discuss the patents	11:12:14
7	with them specifically, look at the claims with them?	11:12:16
8	A. No.	11:12:20
9	In general, those conversations were	11:12:20
10	discussions relating to some questions I had about,	11:12:23
11	you know, what certain documents meant, you know,	11:12:27
12	translation of some terms, and confirmation again of	11:12:32
13	certain issues that I wanted to clarify in the	11:12:36
14	documentation that was sent over.	11:12:38
15	Q. Did you ask these Samsung engineers their	11:12:41
16	views on the patents-in-suit?	11:12:44
17	A. I did not ask them for their opinions on the	11:12:47
18	patents. The discussions were technical discussions	11:12:53
19	relating to the document.	11:12:56
20	Q. What does it mean you deposit something as	11:12:59
21	a mixture? What is -- what is the result of that?	11:13:44
22	It requires that there be the exact same con- --	11:13:47
23	con- -- concentration of both materials; correct?	11:13:51
24	MR. SNYDER: Objection to form.	11:13:55
25	THE WITNESS: I disagree.	11:13:55

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1	BY MR. SHEASBY:	11:14:04
2	Q. So what does it mean for two substances to	11:14:39
3	be deposited as a mixture?	11:14:43
4	A. So for -- to speak generally, for two	11:14:49
5	substances to be a mixture, we have a concentration	11:14:54
6	of one substance, concentration of the other, and the	11:14:58
7	two are combined in a way that distributes the -- the	11:15:01
8	composition between them.	11:15:05
9	Q. Equal amounts?	11:15:07
10	MR. SNYDER: Objection to form.	11:15:11
11	THE WITNESS: I disagree that it means equal	11:15:12
12	amounts; so we have peanut butter and jelly. You can	11:15:15
13	have a different concentration of one or the other,	11:15:21
14	but there is nothing in the word mixture that	11:15:24
15	requires that it be a 50/50 mix of the two materials.	11:15:27
16	BY MR. SHEASBY:	11:15:31
17	Q. Are the organic material and the metal	11:15:31
18	complex in the METL present throughout the ETL?	11:15:36
19	MR. SNYDER: Objection to form.	11:15:45
20	THE WITNESS: So the METL, as the name	11:15:47
21	implies, is mixed, and so there is -- both materials	11:15:53
22	are present in the ETL throughout that layer.	11:15:57
23	BY MR. SHEASBY:	11:16:00
24	Q. Let me ask you the next question, which	11:16:00
25	is -- hmmm.	11:16:02

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1	Have you ever used Liq in making any OLEDs?	11:16:23
2	A. I, personally have not used the Liq	11:16:30
3	equivalent, no.	11:16:33
4	Q. Have you used any lithium-containing	11:16:33
5	compounds?	11:16:37
6	A. Yes.	11:16:38
7	I often use lithium fluoride as an electron	11:16:38
8	injection layer. That lithium fluoride is a -- is	11:16:43
9	a pretty inert salt, and so it is usually -- when	11:16:47
10	I use it, I put it at the very top layer on top of	11:16:51
11	the electron transport layer, and that is activated	11:16:55
12	by the deposition of aluminum, and that forms	11:16:58
13	aluminum fluoride and releases the lithium as a -- as	11:17:02
14	a doping at that interphase.	11:17:07
15	Q. Okay. Hmmm.	11:17:10
16	Let's go to Exhibit 13 -- sorry.	11:19:32
17	Exhibit 13? Yes. Go ahead and download that.	11:19:58
18	A. Okay.	11:20:08
19	Q. Sorry. Exhibit 14.	11:20:10
20	A. Exhibit 14? I was going to say Exhibit 13	11:20:13
21	is the patent.	11:20:19
22	(Deposition Exhibit Number 14	11:20:19
23	was marked for identification.)	11:20:32
24	THE WITNESS: Okay. I have it open.	11:20:32
25	///	

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1	BY MR. SHEASBY:	11:20:34
2	Q. Have you reviewed this document?	11:20:54
3	A. I have seen it before, yes.	11:20:56
4	Q. In your report, you don't indicate any	11:20:58
5	disputes with this experimental methodology; is that	11:21:03
6	correct?	11:21:08
7	MR. SNYDER: Objection to form.	11:21:08
8	THE WITNESS: I detail a number of	11:21:10
9	objections I have to Dr. Schanze's analysis and work	11:21:13
10	in my report; so I would disagree with that	11:21:19
11	statement.	11:21:22
12	BY MR. SHEASBY:	11:21:22
13	Q. Now, Exhibit 14 is a report by Novateq.	11:21:23
14	A. Oh, okay. Sorry. I have Exhibit 15 opened,	11:21:29
15	which also says export.	11:21:37
16	Q. Yeah.	11:21:39
17	It is a little bit confusing.	11:21:39
18	A. Let me clear all of my tabs and go back.	11:21:42
19	Exhibit 14.	11:21:55
20	Okay. Great. Sorry.	11:22:41
21	If you could ask your question again.	11:22:44
22	BY MR. SHEASBY:	11:22:46
23	Q. Yes.	11:22:47
24	The question is you don't specify in your	11:22:47
25	report any disputes with the methodology used by	11:22:50

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1	Novateq in the analysis in Exhibit 14; correct?	11:22:54
2	MR. SNYDER: Objection to form. Sorry.	11:22:59
3	Objection to form.	11:23:00
4	THE WITNESS: So I object to the	11:23:02
5	interpretation of the results, but I have no	11:23:06
6	objection specifically to the measurements that were	11:23:10
7	taken by Novateq.	11:23:13
8	MR. SHEASBY: Objection. Form.	11:23:16
9	BY MR. SHEASBY:	11:23:17
10	Q. In your report you don't identify any	11:23:18
11	disputes or objections to the methodology used by	11:23:20
12	Novateq; correct?	11:23:24
13	MR. SNYDER: Objection to form.	11:23:26
14	THE WITNESS: So, again, the -- the work	11:23:28
15	that -- that Novateq did from the perspective of	11:23:31
16	taking measurements, I did not -- I had no objections	11:23:37
17	specifically to that analysis.	11:23:44
18	BY MR. SHEASBY:	11:23:48
19	Q. Let me ask the next question, which is if	11:23:48
20	you go to page forty-five of this report.	11:23:51
21	A. Okay. I just wanted to complete that the	11:23:54
22	interpretation and the order of the tests I do have	11:23:57
23	a number of objections to.	11:23:59
24	MR. SHEASBY: Objection. Form.	11:24:01
25	///	

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1	BY MR. SHEASBY:	11:24:02
2	Q. Do you have any dispute with the methodology	11:24:02
3	used by Novateq? Yes or no?	11:24:04
4	MR. SNYDER: Objection to form.	11:24:07
5	THE WITNESS: I'm going to do yes or no.	11:24:08
6	I'll say yes.	11:24:10
7	BY MR. SHEASBY:	11:24:10
8	Q. Great.	11:24:12
9	And so let's go to page forty-five.	11:24:12
10	A. (Witness complies.)	11:24:23
11	Okay.	11:24:25
12	Q. [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	11:24:34
15	Q. [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	11:25:50
17	MR. SNYDER: Objection.	11:25:52
18	THE WITNESS: So I -- following the	11:25:53
19	description in the specification of the -- of the	11:26:02
20	patent, no. It is not.	11:26:09
21	BY MR. SHEASBY:	11:26:10
22	Q. What do you mean, following the description?	11:26:10
23	A. [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	11:26:25

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1	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	11:26:42
7	Q. Not the question I asked.	11:26:49
8	MR. SHEASBY: Objection to form.	11:26:52
9	BY MR. SHEASBY:	11:26:52
10	Q. [REDACTED]	[REDACTED]
11	[REDACTED]	11:26:56
12	MR. SNYDER: Objection to form.	11:26:58
13	THE WITNESS: [REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]
16	[REDACTED]	11:27:11
17	BY MR. SHEASBY:	11:27:14
18	Q. Okay. Let's go to paragraph eighty-one of	11:27:14
19	your report. And this is your rebuttal report.	11:27:17
20	A. (Witness complies.)	11:27:32
21	Okay. I am there now.	11:27:52
22	Q. Okay. In -- in this -- in this structure,	11:27:54
23	[REDACTED]	[REDACTED]
24	[REDACTED]?	11:28:11
25	MR. SNYDER: Objection.	11:28:17

1	THE WITNESS: [REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED].	11:28:25
4	MR. SHEASBY: Okay. I have marked a new	11:28:29
5	exhibit, Exhibit 16.	11:29:29
6	(Deposition Exhibit Number 16	11:29:29
7	was marked for identification.)	11:29:31
8	BY MR. SHEASBY:	11:29:31
9	Q. Go ahead and download it.	11:29:31
10	A. (Witness complies.)	11:29:49
11	Okay. Give me a second to take a look.	11:29:50
12	MR. SNYDER: Jason, I think we have been	11:29:54
13	going for over an hour; so if we could take a break	11:29:56
14	soon.	11:30:00
15	MR. SHEASBY: Yeah.	11:30:01
16	Why don't we just break for lunch after this	11:30:01
17	question -- after this -- this line of questioning.	11:30:04
18	THE WITNESS: Okay. Great.	11:30:07
19	I have the reference open.	11:30:10
20	BY MR. SHEASBY:	11:30:12
21	Q. Have you looked at this reference	11:30:12
22	previously?	11:30:14
23	A. Yes, I have.	11:30:14
24	Q. And did you have discussions regarding it	11:30:15
25	with Mr. Kang?	11:30:19

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1	A. No.	11:30:21
2	I did not have any discussions with	11:30:22
3	Mr. Kang.	11:30:24
4	Q. This article concludes that ETL and Liq	11:30:25
5	interact through a coordination bond; correct?	11:30:53
6	A. I disagree under my understanding of the	11:30:57
7	coordination bond that this article shows that	11:31:00
8	conclusion.	11:31:03
9	Q. The article literally states ETL and Liq	11:31:04
10	interact through a coordination bond; correct?	11:31:09
11	A. The article uses those words, but I disagree	11:31:12
12	that the article shows the formation of	11:31:16
13	a coordination bond.	11:31:18
14	Q. Great.	11:31:19
15	So you disagree with Mr. Kang?	11:31:20
16	A. Again, I would not describe what he shows or	11:31:22
17	the net effect as a coordination bond.	11:31:26
18	Q. This is a peer-reviewed publication on	11:31:30
19	experiments involving Liq; correct?	11:31:34
20	A. This is a peer-reviewed publication, and	11:31:36
21	lithium quinolate is used in this publication.	11:31:40
22	Q. And you have never published on the use of	11:31:43
23	Liq.	11:31:46
24	In fact, you have never used Liq in your	11:31:46
25	entire career; right?	11:31:49

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1	MR. SNYDER: Objection to form.	11:31:50
2	THE WITNESS: I have -- I have never	11:31:51
3	published on the use of Liq quinolate.	11:31:52
4	BY MR. SHEASBY:	11:31:56
5	Q. Have you ever used it in your entire career?	11:31:56
6	A. I don't believe that I have, although --	11:32:00
7	yeah. I'll leave it at that.	11:32:04
8	Q. And you believe that Liq does not form	11:32:06
9	a coordination bond with ETL; correct?	11:32:11
10	A. That is correct.	11:32:15
11	Q. And looking at this article by Samsung	11:32:16
12	dis- -- Sam- -- from the Samsung display, Researcher	11:32:47
13	Sunwoo Kang in the peer-reviewed journal, why don't	11:32:54
14	you read out loud the sentence in blue highlighting?	11:32:55
15	A. Okay. And, again, this is the language of	11:33:01
16	the paper, not my position:	11:33:03
17	"It was found that ETL-Liq complex could	11:33:06
18	be formed from an attractive interaction	11:33:10
19	between ETL and Liq through a coordination	11:33:13
20	bond."	11:33:17
21	Q. Did you discuss this paper with any of the	11:33:18
22	Samsung engineers that you talked to?	11:33:20
23	A. I don't believe this came up in my	11:33:22
24	discussion with the Samsung engineer.	11:33:25
25	Q. Did you ask Samsung lawyers to allow you to	11:33:26

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1	speak to Mr. Kang?	11:33:29
2	MR. SNYDER: Objection based on the wording	11:33:31
3	of that question --	11:33:34
4	THE REPORTER: I can't hear you at all.	11:33:37
5	MR. SNYDER: Yes.	11:33:39
6	Based on the wording of that question,	11:33:40
7	I instruct the witness not to answer.	11:33:42
8	BY MR. SHEASBY:	11:33:45
9	Q. Who do you think knows more about Liq, you	11:33:45
10	or Mr. Kang?	11:33:50
11	A. So, again, the word coordination has	11:33:51
12	a specific meaning and construction, and my	11:33:55
13	interpretation and answers are based on that specific	11:33:58
14	meaning and construction.	11:34:01
15	MR. SHEASBY: Objection. Form.	11:34:03
16	BY MR. SHEASBY:	11:34:04
17	Q. I asked you who do you think knows more	11:34:04
18	about Liq, you or Mr. King?	11:34:08
19	MR. SNYDER: Objection to form.	11:34:10
20	THE WITNESS: I don't have an opinion on the	11:34:12
21	relative expertise that I and Mr. Kang have on the	11:34:13
22	specifics of lithium quinolate.	11:34:17
23	BY MR. SHEASBY:	11:34:21
24	Q. Well, we do know one thing, which is he has	11:34:21
25	published a peer-reviewed article on the subject;	11:34:24

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1	correct?	11:34:27
2	A. He has. That is correct.	11:34:27
3	Q. You have not; correct?	11:34:28
4	A. I have not.	11:34:30
5	Q. And, in fact, you have never used Liq in	11:34:30
6	your entire career, as far as you know; correct?	11:34:34
7	A. Again, I have not used Liq that I can recall	11:34:36
8	in my career; that is correct.	11:34:41
9	MR. SHEASBY: Okay. Why don't we break for	11:34:43
10	lunch.	11:34:45
11	THE VIDEOGRAPHER: Okay. This marks the end	11:34:46
12	of media unit three.	11:34:48
13	The time is 11:34 a.m.	11:34:50
14	We are off the record.	11:34:52
15	(Luncheon recess taken.)	12:39:41
16	THE VIDEOGRAPHER: This marks the beginning	12:39:41
17	of media unit number four.	12:39:49
18	The time is 12:39 p.m.	12:39:52
19	We are on the record.	12:39:54
20	BY MR. SHEASBY:	12:39:55
21	Q. Sir, joint vaporization doesn't require	12:39:55
22	a mixture in the gas phase; correct?	12:39:58
23	A. So, again -- all right. Give me a second to	12:40:03
24	just recalibrate on my report.	12:40:10
25	But, again, the -- the patent doesn't	12:40:13

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1	specify where the -- sorry. Let me start again.	12:40:15
2	Joint vaporization is, again, that --	12:40:23
3	that -- that evaporation or vapor- -- vaporization	12:40:27
4	which allows at least for the opportunity for the	12:40:31
5	materials to -- to interact.	12:40:34
6	Q. In a gaseous phase?	12:40:38
7	A. So, again, it is not a requirement for the	12:40:40
8	coordination to necessarily happen at a specific	12:40:43
9	spot, but I -- if you give me a second, I will pull	12:40:45
10	up my definition in my report. But certainly the gas	12:40:51
11	phase is one region where there is the opportunity	12:40:57
12	for interaction to occur.	12:41:01
13	So in my report -- if we go to paragraph	12:41:44
14	fifty-two of my noninfringement report, it has some	12:41:47
15	discussion about what is not joint vaporization.	12:41:54
16	Again, there is no, really -- it depends in many	12:41:57
17	cases on some of the details, like the reactivity of	12:42:02
18	the materials, the degree of interaction, the	12:42:06
19	pressure that occurs, the overlap of the gas plumes,	12:42:09
20	during vaporization, et cetera.	12:42:14
21	And so -- again, there is the opportunity	12:42:16
22	for that interaction, but it -- it -- whether the	12:42:20
23	reaction happens exactly in one spot or another is	12:42:29
24	not so specified. As I say, a POSITA would recognize	12:42:31
25	joint vaporization requires metal complex. And,	12:42:33

1	there again, the compound should be coevaporated so	12:42:38
2	that they are immediately present in the same vapor	12:42:38
3	phase.	12:42:41
4	Q. And what does it mean to be immediately	12:42:41
5	present in the same vapor phase?	12:42:43
6	A. So that would mean that at least at some	12:42:46
7	point they are colocated in space while they are in	12:42:50
8	the vapor phase.	12:42:57
9	Q. What does it mean to be colocated in space?	12:42:58
10	A. So that would mean that they are in the same	12:43:01
11	location in -- in -- in space in -- during the --	12:43:08
12	during the vaporization.	12:43:11
13	Q. What does it mean to be in the same location	12:43:12
14	in space?	12:43:15
15	A. I'm sorry.	12:43:17
16	I'm not sure what you are asking, beyond the	12:43:18
17	ordinary meaning of being in the same location.	12:43:21
18	Q. Yes.	12:43:24
19	That's what I am asking.	12:43:27
20	What does it mean to be in the same	12:43:28
21	location?	12:43:30
22	A. So the -- the vaporization has a particular	12:43:31
23	plume. And the molecules, while they are in space,	12:43:38
24	if they are colocated, they are in the same place.	12:43:41
25	That is -- that is the meaning of colocation.	12:43:46

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1	Q. So the plumes would overlap?	12:43:48
2	A. The plumes overlapping is one way for there	12:43:50
3	to be that colocation.	12:43:54
4	Q. What are the other ways for there to be that	12:43:56
5	colocation?	12:43:59
6	A. So for -- I don't know that I have the list	12:44:00
7	specifically. You know, I would -- I would say, you	12:44:11
8	know, again, in the evaporation having the plumes	12:44:18
9	overlap is one way that it is possible to have the	12:44:22
10	colocated.	12:44:26
11	Q. Right.	12:44:26
12	And I am asking for what are the other ways	12:44:27
13	of colocation that you are aware of?	12:44:29
14	A. Just thinking here right now, I can't think	12:44:32
15	of any right off the top of my head.	12:44:35
16	Q. Okay. Why don't you go ahead and download	12:44:37
17	Exhibits 18 through 20.	12:44:52
18	(Deposition Exhibit Number 18	12:44:52
19	was marked for identification.)	12:44:57
20	(Deposition Exhibit Number 19	12:44:57
21	was marked for identification.)	12:44:57
22	(Deposition Exhibit Number 20	12:44:57
23	was marked for identification.)	12:44:58
24	THE WITNESS: Okay. Okay. I have them	12:44:58
25	downloaded.	12:45:21

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1	BY MR. SHEASBY:	12:45:22
2	Q. Okay. So one of the prior arts -- prior	12:45:22
3	references you rely on is the display in what you	12:45:24
4	describe as the Clix2; is that correct?	12:45:27
5	A. Yes.	12:45:30
6	The Clix2, yes.	12:45:31
7	Q. And the Clix2 screen you claim is OLED -- an	12:45:32
8	OLED; is that correct?	12:45:39
9	A. That is correct.	12:45:40
10	The Clix2 used an OLED display as its	12:45:41
11	screen.	12:45:46
12	Q. Did you investigate whether there was	12:45:46
13	a different Clix2 display using the United States	12:45:48
14	versus the one outside the United States?	12:45:53
15	A. So there is substantial evidence, which	12:45:56
16	I detail in my report, that the Clix2, and every	12:45:58
17	model of the Clix2, used an organic light-emitting	12:46:01
18	diode display.	12:46:06
19	Q. Not the question I asked.	12:46:06
20	I said did you investigate it?	12:46:08
21	MR. SNYDER: Objection to form.	12:46:10
22	THE WITNESS: So I reviewed the evidence,	12:46:11
23	which I describe in my report. That is the extent of	12:46:14
24	my investigation.	12:46:19
25	///	

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1	BY MR. SHEASBY:	12:46:20
2	Q. Did you speak to the individuals who	12:46:20
3	manufactured the Clix2?	12:46:22
4	A. So I, personally, did not -- well, I'm	12:46:25
5	sorry.	12:46:32
6	Are we asking about the screen or are we	12:46:33
7	asking about the finished unit?	12:46:36
8	Q. The finished?	12:46:39
9	A. So no.	12:46:41
10	I did not have an interview with anybody at	12:46:42
11	Dreamus. I just have their declaration, which is in	12:46:45
12	the report as well -- is cited in my report.	12:46:48
13	Q. Okay. So if we go to Exhibit 18 -- first	12:46:52
14	off, what process was used for the OLED screen in the	12:47:04
15	Clix2 product?	12:47:11
16	MR. SNYDER: Objection to form.	12:47:14
17	THE WITNESS: I'm sorry.	12:47:15
18	Are you asking about the code name for the	12:47:19
19	process or a different description?	12:47:22
20	BY MR. SHEASBY:	12:47:26
21	Q. What is the name of the process?	12:47:26
22	MR. SNYDER: Objection to form.	12:47:28
23	THE WITNESS: So Samsung described this as	12:47:29
24	[REDACTED]	[REDACTED]
	[REDACTED]	12:47:43

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1	BY MR. SHEASBY:	12:47:43
2	Q. [REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED]	12:47:53
5	Q. [REDACTED]	[REDACTED]
6	[REDACTED]	12:47:57
7	A. [REDACTED]	[REDACTED]
8	[REDACTED]	12:48:05
9	Q. Not the question I asked.	12:48:07
10	[REDACTED]	[REDACTED]
11	[REDACTED] [REDACTED]	12:48:13
12	MR. SNYDER: Objection to form.	12:48:15
13	THE WITNESS: [REDACTED]	[REDACTED]
14	[REDACTED] [REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]
16	[REDACTED]	12:48:28
17	BY MR. SHEASBY:	12:48:29
18	Q. [REDACTED]	[REDACTED]
19	[REDACTED]	12:48:33
20	A. [REDACTED]	[REDACTED]
21	[REDACTED]	[REDACTED]
22	[REDACTED] [REDACTED]	[REDACTED]
23	[REDACTED]	[REDACTED]
24	[REDACTED]	[REDACTED]
25	[REDACTED]	12:48:57

1	██████████.	12:49:07
2	Q. So you cite a teardown by a company called	12:49:08
3	Eurofins; correct?	12:49:37
4	A. That is correct.	12:49:40
5	Q. And if you go to Exhibit 18, did you	12:49:41
6	supervise the experiments in Exhibit 18?	12:50:17
7	A. I'm not sure exactly what you mean by	12:50:20
8	supervised. I was involved in helping to confirm the	12:50:25
9	teardown structure and had some discussion with the	12:50:30
10	engineers at Eurofins, but I did not, for example,	12:50:33
11	fly to Europe in order to participate personally in	12:50:38
12	any of the teardown.	12:50:42
13	Q. And did you tear down the product?	12:50:44
14	A. I was not personally involved in any of the	12:50:46
15	disassembly or analysis of the product.	12:50:55
16	Q. Okay. If you turn to page twenty-four of	12:50:58
17	the document, on the right-hand side it has a date of	12:51:10
18	01/09/2008.	12:51:16
19	Do you see that?	12:51:18
20	MR. SNYDER: Objection to form.	12:51:19
21	THE WITNESS: I do not see that, no.	12:51:22
22	BY MR. SHEASBY:	12:51:25
23	Q. Do you see .01.09?	12:51:26
24	A. So I see numbers on the circuit board, but	12:51:31
25	I disagree that that is a date.	12:51:35

1	Q. Okay. What is it then?	12:51:37
2	A. There are a significant number of numbers	12:51:39
3	that are on the circuit board. And, again, I see no	12:51:43
4	reason to believe that that is a date.	12:51:47
5	Q. Did you ask the manufacturers if it was	12:51:49
6	a date?	12:51:52
7	A. I -- as I mentioned, I had no discussion	12:51:53
8	with the manufacturer.	12:51:58
9	Q. Did you do anything to confirm that this was	12:51:59
10	actually an iRiver Clix2 that was sold before the	12:52:02
11	date of the patents-in-suit in the United States?	12:52:07
12	This specific product.	12:52:11
13	MR. SNYDER: Objection to form.	12:52:15
14	THE WITNESS: So there is significant	12:52:17
15	evidence that this unit was sold before the priority	12:52:20
16	date of the patent in evidence. In particular, there	12:52:25
17	is the sale receipt of the product on its first sale,	12:52:28
18	which was provided, as well as documentation that the	12:52:33
19	product was released well before the priority date of	12:52:39
20	the patents-in-suit.	12:52:43
21	BY MR. SHEASBY:	12:52:44
22	Q. So Exhibit 17 is the -- this sale receipt	12:52:44
23	you are referring to?	12:52:49
24	A. That is one of the pieces of evidence that	12:52:50
25	is the sales receipt, yes.	12:52:52

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1	Q. And who purchased this product?	12:52:54
2	A. So the product was purchased by -- I think	12:52:56
3	it is on the next page. The -- oh, I guess I don't	12:53:05
4	know. Again, I had no contact with the individual	12:53:15
5	who purchased the product.	12:53:27
6	Q. Was that individual deposed?	12:53:28
7	A. I am not aware of that individual being	12:53:31
8	deposed.	12:53:36
9	Q. Did they submit a declaration?	12:53:37
10	A. I am not aware of that individual having	12:53:42
11	submitted a declaration.	12:53:45
12	Q. Do you know if anything was done to	12:53:45
13	authenticate that this receipt related to the actual	12:53:48
14	device that was shipped to Quinn Emanuel, Samsung's	12:53:52
15	counsel?	12:53:57
16	MR. SNYDER: Objection to form.	12:54:03
17	THE WITNESS: So this is the customary	12:54:04
18	receipt that one receives from eBay. And so, again,	12:54:06
19	I am not aware of any further authentication that has	12:54:11
20	been attempted. But this is consistent with what one	12:54:16
21	receives when they purchase off eBay. I have done it	12:54:21
22	many times, and this is the normal documentation one	12:54:25
23	receives.	12:54:28
24	BY MR. SHEASBY:	12:54:28
25	Q. So the normal documentation is thank you for	12:54:28

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1 shopping at iRiver America. We are happy to report 12:54:31
2 that your Order Number 235648 shipped on 10/03/2007? 12:54:36
3 A. Oh, sorry. You are talking about the iRiver 12:54:42
4 receipt, yeah. That is the receipt that the -- the 12:54:44
5 seller received and that they forwarded. 12:54:46
6 Q. Yeah. 12:54:47
7 I know that is what the seller received and 12:54:47
8 forwarded. 12:54:51
9 But what is the evidence that that receipt 12:54:53
10 relates to the actual product that was shipped to 12:54:55
11 Quinn Emanuel? 12:54:57
12 MR. SNYDER: Objection to form. 12:54:58
13 THE WITNESS: So, again, I am not aware of 12:54:59
14 any further authentication that has been done. 12:55:02
15 BY MR. SHEASBY: 12:55:04
16 Q. Did you do anything to authenticate it? 12:55:04
17 A. I have no other interaction with the receipt 12:55:07
18 specifically. 12:55:18
19 Q. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 12:55:48
21 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 12:56:04
23 Q. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 12:56:10
25 A. [REDACTED] [REDACTED] 12:56:13

1 [REDACTED] 56:17

2 Q. [REDACTED]

3 [REDACTED] 12:56:22

4 A. I did not conduct any experiments examining 12:56:25

5 the -- the plume. 12:56:29

6 Q. Did you know the shapes of the vessels that 12:56:31

7 were used in [REDACTED] 12:56:33

8 A. [REDACTED]

9 [REDACTED]

10 [REDACTED] 12:56:47

11 Q. [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED]

15 [REDACTED] 12:56:59

16 Q. [REDACTED]

17 [REDACTED]

18 [REDACTED] 12:57:09

19 A. [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

24 [REDACTED]

25 [REDACTED] :57:42

1	██	12:57:46
2	Q. Yeah.	12:57:50
3	And so now I'm asking you did you do	12:57:51
4	a simulation to establish that?	12:57:53
5	A. So I did not independently do any simulation	12:57:55
6	of the plume shape in -- in the deposition process.	12:58:00
7	Q. For either ██████ or the current process?	12:58:05
8	A. I have not, personally, done any simulation	12:58:08
9	for ██████ or the current process of the exact shape of	12:58:14
10	the plume direction.	12:58:19
11	MR. SHEASBY: Okay. I'm marking Exhibit 21.	12:58:20
12	(Deposition Exhibit Number 21	12:58:20
13	was marked for identification.)	12:58:56
14	BY MR. SHEASBY:	12:58:56
15	Q. Let me know when you get it.	12:58:56
16	A. Okay.	12:58:58
17	Q. It may take a minute.	12:59:18
18	A. Okay. I have the document.	12:59:39
19	Q. Let's go to Page 77047.	12:59:41
20	A. (Witness complies.)	12:59:50
21	Okay. Okay.	13:00:09
22	Q. You agree that whether electron-conducting	13:00:15
23	layers formed by joint vaporization depends, in part,	13:00:18
24	on the configuration via evaporation chambers?	13:00:22
25	A. One of the components of considering joint	13:00:28

1 vaporization -- joint vaporization is the 13:00:30
2 configuration of the evaporation chamber. 13:00:31
3 Q. And that would include chamber height, 13:00:35
4 variable baffle height, placement of the shutter -- 13:00:39
5 shutter, and lip length? 13:00:43
6 A. Yes. 13:00:44
7 Amongst other considerations, the -- the 13:00:44
8 baffles, the shape of the emitter, and also the 13:00:46
9 pressure in the chamber will also have an effect. 13:00:49
10 Q. And, in fact, if you go to page -- if you go 13:00:52
11 to Exhibit 31 [sic] and look at 77047, [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:01:09
14 MR. SNYDER: Objection to form. 13:01:11
15 THE WITNESS: So it shows that, yes. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:01:27
19 BY MR. SHEASBY: 13:01:28
20 Q. Did you say shadowing? 13:01:29
21 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:01:35
23 Q. Right. 13:01:41
24 And you used shadowing to describe that; 13:01:43
25 correct? 13:01:48

1 A. That is one word that can be used to 13:01:49

2 describe that effect. 13:01:51

3	Q. Okay. Let's turn to your open report at	13:01:51
4	Page 147.	13:04:46

5	A. (Witness complies.)	13:04:47
6	This is the .pdf Page 147 or the marked	13:04:58
7	Page 1- --	13:05:02

8 Q. Marked Page 147; so it is -- it is -- it is 13:05:02

9 Paragraph 294. 13:05:06

10	A. Okay. I'm there now.	13:05:08
----	-------------------------	----------

11 Q. Where in this document that you cite on 13:05:12

12 Page 147 does it show that the -- that [REDACTED] [REDACTED]

13:05:57

14	A. So if we look there in that figure, the ETL	13:06:05
15	layer was deposited in the system that is surrounded	13:06:16
16	by the red box. And if you zoom in, you will see on	13:06:21
17	the upper left the chamber, [REDACTED]	[REDACTED]

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[REDACTED] is labeled METL.                                     13:06:29

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19	Q. So you think only that chamber -- so only	13:06:32
20	that chamber was used for METL.	13:06:38

21	You think that that annotation of METL is	13:06:42
22	only associated [REDACTED]?	13:06:45

23	A. So that is my understanding of the structure	13:06:50
24	that is in that top line. The -- as -- as you have	13:06:55
25	seen in the other documentation, [REDACTED]	13:07:01

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1 [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:07:21
6 But at least for that top line, it is my 13:07:23
7 understanding [REDACTED] delivers the METL. 13:07:25
8 In some of the more advanced lines in the future, the 13:07:30
9 configuration may be slightly different. 13:07:35
10 Q. Right. 13:07:37
11 And so a couple issues. 13:07:37
12 That -- you think that your evidence that 13:07:42
13 [REDACTED] is the chamber that delivers the METL is 13:07:45
14 the fact that there is that word METL written above 13:07:50
15 what you claim [REDACTED]; is that right? 13:07:52
16 A. That is one of the pieces of evidence. 13:07:57
17 There is additional documentation in the -- in the -- 13:08:00
18 in the data sheets and in the project breakdown that 13:08:03
19 also discusses the chamber configurations. 13:08:08
20 Q. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:08:18
23 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:08:34

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1	Q. Okay. So let's go -- go to the next	13:08:35
2	document.	13:08:40
3	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	13:08:53
7	Q. Where are they?	13:08:57
8	A. [REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]:37
16	THE REPORTER: Are the what?	13:09:42
17	THE WITNESS: I'm sorry.	13:09:44
18	Are the crucibles.	13:09:45
19	BY MR. SHEASBY:	13:09:46
20	Q. [REDACTED]	[REDACTED]
21	[REDACTED]	13:09:49
22	A. [REDACTED]	[REDACTED]
23	[REDACTED]	[REDACTED]
24	[REDACTED]	13:10:01
25	[REDACTED]	13:10:05

1 Q. Okay. Let's go to the next page, 13:10:05
2 Paragraph 296. 13:10:11
3 A. (Witness complies.) 13:10:13
4 I'm okay. I am there now. 13:10:15
5 Q. What is the document in page -- on 13:10:18
6 Paragraph 296 depicting? 13:10:23
7 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:10:41
11 Q. Does this show joint vaporization? 13:10:43
12 A. [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] 13:11:06
17 Q. And let's go to the next paragraph. It is 13:11:08
18 Paragraph 297. 13:11:20
19 A. Uh-huh. 13:11:21
20 Q. This is a document for [REDACTED] is that 13:11:22
21 correct? 13:11:27
22 A. That is correct. 13:11:27
23 Q. And it shows the chamber in which the -- in 13:11:28
24 which -- by the way, what is alignment? 13:11:33
25 A. [REDACTED] 13:11:38

1 [REDACTED] [REDACTED]
2 [REDACTED]. 13:11:47
3 Q. And where it says 360, what is that column 13:11:50
4 referring to? 13:11:54
5 A. I'm sorry. 13:11:56
6 Where are we pointing now? 13:11:57
7 Q. Paragraph 297, the red box. 13:11:59
8 A. 297, the red box. I'm sorry. I am just not 13:12:03
9 clear. 13:12:18
10 Paragraph 297 says: 13:12:18
11 [REDACTED] [REDACTED]
12 [REDACTED] [REDACTED]
13 [REDACTED] [REDACTED]
14 [REDACTED] [REDACTED]
15 [REDACTED] [REDACTED]
16 [REDACTED] 13:12:34
17 Q. Right. 13:12:35
18 [REDACTED] 13:12:35
19 A. [REDACTED] [REDACTED]
20 [REDACTED] 13:12:43
21 Q. Okay. Does this document show that they are 13:12:43
22 jointly vaporized? 13:12:48
23 A. [REDACTED] [REDACTED]
24 [REDACTED] [REDACTED] [REDACTED]
25 [REDACTED] 13:12:59

1 [REDACTED] 13:13:02

2 Q. Okay. [REDACTED] [REDACTED]

3 [REDACTED]; correct? 13:13:08

4 A. That is what this document says, yes. 13:13:12

5 Q. And the document you cited previously for 13:13:14

6 the [REDACTED] process says the -- the -- the METL you claim 13:13:17

7 is in [REDACTED] 13:13:22

8 A. That is what that document shows; correct. 13:13:25

9 Q. Which one -- is the [REDACTED] the same as the [REDACTED] 13:13:28

10 line? 13:13:32

11 MR. SNYDER: Objection to form. 13:13:33

12 THE WITNESS: [REDACTED] [REDACTED]

13 [REDACTED] [REDACTED]

14 [REDACTED] [REDACTED]

15 [REDACTED] 13:13:47

16 BY MR. SHEASBY: 13:13:51

17 Q. Right. 13:13:51

18 So that is what I'm asking you. 13:13:51

19 This [REDACTED] one, what is the date of this 13:13:53

20 document for this process? 13:13:57

21 A. I would need to check the original 13:13:58

22 reference, if you have that available. Cited as 13:14:05

23 citation in Footnote 235. 13:14:10

24 Q. I do think I have it. Just give me one 13:14:13

25 second. 13:14:16

1	A. Okay.	13:14:16
2	MR. SHEASBY: Okay. I have just marked it	13:15:04
3	as a new exhibit.	13:15:08
4	(Deposition Exhibit Number 22	13:15:08
5	was marked for identification.)	13:15:16
6	THE REPORTER: What number?	13:15:16
7	MR. SHEASBY: It looks like it is	13:15:18
8	twenty-two.	13:15:20
9	THE WITNESS: So I -- yeah.	13:16:02
10	So I don't know when the document was -- was	13:16:04
11	first presented, yeah. I would have to -- I would	13:16:07
12	have to check with -- I would have to check with	13:16:11
13	others at Samsung to -- to translate it for me.	13:16:18
14	BY MR. SHEASBY:	13:16:21
15	Q. In your report, do you cite any evidence	13:16:22
16	whatsoever that this [REDACTED] document existed at the	13:16:24
17	time of the -- before the priority date of	13:16:28
18	patents-in-suit?	13:16:32
19	A. So -- okay. In my report I discuss the	13:16:33
20	review that I had of the process with several	13:16:41
21	engineers at Samsung who worked on the -- the Clix2	13:16:44
22	product, and they confirmed that the process, as	13:16:49
23	I understood it, was the process used for the Clix1,	13:16:52
24	and that predates the -- the -- the start of the	13:16:56
25	Clix1 production process, which is also then before	13:17:00

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1 the priority date of the patents that are involved in 13:17:03
2 the suit. 13:17:06
3 MR. SHEASBY: Objection. Form. 13:17:07
4 BY MR. SHEASBY: 13:17:08
5 Q. The document -- SDC_74321, do you cite any 13:17:08
6 evidence whatsoever that that document existed before 13:17:16
7 the priority date of the patents-in-suit? Yes or no? 13:17:19
8 MR. SNYDER: Objection to form. 13:17:23
9 THE WITNESS: So I do not cite any specific 13:17:24
10 evidence relating to that document specifically. 13:17:27
11 BY MR. SHEASBY: 13:17:33
12 Q. Okay. Why don't you pull down Exhibit 26. 13:17:33
13 (Deposition Exhibit Number 26 13:17:33
14 was marked for identification.) 13:18:57
15 THE WITNESS: I don't see it yet. 13:18:57
16 BY MR. SHEASBY: 13:19:15
17 Q. Try it now. 13:19:16
18 A. Okay. I have the document. 13:19:33
19 Q. So this is -- this document, Exhibit 26, has 13:19:36
20 a date of May 14th, 2008, on it. 13:20:14
21 Do you see that? 13:20:18
22 A. I see that on the cover page, yes. 13:20:19
23 Q. Yes. 13:20:25
24 And that is after the alleged date of the -- 13:20:26
25 of the shipment of the -- the Clix2 in 2007 that we 13:20:30

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1	saw in this e-mail.	13:20:36
2	Do you see that?	13:20:37
3	A. That is after that date.	13:20:39
4	Q. And did you investigation whether the	13:20:41
5	process -- the [REDACTED] process changed between 2007 and	13:20:43
6	2008 in 2009?	13:20:50
7	A. Yes.	13:20:54
8	In my report, I have -- if you go to	13:20:55
9	Paragraph 303 of my opening report, [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	13:21:18
14	Q. Right.	13:21:21
15	You realize that is a hearsay document;	13:21:21
16	correct?	13:21:24
17	MR. SNYDER: Objection to form.	13:21:24
18	THE WITNESS: I'm not a lawyer, and so I --	13:21:26
19	yeah.	13:21:29
20	BY MR. SHEASBY:	13:21:30
21	Q. So here is what I'm asking for. I'm asking	13:21:30
22	for a document [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	13:22:00
25	A. I'm sorry.	13:22:18

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1	Is there a question?	13:22:18
2	Q. Yes.	13:22:19
3	I just said that question. [REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	13:22:31
6	A. So the -- there is substantial documentation	13:22:38
7	of the process from Samsung. We have testimony	13:22:42
8	confirming that the process was stable between the	13:22:46
9	beginning and the end of the project that developed	13:22:50
10	those materials. And so the documents that we have	13:22:54
11	all describe the same process, again, as supported by	13:22:59
12	that testimony, as well as the analysis that we had	13:23:02
13	performed, which is consistent with that -- that	13:23:05
14	process, material stack, and process of -- the	13:23:10
15	teardown of the Clix2 confirmed all of the major	13:23:16
16	components of the composition and the stack,	13:23:20
17	confirming that, indeed, the product was made the way	13:23:24
18	that the documentation supports.	13:23:28
19	MR. SHEASBY: Objection. Form.	13:23:30
20	BY MR. SHEASBY:	13:23:31
21	Q. [REDACTED]	[REDACTED]
22	[REDACTED]	[REDACTED]
23	[REDACTED] Point to me the document.	13:23:39
24	MR. SNYDER: Objection to form.	13:23:43
25	THE WITNESS: So sitting here right now	13:23:44

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1 during the deposition, unfortunately, I don't know 13:23:48
2 the exact generation date of all of the documents 13:23:51
3 that I cited, but, again, I am, for all the reasons 13:23:55
4 I described, confident in the statement that the -- 13:24:02
5 [REDACTED] [REDACTED]
6 [REDACTED]. And given time to check the 13:24:13
7 production date of all of the documents, I am 13:24:17
8 confident again that there is documentation available 13:24:20
9 that -- that would meet that criteria. But I did 13:24:23
10 not -- 13:24:26
11 BY MR. SHEASBY: 13:24:27
12 Q. In -- in your report, point out to me the 13:24:27
13 document you cite [REDACTED] [REDACTED]
14 [REDACTED] [REDACTED]
15 [REDACTED] and that -- 13:24:39
16 MR. SNYDER: Objection to form. 13:24:41
17 BY MR. SHEASBY: 13:24:41
18 Q. Point out to me the document. 13:24:41
19 A. So, again, sitting here today, I don't know 13:24:44
20 the exact generation date of each of the documents 13:24:47
21 that I relied on. That would require some additional 13:24:50
22 investigation, and I would need to -- to -- to check 13:24:55
23 and see when they were -- when they were provided. 13:24:59
24 Q. Okay. 13:25:03
25 A. My -- 13:25:03

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1 Q. Let me ask you this. 13:25:04

2 Did you speak to the engineers and tell the 13:25:05

3 engineers -- say to the engineers at Samsung, [REDACTED] [REDACTED]

4 [REDACTED] [REDACTED]

5 [REDACTED] Did 13:25:15

6 you ask that of any of the engineers? 13:25:20

7 A. So, again, my discussion with the engineers 13:25:23

8 was understanding the stationary of the process, and 13:25:26

9 they confirmed that the process, after it was 13:25:33

10 established, remained the same throughout the 13:25:36

11 project, [REDACTED] [REDACTED]

12 [REDACTED] And so that was, again, for 13:25:42

13 me, adequate to then understand the process and 13:25:46

14 define it. 13:25:50

15 I did not have a discussion with the 13:25:51

16 engineers beyond that -- those parameters. 13:25:53

17 MR. SHEASBY: Objection. Form. 13:25:57

18 BY MR. SHEASBY: 13:25:57

19 Q. Did you ask any Samsung engineer anywhere in 13:25:58

20 the world or any Samsung attorney anywhere in the 13:26:00

21 world to [REDACTED] [REDACTED]

22 [REDACTED] [REDACTED]

23 [REDACTED] 13:26:12

24 MR. SNYDER: I caution the witness not to 13:26:17

25 reveal the contents of any privileged communication. 13:26:20

1	And so on that basis I would instruct the	13:26:24
2	witness not to answer the question without talking to	13:26:28
3	the attorney.	13:26:28
4	But do not answer the question without	13:26:31
5	talking first to me.	13:26:32
6	BY MR. SHEASBY:	13:26:32
7	Q. Did you ask any Samsung employee anywhere in	13:26:33
8	the world [REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	13:26:43
11	MR. SNYDER: I repeat my previous	13:26:47
12	instruction to the extent that Samsung employee also	13:26:49
13	encompasses Samsung's counsel.	13:26:52
14	MR. SHEASBY: It doesn't.	13:26:55
15	BY MR. SHEASBY:	13:26:56
16	Q. You may answer the question.	13:26:56
17	A. So, again, I have a lot of documentation.	13:26:58
18	And some of that may, indeed, predate that date.	13:27:03
19	Unfortunately, sitting here today, I can't pick out	13:27:06
20	the -- the drafting dates of each of the documents	13:27:09
21	that I relied on. And so with that -- with that	13:27:14
22	caveat, I did not make a specific request for the	13:27:19
23	specific document with -- with that providence.	13:27:24
24	MR. SHEASBY: Objection. Form.	13:27:27
25	///	

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1	BY MR. SHEASBY:	13:27:28
2	Q. Did you ask a Samsung employee for	13:27:29
3	[REDACTED]	[REDACTED]
4	[REDACTED]	13:27:36
5	MR. SNYDER: Objection to form.	13:27:41
6	THE WITNESS: So, again, with that	13:27:42
7	restriction, I had a lot of documents already	13:27:45
8	produced in my possession, and I was satisfied with	13:27:49
9	their -- with their information; so I did not make	13:27:53
10	that specific request of Samsung employees.	13:27:56
11	MR. SHEASBY: Objection to form.	13:27:59
12	BY MR. SHEASBY:	13:28:00
13	Q. Did you make a request for [REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED] Yes or no?	13:28:07
16	MR. SNYDER: Objection to form.	13:28:11
17	THE WITNESS: Yeah.	13:28:12
18	I'm sorry. I feel like I have already	13:28:13
19	answered that question.	13:28:15
20	And is there a different way that you	13:28:16
21	would --	13:28:20
22	BY MR. SHEASBY:	13:28:20
23	Q. I'm not allowed to comment on your	13:28:21
24	questioning, sir. That -- I'm not allowed to comment	13:28:23
25	on it.	13:28:26

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1	A. Okay. That -- that is fine.	13:28:26
2	Q. So if you can just answer the question. All	13:28:28
3	I can do is object to form.	13:28:31
4	A. Okay. I'm sorry. I feel like I have	13:28:35
5	answered the question.	13:28:38
6	Q. Okay. We'll try it one more time. It is	13:28:38
7	a yes-or-no question.	13:28:41
8	Did you ask any employee at Samsung for	13:28:42
9	[REDACTED]	[REDACTED]
	[REDACTED]	13:28:48
11	MR. SNYDER: Objection to form.	13:28:53
12	THE WITNESS: So Samsung produced a large	13:28:54
13	number of documents, some of which I am confident	13:28:56
14	were produced before that date. But I did not make	13:28:59
15	that specific request of any Samsung employees.	13:29:01
16	MR. SHEASBY: Objection to form.	13:29:05
17	BY MR. SHEASBY:	13:29:07
18	Q. Did you ask any Samsung employee for	13:29:07
19	[REDACTED]	[REDACTED]
	[REDACTED]	13:29:14
21	MR. SNYDER: Objection to form.	13:29:19
22	BY MR. SHEASBY:	13:29:20
23	Q. Yes or no?	13:29:21
24	A. Again, I don't feel this is a yes-or-no	13:29:21
25	question. I had a large number of documents in my	13:29:24

1 possession, and I -- and many of which for particular 13:29:26
2 reasons I am confident predated that date. But I did 13:29:33
3 not make a specific request for any additional 13:29:37
4 documents with that particular date. 13:29:39
5 MR. SHEASBY: Objection. Form. 13:29:44
6 BY MR. SHEASBY: 13:29:47
7 Q. Did any of those documents [REDACTED] [REDACTED]
8 [REDACTED] [REDACTED]
9 [REDACTED] 13:29:54
10 A. So I show in my report documentation that 13:29:56
11 was produced that details the process used for the -- 13:29:59
12 for the Clix device, and that documentation shows [REDACTED] [REDACTED]
13 [REDACTED] [REDACTED]
14 [REDACTED] And, again, there is substantial 13:30:14
15 documentation and witness testimony that that process 13:30:16
16 was stationary [REDACTED]. 13:30:19
17 MR. SHEASBY: Objection. Form. 13:30:25
18 BY MR. SHEASBY: 13:30:26
19 Q. Did -- any of the documents you cited that 13:30:27
20 are dated before September of 2008 that have 13:30:30
21 information [REDACTED]? 13:30:33
22 A. So, again, sitting here right now, I am not 13:30:38
23 sure which documents have exactly which date. Again, 13:30:42
24 I have that evidence of the process based on the 13:30:46
25 parameters that I had discussed. 13:30:49

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1	Q. So on this spreadsheet you relied in	13:30:50
2	Paragraph 297, [REDACTED]	13:30:54
3	What is [REDACTED]	13:31:00
4	A. Sorry. Let me pull that up again. This is	13:31:03
5	in --	13:31:06
6	Q. 297.	13:31:08
7	A. -- my report or are we -- I'm sorry.	13:31:10
8	Q. Yeah.	13:31:14
9	Paragraph 297 of your report.	13:31:14
10	A. 297 of my report. Give me a second to pull	13:31:16
11	that up.	13:31:21
12	I'm sorry. Paragraph 297?	13:31:33
13	Q. In Paragraph 297 of your report, sir.	13:31:34
14	A. This is the opening report?	13:31:37
15	Q. Yes, sir.	13:31:38
16	A. Okay. I'm back there now.	13:31:53
17	Q. What is [REDACTED]	13:31:54
18	A. And so [REDACTED]	[REDACTED]
19	[REDACTED].	13:32:05
20	I'm sorry. Is -- hmmm. Yeah. I think so. Give me	13:32:09
21	a second. Let me just double-check.	13:32:14
22	So [REDACTED]	[REDACTED]
23	[REDACTED]	13:32:45
24	Q. What is your evidence that it is the code	13:32:45
25	name for the [REDACTED]	13:32:48

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1 A. Sorry. Refresh my memory, it had it in 13:32:51
2 Paragraph 302. But in terms of the evidence that was 13:32:56
3 also something that I discussed with Mr. Jo during 13:32:58
4 our conversation, and I specifically asked him about 13:33:04
5 that issue just to confirm. 13:33:07

6 Q. What is the documentary evidence -- written 13:33:09
7 documentary evidence that [REDACTED] [REDACTED]
8 [REDACTED]? 13:33:17

9 A. Sitting here right now, I can't point 13:33:21
10 specifically to it. But I know it is in other 13:33:26
11 Samsung documentation amongst the process documents 13:33:29
12 and material specs that I cited in my report. But 13:33:32
13 I would need some time to review them in order to 13:33:36
14 point to the specific document that confirms that 13:33:39
15 fact. 13:33:41

16 Q. Do you cite any document in your report -- 13:33:41
17 discuss any document in your report that defines [REDACTED] [REDACTED]
18 [REDACTED]? 13:33:50

19 A. So I would need to check. I do cite 13:33:52
20 Footnote 238 for the 321 document. But, again, 13:33:57
21 I would need to check my -- 13:34:04

22 Q. I think I -- I have given you that 13:34:06
23 document -- 13:34:08

24 A. Same document. 13:34:09

25 Q. -- so you can check it as much as you want. 13:34:10

1	MR. SNYDER: Objection to form.	13:34:14
2	THE WITNESS: Give me just a second to	13:34:15
3	check. There are a lot of citations, and so -- and	13:34:17
4	there were a lot of data sheets and other	13:34:19
5	documentation; so just give me a moment.	13:34:22
6	The document doesn't specify.	13:35:21
7	BY MR. SHEASBY:	13:35:23
8	Q. Okay. Well, let's dig in a little more.	13:35:23
9	A. Okay.	13:35:26
10	Q. Does chamber twelve have the capability of	13:35:26
11	joint vaporization?	13:35:30
12	MR. SNYDER: Objection to form.	13:35:32
13	THE WITNESS: So I don't have, again, the	13:35:33
14	exact details to understand if that might be	13:35:42
15	possible, but my understanding, [REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	13:36:09
22	BY MR. SHEASBY:	13:36:10
23	Q. Okay. Let's go to Werner251. And I believe	13:36:10
24	that should be --	13:36:23
25	A. Exhibit 20?	13:36:31

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1	Q. Yeah.	13:36:32
2	That sounds right. Well, yeah. That sounds	13:36:34
3	right.	13:36:38
4	A. Okay. I'm there now.	13:36:50
5	Q. Has anyone in the world ever combined the --	13:36:52
6	a process like the [REDACTED] process with Werner251?	13:36:57
7	MR. SNYDER: Objection to form.	13:37:04
8	THE WITNESS: I -- I'm not sure exactly what	13:37:05
9	you are asking. Werner251 describes a few possible	13:37:08
10	processes and some doping; so I'm not sure what your	13:37:12
11	question is.	13:37:23
12	BY MR. SHEASBY:	13:37:23
13	Q. Well, you specify in Paragraph 30 -- 365 you	13:37:24
14	specify a modification that you would make to Clix2	13:37:30
15	based on Werner251.	13:37:35
16	A. I have to go there.	13:37:43
17	Okay. So -- sorry.	13:38:11
18	You are thinking of the combination of Clix2	13:38:14
19	and Werner251?	13:38:17
20	Q. Yes, sir.	13:38:19
21	I'm asking has anyone in the real world ever	13:38:20
22	made the combination that you propose?	13:38:23
23	MR. SNYDER: Objection to form.	13:38:26
24	THE WITNESS: So I -- I can't say whether	13:38:27
25	someone has or has not.	13:38:33

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1	BY MR. SHEASBY:	13:38:35
2	Q. Okay. Next question.	13:38:35
3	Have you ever worked with those materials	13:38:39
4	that you are proposing to swap out of -- of -- of	13:38:47
5	Werner251 in the Clix2?	13:38:52
6	A. I'm sorry.	13:38:56
7	Or, more specifically, you are speaking	13:39:00
8	about the paddle wheel-type complexes or --	13:39:03
9	Q. Yeah.	13:39:06
10	The specific complexes that are -- that you	13:39:07
11	are citing in Werner251 and --	13:39:09
12	A. So I have not personally used the tungsten	13:39:14
13	W2(hpp4) molecule.	13:39:25
14	Q. Okay.	13:39:26
15	MR. SHEASBY: Why don't we take a break	13:40:44
16	while I organize myself.	13:40:46
17	THE WITNESS: Okay.	13:40:48
18	THE VIDEOGRAPHER: Okay. This marks the end	13:40:49
19	of media unit number four.	13:40:51
20	The time is 1:40 p.m.	13:40:53
21	We are off the record.	13:40:54
22	(Short recess taken.)	13:57:08
23	THE VIDEOGRAPHER: This marks the beginning	13:57:08
24	of media unit number five.	13:57:13
25	The time is 1:57 p.m.	13:57:15

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1	We are on the record.	13:57:17
2	BY MR. SHEASBY:	13:57:18
3	Q. Did you do any analysis as to whether the --	13:57:20
4	in your report, did you do analysis as to whether the	13:57:23
5	materials you proposed to swap in from Werner, how	13:57:26
6	they would interact with the layers adjacent to the	13:57:30
7	EML layer?	13:57:34
8	A. Okay. So we're speaking now about my --	13:57:38
9	the -- the -- the Werner -- the Werner modification	13:57:41
10	that -- that I proposed?	13:57:50
11	Q. Yes, sir.	13:57:51
12	A. I did not do any specific analysis relating	13:57:52
13	to that interaction.	13:57:59
14	Q. Let me ask the next question.	13:58:00
15	Did you speak to any Samsung engineers to	13:58:02
16	see if the Werner materials that you proposed to	13:58:05
17	introduce would appropriately interact with the	13:58:09
18	surrounding layers?	13:58:12
19	A. So my argument is that it would be obvious	13:58:13
20	to a person of ordinary skill that is not based on	13:58:22
21	any interviews with Samsung.	13:58:25
22	MR. SHEASBY: Objection. Form.	13:58:27
23	BY MR. SHEASBY:	13:58:29
24	Q. I said did you ask any Samsung engineers	13:58:29
25	whether the materials you proposed to use from Werner	13:58:32

1 would be appropriate and work in a Clix2 process -- 13:58:35
2 the [REDACTED] process. 13:58:38
3 A. And I apologize. I believe I have already 13:58:40
4 answered that question, which is that -- that my 13:58:43
5 proposal was based on what I considered to be 13:58:47
6 obvious, and it was not based on any interview with 13:58:50
7 Samsung employees. 13:58:53
8 MR. SHEASBY: Objection. Form. 13:58:54
9 BY MR. SHEASBY: 13:58:55
10 Q. I asked you did you speak to any Samsung 13:58:55
11 employees about your proposal to swap out the 13:58:57
12 Werner -- the -- [REDACTED] materials with the 13:59:00
13 Werner materials to determine how they interact with 13:59:06
14 other layers? 13:59:09
15 MR. SNYDER: Objection to form. 13:59:11
16 THE WITNESS: So, again, I will repeat that 13:59:12
17 my opinion is based on my opinion that that 13:59:14
18 combination is obvious, and it is not based on any 13:59:19
19 interview with any Samsung employees. 13:59:22
20 MR. SHEASBY: Objection. Form. 13:59:24
21 BY MR. SHEASBY: 13:59:25
22 Q. Let's look at Exhibit 19. 13:59:59
23 A. (Witness complies.) 14:00:02
24 Q. Wait. Is it Exhibit 19? Yeah. It is 14:00:07
25 Exhibit 19. 14:00:11

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1	A. Okay. I have the paper up.	14:00:25
2	Q. Great.	14:00:27
3	Does Exhibit 19 disclose joint vaporization?	14:00:27
4	A. So I'm not sure. And there is some	14:00:36
5	discussion of the deposition, but it is not -- you	14:00:43
6	know, it is a relatively short paper; so I can't say	14:00:50
7	whether or not it represents joint vaporization.	14:00:54
8	Q. Does codeposition necessarily result in	14:00:57
9	joint vaporization or does joint vaporization -- does	14:01:02
10	this codeposition necessarily mean there was joint	14:01:06
11	vaporization?	14:01:09
12	MR. SNYDER: Objection to form.	14:01:11
13	THE WITNESS: So, again, not necessarily.	14:01:14
14	The -- the question of joint vaporization depends on	14:01:16
15	a number of factors, including the presence of the	14:01:19
16	materials together; also, their opportunity to	14:01:22
17	interact; some energetic and kinetic factors. And	14:01:26
18	so, again, we need to know more details in order to	14:01:33
19	reach any conclusion about joint vaporization in the	14:01:38
20	system.	14:01:38
21	BY MR. SHEASBY:	14:01:39
22	Q. Why don't you download twenty, twenty-one --	14:02:05
23	sorry. Twenty-three, twenty-four, and twenty-five.	14:02:12
24	(Deposition Exhibit Number 23	14:02:12
25	was marked for identification.)	14:02:17

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1	(Deposition Exhibit Number 24	14:02:17
2	was marked for identification.)	14:02:17
3	(Deposition Exhibit Number 25	14:02:17
4	was marked for identification.)	14:02:52
5	THE WITNESS: Twenty-five is taking a while.	14:02:52
6	Okay. I have them downloaded.	14:03:00
7	BY MR. SHEASBY:	14:03:03
8	Q. Let's pull up Exhibit 23.	14:03:26
9	A. (Witness complies.)	14:03:29
10	Okay. I have that up.	14:03:41
11	Q. So if you go to Exhibit 23, [REDACTED]	[REDACTED]
	[REDACTED]	14:04:48
13	Do you see that?	14:04:55
14	MR. SNYDER: Objection to form.	14:04:56
15	THE WITNESS: [REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	14:05:08
18	BY MR. SHEASBY:	14:05:12
19	Q. Did you ask -- did you have that document	14:05:12
20	translated?	14:05:13
21	A. I don't know if I did. But, again, the	14:05:14
22	document -- if you are reading through the document,	14:05:27
23	it very, very clearly describes the specification for	14:05:31
24	organic light-emitting diode display.	14:05:37
25	Q. I understand that.	14:05:37

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1 [REDACTED] 14:05:38

2 A. I would have to check my references to see 14:05:44

3 if this document was translated. But, again, I, even 14:05:46

4 after reviewing this, did not conclude at any point 14:05:52

5 that that statement [REDACTED] [REDACTED]

6 [REDACTED] [REDACTED]:01

7 Q. Did -- did Dreamus make available versions 14:06:05

8 of its devices with LCD displays? 14:06:12

9 A. I'm sorry. 14:06:16

10 Are you asking Dreamus as the corporate 14:06:19

11 entity generally? 14:06:23

12 Q. No. 14:06:24

13 For the Clix2 product. 14:06:26

14 A. So.... 14:06:29

15 MR. SNYDER: Objection to form. 14:06:30

16 THE WITNESS: So no. 14:06:33

17 The Clix2 product was only offered in an 14:06:33

18 AMOLED format. 14:06:36

19 BY MR. SHEASBY: 14:06:37

20 Q. Okay. So if you go to the spreadsheet, 14:06:37

21 which is Exhibit 24. 14:06:39

22 A. (Witness complies.) 14:06:42

23 Q. Go to the sheet one page. 14:07:05

24 A. (Witness complies.) 14:07:20

25 Okay. I'm on sheet one. 14:07:20

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1	Q. Uh-huh.	14:07:25
2	Okay. Where can I find this? One second.	14:07:54
3	Hmmm. Let's go -- let's do it in a different way.	14:08:25
4	Let's go to Exhibit 18.	14:09:37
5	A. (Witness complies.)	14:09:49
6	Q. Let's turn to page eight.	14:10:00
7	A. (Witness complies.)	14:10:04
8	It is opening. Okay. Page eight.	14:10:09
9	Q. What are the three matrix materials in the	14:10:14
10	functional layer in -- in the Clix2 in [REDACTED]	14:10:18
11	process?	14:10:25
12	A. Okay. So I guess I disagree that there are	14:10:28
13	any matrix materials. Matrix materials, as I discuss	14:10:36
14	in my report, are only those materials where there	14:10:40
15	are three components, as defined by the patent. And	14:10:44
16	there are no layers in the device in which there are	14:10:51
17	three materials, let alone matrix materials, as -- as	14:10:55
18	I discuss in my report.	14:10:58
19	Q. Okay. Let me ask you the next question,	14:11:00
20	which is if you go to -- hmmm.	14:11:02
21	Can we go to Segura, which I think is in	14:11:21
22	paragraph -- what is the paragraph of your report	14:11:25
23	that has Segura in it? Do you remember?	14:11:27
24	A. Sorry.	14:11:32
25	Were you speaking about the combination	14:11:32

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1	Segura?	14:11:35
2	Q. Yeah.	14:11:38
3	Hold on for one second.	14:11:39
4	MR. SHEASBY: Actually, give me five	14:11:43
5	minutes. Sorry.	14:11:45
6	Let's go off the record. I have to deal	14:11:46
7	with something.	14:11:49
8	THE VIDEOGRAPHER: This marks the end of	14:11:49
9	media unit number five.	14:11:51
10	The time is 2:11 p.m.	14:11:52
11	We are off the record.	14:11:55
12	(Short recess taken.)	14:17:54
13	THE VIDEOGRAPHER: This marks the beginning	14:17:54
14	of media unit number six.	14:17:58
15	The time is 2:18 p.m.	14:18:00
16	We are on the record.	14:18:03
17	BY MR. SHEASBY:	14:18:04
18	Q. Let's go to the '164 patent.	14:18:05
19	Do you have it handy?	14:18:13
20	A. Just give me a moment to bring it up.	14:18:16
21	Seven.	14:18:30
22	MR. SNYDER: And, Jason, I don't see that as	14:18:55
23	an exhibit.	14:18:58
24	Do you have an exhibit number?	14:18:59
25	THE WITNESS: Yeah.	14:19:02

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1	Is there an exhibit number? Sorry.	14:19:02
2	MR. SHEASBY: That will be Exhibit 27.	14:19:47
3	(Deposition Exhibit Number 27	14:19:47
4	was marked for identification.)	14:20:04
5	THE WITNESS: Okay. I have that open.	14:20:04
6	BY MR. SHEASBY:	14:20:05
7	Q. Okay. I want to look at claim one.	14:20:05
8	So it -- it requires an organic functional	14:20:13
9	layer that has at least three matrix materials;	14:20:18
10	correct?	14:20:26
11	A. So that is correct.	14:20:32
12	There are three matrix materials specified	14:20:36
13	in claim one.	14:20:39
14	Q. And those three matrix materials have to be	14:20:40
15	in a single organic functional layer?	14:20:43
16	A. That's right.	14:20:48
17	It specifies there should be one organic	14:20:49
18	functional layer, and those are the matrix materials	14:20:53
19	of that functional layer.	14:20:56
20	Q. And there can be more than those matrix	14:20:56
21	materials in an organic functional layer, but there	14:21:01
22	needs to be at least those three; correct?	14:21:02
23	A. Yes.	14:21:05
24	There is one layer, but there can be more	14:21:05
25	materials inside that layer.	14:21:08

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1 Q. And the layer is defined by the function; is 14:21:11
2 that correct? 14:21:18

3 MR. SNYDER: Objection to form. 14:21:18

4 THE WITNESS: Not exclusively. Again, if we 14:21:20
5 look at the specification and the understanding of 14:21:20
6 a person of ordinary skill in the art, there is also 14:21:20
7 an understanding based on, especially the 14:21:23
8 specification, what the layer is. But one of the 14:21:26
9 determining factors is the function of the layer. 14:21:28

10 BY MR. SHEASBY: 14:21:31

11 Q. What are the other determining factors? 14:21:31

12 A. Again, the composition, the -- what the 14:21:40
13 layer does beyond just the electrical function. In 14:21:42
14 some cases the practical function, et cetera. 14:21:46

15 Q. And specific in this, the emission layer has 14:21:48
16 to be -- in this claim it is an emission layer that 14:21:55
17 has to have at least three matrix materials; correct? 14:21:59

18 A. So in -- the EML is the layer here, which is 14:22:05
19 described by having these -- these components. 14:22:11

20 Q. No. 14:22:14

21 It literally says -- the claim literally 14:22:14
22 says emission layer. It doesn't say EML. 14:22:18

23 It says emission layer; correct? 14:22:22

24 A. So that is the language which is in the 14:22:25
25 patent. 14:22:26

1 Q. Okay. And so in the patent it specifies an 14:22:26
2 emission layer that is an organic functional layer 14:22:28
3 that has at least three matrix materials in it; 14:22:32
4 correct? 14:22:34

5 A. The patent describes the organic functional 14:22:35
6 layer with the three matrix materials, and that layer 14:22:39
7 is responsible for the emission in it. 14:22:42

8 Q. Okay. Now, the -- those matrix materials, 14:22:46
9 what makes a material a matrix material? 14:22:54

10 A. So, again, there are two possible 14:22:58
11 interpretations here; right? 14:23:04

12 And I have answered most of your questions 14:23:05
13 under the construction that Samsung has proposed, but 14:23:08
14 I -- I understand also that Pictiva has a different 14:23:12
15 construction. And I got into this a little bit in my 14:23:15
16 report. 14:23:21

17 Q. I'm just asking for your opinion. 14:23:21
18 What makes something a matrix material? 14:23:22

19 A. So, again, there are two constructions, and 14:23:25
20 so I just want to be really careful in my answer 14:23:32
21 because, again -- I have, again, answered a lot of 14:23:36
22 questions, and I want to be clear that there are two 14:23:39
23 possible interpretations. 14:23:46

24 Q. You can do whatever you want. I am just 14:23:47
25 asking for your interpretation. 14:23:49

1	A. Fantastic.	14:23:51
2	So....	14:23:52
3	MR. SNYDER: Objection to form.	14:23:52
4	THE WITNESS: So give me -- give me one	14:23:53
5	second just to -- just to collect myself for	14:24:00
6	a moment.	14:24:05
7	Okay. Sorry. Just every time there is	14:26:00
8	a claim construction dispute, I want to be very clear	14:26:03
9	on which construction I am going to be doing an	14:26:06
10	explanation.	14:26:09
11	So -- so in terms of the matrix material,	14:26:10
12	you know, Samsung has proposed the construction. The	14:26:20
13	first, second, and third matrix materials are	14:26:23
14	different materials and part of the same matrix, and	14:26:26
15	so -- and I agree with that as a general definition	14:26:29
16	of matrix material.	14:26:32
17	But Pictiva has proposed a different	14:26:34
18	construction, which is the plain and ordinary	14:26:36
19	meaning, which is to say a material that forms	14:26:39
20	a continuous phase.	14:26:42
21	Now, Samsung's proposal is a little bit more	14:26:44
22	restrictive because it restricts everybody to	14:26:47
23	a single layer. Under Pictiva's understanding, you	14:26:50
24	know, for example, Mr. Humphrey and Dr. Schanze have	14:26:54
25	some considerations which allow for a broader	14:26:59

1	definition of what could mean in a layer or within	14:27:03
2	one of the matrix materials. And, again, if there is	14:27:07
3	a claim construction offered by the court, then we'll	14:27:10
4	have to abide by that.	14:27:13
5	BY MR. SHEASBY:	14:27:14
6	Q. And what does it mean to be part of the same	14:27:15
7	matrix?	14:27:17
8	A. So part of the same matrix -- again, the	14:27:19
9	matrix is another one of these disputed terms, and,	14:27:27
10	you know -- and I agree with Samsung's construction	14:27:33
11	as a general matter, which is that it is a continuous	14:27:35
12	phase of the mixture of matrix materials.	14:27:38
13	But Pictiva has offered an alternative	14:27:41
14	construction, which is to say that they believe it	14:27:47
15	should not be construed and that that should be	14:27:49
16	interpreted under the plain and ordinary meaning.	14:27:51
17	Q. Okay.	14:27:54
18	A. And we should examine examples like yours	14:27:55
19	under both constructions just to be careful.	14:27:58
20	Q. Well, I'm not -- I am asking about your	14:28:00
21	construction. I have said that three times now.	14:28:03
22	Do you understand that?	14:28:05
23	A. That's fine.	14:28:06
24	MR. SNYDER: Objection to form.	14:28:07
25	MR. SHEASBY: At a break will you instruct	14:28:09

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1 him to just give the speech you gave about different 14:28:11
2 constructions at the previous break? 14:28:12
3 MR. SNYDER: Objection to form. 14:28:13
4 THE WITNESS: So... 14:28:15
5 MR. SNYDER: And I instruct the witness not 14:28:17
6 to answer on the basis of privilege. 14:28:19
7 BY MR. SHEASBY: 14:28:19
8 Q. Did you speak -- 14:28:19
9 THE REPORTER: On the basis of what? 14:28:19
10 MR. SNYDER: Privilege. 14:28:25
11 BY MR. SHEASBY: 14:28:25
12 Q. Did you speak about your deposition 14:28:26
13 testimony at the last break with your counsel? 14:28:27
14 MR. SNYDER: I -- to answer that question -- 14:28:30
15 THE WITNESS: Yeah. No. 14:28:38
16 BY MR. SHEASBY: 14:28:40
17 Q. Okay. So what does it mean for the three 14:28:41
18 materials to be part of a continuous phase? 14:28:44
19 A. So for three materials to be part of 14:28:48
20 a continuous phase is to say that there are three 14:28:50
21 materials that are in a layer that are intermixed. 14:28:53
22 And, as we discussed before, when they are 14:28:57
23 continuous, there is no interruption in the -- the 14:28:59
24 general positioning of the material. 14:29:04
25 Q. And did -- do they have to be at the same 14:29:06

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1	concentration at each location in the phase?	14:29:10
2	A. I think that has to be considered in the	14:29:13
3	context of a person of ordinary skill in the art, and	14:29:17
4	I think there can be some difference in the	14:29:21
5	concentration. But we have to evaluate whether or	14:29:24
6	not it is a continuous layer or not when we are	14:29:26
7	making that evaluation.	14:29:29
8	Q. Right.	14:29:30
9	And what does it mean for it to be	14:29:30
10	a continuous layer?	14:29:32
11	A. Again, I think we have had this	14:29:34
12	conversation. But the continuous layer is that --	14:29:37
13	that layer that has that structure but without	14:29:40
14	interruption.	14:29:45
15	Q. What structure?	14:29:45
16	A. A layer. I don't know how else to define	14:29:48
17	a layer. A layer is -- is the -- a layer in the	14:29:54
18	material.	14:30:00
19	Q. You don't know how to define a layer?	14:30:00
20	MR. SNYDER: Objection to form.	14:30:04
21	THE WITNESS: Yeah.	14:30:05
22	I think a person of ordinary skill would	14:30:06
23	understand what a layer is in -- in the device.	14:30:08
24	BY MR. SHEASBY:	14:30:11
25	Q. Yeah.	14:30:12

1	What is a layer in the device?	14:30:12
2	A. So a layer is, in the sequence of the	14:30:16
3	device, in the vertical dimension or the third	14:30:18
4	dimension, would be one of the parts of the stack of	14:30:25
5	the device.	14:30:29
6	Q. So a layer is a part of the stack of the	14:30:29
7	device?	14:30:32
8	MR. SNYDER: Objection to form.	14:30:32
9	THE WITNESS: That is one definition that	14:30:33
10	one could apply.	14:30:38
11	BY MR. SHEASBY:	14:30:38
12	Q. Any other definitions?	14:30:38
13	A. Sitting here right now, I guess I can't	14:30:42
14	think of another one. But, again, if we speak to	14:30:45
15	a person of ordinary skill, they would understand	14:30:49
16	what a layer is when we speak about -- and	14:30:52
17	organically with that instruction.	14:30:55
18	Q. Right.	14:30:56
19	And what is that?	14:30:57
20	MR. SNYDER: Object to the form.	14:31:01
21	THE WITNESS: So, again, it would be as we	14:31:02
22	build the device and the third dimension -- so the	14:31:04
23	device is generally relatively large in two	14:31:07
24	dimensions. The device -- there are deposited layers	14:31:13
25	in the material, and those layers then form the	14:31:18

1	layers of the system.	14:31:21
2	BY MR. SHEASBY:	14:31:22
3	Q. Does the layer have to be deposited	14:31:22
4	simultaneously, all of the matrix materials in it?	14:31:25
5	A. So there is no -- as long as we can somehow	14:31:28
6	form that mixture, I don't believe that is necessary	14:31:36
7	that it has to be formed simultaneously. The	14:31:39
8	specification, the patent all discuss the formation	14:31:44
9	of that layer, and if there is some way to do it	14:31:48
10	without them, I don't see how.	14:31:51
11	Q. So there is no obstacle? You don't have to	14:31:55
12	form all the matrix materials in the functional layer	14:31:58
13	simultaneously?	14:32:01
14	A. The -- so if we are purely speaking about	14:32:02
15	the mixture of matrix materials as the matrix, the --	14:32:10
16	it is the final product which is being described.	14:32:17
17	Q. Okay. So the layer doesn't have to be	14:32:20
18	formed simultaneously, and the matrix materials don't	14:32:24
19	have to be deposited simultaneously?	14:32:27
20	MR. SNYDER: Objection to form.	14:32:29
21	THE WITNESS: I'm sorry.	14:32:30
22	Could you ask that question again?	14:32:32
23	BY MR. SHEASBY:	14:32:34
24	Q. Sure.	14:32:34
25	The layer doesn't have to be formed at one	14:32:35

1	moment in time.	14:32:38
2	It could be formed iteratively?	14:32:40
3	MR. SNYDER: Objection to form.	14:32:43
4	THE WITNESS: So I guess I'm not sure	14:32:44
5	I agree with iteratively. But if the layer has grown	14:32:49
6	and if it has that mixed construction, then it -- it	14:32:53
7	is a mixed layer.	14:32:58
8	BY MR. SHEASBY:	14:33:00
9	Q. It can grow in multiple steps?	14:33:00
10	MR. SNYDER: Objection to form.	14:33:04
11	THE WITNESS: So it is -- again, without	14:33:06
12	trying to define specific details, in general, the	14:33:12
13	sequence is not specified by the -- by the -- by the	14:33:18
14	term under -- under either construction.	14:33:22
15	BY MR. SHEASBY:	14:33:25
16	Q. Okay. So I'm actually asking you to define	14:33:25
17	details.	14:33:28
18	Do you understand that?	14:33:32
19	A. So if you ask your question again, I might	14:33:33
20	be able to give a better answer. But as a general	14:33:37
21	matter, the term matrix or matrix material doesn't	14:33:40
22	specify the time at which the matrix is made and so	14:33:45
23	it specifies the structure after the matrix is done.	14:33:49
24	Q. And how about the layer? Can the layer be	14:33:54
25	formed in multiple steps?	14:34:08

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1	MR. SNYDER: Objection to form.	14:34:11
2	BY MR. SHEASBY:	14:34:12
3	Q. Functional layer.	14:34:13
4	A. So, again, the functional layer -- there is	14:34:15
5	no requirement in the term functional layer that is	14:34:20
6	temporal. What matters is the layer has its	14:34:26
7	formative device.	14:34:30
8	Q. Let's go to Exhibit A of the Humphrey	14:34:31
9	report.	14:36:22
10	A. That's Exhibit Number 7?	14:36:37
11	Q. I believe so.	14:36:39
12	A. (Witness complies.)	14:36:43
13	Okay. I'm there now.	14:36:44
14	Q. Okay. Hmmm.	14:36:46
15	Okay. Let's go to Paragraph 205.	14:37:47
16	A. (Witness complies.)	14:37:59
17	Okay. I'm there now.	14:38:09
18	Q. So there are HOMO and LUMO values reported	14:38:10
19	on -- on -- in the table in Paragraph 205?	14:38:16
20	A. I see those, yes.	14:38:18
21	Q. And putting aside the actual numbers, do	14:38:20
22	those reflect the relative magnitude of difference	14:38:24
23	between HOMO and LUMO values for the materials that	14:38:27
24	are identified in that chart?	14:38:32
25	MR. SNYDER: Objection to form.	14:38:34

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1	THE WITNESS: Give me a moment to	14:38:36
2	double-check how those were measured. But if they	14:38:41
3	were measured the same way, then their relative	14:38:43
4	values would be comparable.	14:38:47
5	MR. SHEASBY: Now -- objection. Form.	14:38:49
6	BY MR. SHEASBY:	14:38:50
7	Q. I'm asking you as an expert, are the	14:38:51
8	relative HOMO and LUMO values for those materials	14:38:54
9	consistent with the numbers that are reported in this	14:38:58
10	chart?	14:39:01
11	MR. SNYDER: Objection to form.	14:39:03
12	THE WITNESS: I have those numbers in my	14:39:07
13	report. If you give me a moment, I can double-check	14:39:09
14	using my method.	14:39:13
15	BY MR. SHEASBY:	14:39:18
16	Q. And tell me where you are going in your	14:39:19
17	report.	14:39:22
18	A. Yeah.	14:39:22
19	Going to Page 225. Okay. So yeah. If you	14:39:35
20	go to Paragraph 418, that is some indications of this	14:40:08
21	particular measurement, and I just wanted to check	14:40:13
22	the references. I looked up the references for how	14:40:15
23	Mr. Humphrey had determined these, and the -- the	14:40:19
24	reference for the [REDACTED] doesn't specify the	14:40:23
25	measurement method. And that is the alleged first	14:40:28

1 matrix material; whereas, the other two materials 14:40:33
2 were -- sorry. 14:40:38
3 The -- the [REDACTED] [REDACTED]
4 [REDACTED], and so the -- the same technique generally 14:40:49
5 has to be used in order to guarantee that the 14:40:57
6 relative levels are correct. Measuring HOMO and LUMO 14:41:01
7 is pretty complicated, unfortunately, and so there 14:41:06
8 are some built-in biases for that particular method, 14:41:09
9 and so it can be really challenging to confirm that 14:41:13
10 the relative HOMO and LUMO levels are correct if they 14:41:17
11 are measured through different methods or, in one 14:41:21
12 case at least here, we don't even know the method. 14:41:26
13 MR. SHEASBY: Objection. Objection. Form. 14:41:29
14 BY MR. SHEASBY: 14:41:31
15 Q. The question I asked you was do you have 14:41:31
16 different data on what the relative HOMO and LUMO 14:41:33
17 measures are for any of the materials that 14:41:37
18 Mr. Humphrey cites in his report -- or Dr. Humphrey 14:41:39
19 cites -- Mr. Humphrey cites in his report? 14:41:42
20 A. So I did not do any measurement of the HOMO 14:41:48
21 and LUMO levels. And I -- I made my comments based 14:41:54
22 on Mr. Humphrey's -- Mr. Humphrey's analysis, and 14:41:58
23 I have highlighted some concerns that I have. 14:42:03
24 MR. SHEASBY: Objection. Form. 14:42:06
25 ///

1	BY MR. SHEASBY:	14:42:07
2	Q. I said did you -- did you reach -- did you	14:42:07
3	have a different -- did you reach a conclusion of	14:42:10
4	what the relative HOMO and LUMO levels are for the	14:42:12
5	matrix materials that Mr. Humphrey identifies in this	14:42:15
6	report?	14:42:19
7	A. I'm sorry. Could you ask that again?	14:42:24
8	Q. Sure.	14:42:26
9	Did you reach a conclusion on what the	14:42:27
10	relatively -- relative HOMO and LUMO levels are for	14:42:30
11	the materials that Mr. Humphrey identifies in his	14:42:32
12	report as matrix materials?	14:42:35
13	A. So no.	14:42:37
14	I did not offer an opinion or conclusion on	14:42:37
15	the relative HOMO and LUMO levels for these	14:42:39
16	materials.	14:42:43
17	Q. And did you ask Samsung engineers what the	14:42:43
18	relatively level -- rel- -- relative HOMO and LUMO	14:42:47
19	levels were for these materials?	14:42:48
20	A. No.	14:42:50
21	Again, I -- in my report I detail my -- my	14:42:51
22	concerns about Mr. Humphrey's technique, and none of	14:42:57
23	that is a product of any discussion with Samsung	14:43:00
24	engineers.	14:43:04
25	MR. SHEASBY: Objection. Form.	14:43:05

1	BY MR. SHEASBY:	14:43:06
2	Q. Did you speak to any Samsung engineers about	14:43:06
3	what the relative HOMO and LUMO levels are for the	14:43:08
4	materials Mr. Humphrey identifies as matrix materials	14:43:11
5	in his report?	14:43:15
6	A. So I did not have any explicit discussion	14:43:17
7	with any Samsung engineers regarding the measurements	14:43:22
8	of the HOMO and LUMO levels of the materials in	14:43:27
9	Mr. Humphrey's report.	14:43:30
10	Q. Okay. Do you have the technical capability	14:43:32
11	of calculating HOMO and LUMO levels?	14:43:38
12	A. From simulation?	14:43:42
13	Q. From any source.	14:43:44
14	A. So I, personally, have access to the	14:43:47
15	software that can do it, but I do not attempt to or	14:43:53
16	generally simulate materials in order to calculate	14:43:59
17	the HOMO or LUMO levels in any level of detail.	14:44:03
18	Q. Have you ever calculated HOMO and LUMO	14:44:07
19	levels from materials?	14:44:09
20	A. I have -- I have in the past used software	14:44:11
21	to calculate energy levels of organic semiconductors.	14:44:16
22	MR. SHEASBY: Objection. Form.	14:44:25
23	BY MR. SHEASBY:	14:44:26
24	Q. Have you ever used -- calculated HOMO and	14:44:26
25	LUMO levels for matrix materials, such as those	14:44:30

1	specified in the '164 patent?	14:44:33
2	MR. SNYDER: Objection to form.	14:44:39
3	THE WITNESS: So I have not done any	14:44:40
4	simulation for any materials or the types of	14:44:42
5	materials which are being described here using any	14:44:45
6	simulation software.	14:44:50
7	BY MR. SHEASBY:	14:44:51
8	Q. Okay.	14:44:51
9	A. The simulations I have performed have been	14:44:51
10	for primarily organic photovoltaic applications,	14:44:54
11	which are somewhat different.	14:44:56
12	Q. Okay. And have you asked Samsung how they	14:44:57
13	pegged the HOMO and LUMO levels of their materials?	14:45:04
14	A. So the Samsung documentation, which	14:45:10
15	describes the HOMO and LUMO levels, generally	14:45:12
16	references the measurements, and Mr. Humphrey also	14:45:16
17	uses some of those references as well. But I did not	14:45:20
18	have any particular questions or discussion with	14:45:24
19	Samsung about analyzing any materials forming.	14:45:26
20	Q. For the '164 patent you propose combining	14:45:31
21	the Clix2 with a number of different references;	14:45:47
22	correct?	14:45:52
23	A. Yes, I do.	14:45:55
24	Q. And in the real world, have those references	14:45:56
25	ever been combined with the Clix2?	14:45:59

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1	MR. SNYDER: Objection to form.	14:46:02
2	THE WITNESS: So yeah.	14:46:03
3	There have been a large number of	14:46:06
4	innovations in the organic light-emitting diode	14:46:09
5	space, and so I can't speak specifically as to which	14:46:12
6	ones may or may not have been developed based on my	14:46:16
7	proposed accommodations.	14:46:20
8	BY MR. SHEASBY:	14:46:20
9	Q. Did you ask any Samsung engineers if they	14:46:34
10	have ever combined the references in the way you	14:46:37
11	have -- where -- whether it would be reasonable to	14:46:39
12	combine the references -- references in the way you	14:46:41
13	disclose?	14:46:44
14	A. I have not had any discussions with Samsung	14:46:47
15	engineers regarding the specific combinations of	14:46:54
16	references that I had proposed.	14:47:00
17	MR. SHEASBY: I pass the witness.	14:47:02
18	MR. SNYDER: All right. Give us a few	14:47:05
19	minutes.	14:47:07
20	THE REPORTER: What did you just say?	14:47:17
21	MR. SHEASBY: He said give us a few minutes.	14:47:17
22	THE REPORTER: After that.	14:47:20
23	MR. SNYDER: Yeah.	14:47:21
24	Let's go off the record.	14:47:22
25	We'll come back in fifteen minutes.	14:47:25

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1	THE VIDEOGRAPHER: Okay. This marks the end	14:47:25
2	of media unit number six.	14:47:27
3	The time is 2:47 p.m.	14:47:30
4	We are off the record.	14:47:34
5	(Short recess taken.)	15:06:56
6	THE VIDEOGRAPHER: This marks the	15:06:56
7	beginning -- oh, sorry.	15:07:57
8	This marks the beginning of media unit	15:07:58
9	number seven.	15:08:01
10	The time is 3:08 p.m.	15:08:05
11	We are on the record.	15:08:07
12	MR. SNYDER: The defendants don't have any	15:08:07
13	questions for the witness, but we would like to	15:08:08
14	designate the deposition transcript as confidential,	15:08:08
15	attorneys' eyes only pursuant to the protective	15:08:12
16	order.	15:08:16
17	Also, we object to including as an exhibit	15:08:16
18	documents that the witness did not discuss.	15:08:20
19	MR. SHEASBY: Okay. Thank you.	15:08:25
20	THE VIDEOGRAPHER: Mr. Sheasby, before we go	15:08:27
21	off the record -- oh, he left already.	15:08:31
22	Okay. Mr. Snyder, do you need a copy of the	15:08:33
23	video?	15:08:36
24	MR. SNYDER: Yes.	15:08:36
25	We are going to need the video, yes.	15:08:37

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1	THE VIDEOGRAPHER: Do you want it synced	15:08:40
2	with the transcript?	15:08:42
3	MR. SNYDER: Yes, please.	15:08:43
4	THE VIDEOGRAPHER: Okay. Perfect.	15:08:44
5	Suzanne, anything on the record or can	15:08:44
6	I take us off?	15:08:45
7	MR. SNYDER: We are good.	15:08:45
8	THE VIDEOGRAPHER: Okay. Then this	15:08:46
9	concludes the deposition.	15:08:47
10	And we are off the record at 3:08 p.m.	15:08:50
11	Given by Dr. Ioannis Kymissis -- sorry.	15:08:53
12	Kymissis.	15:09:00
13	Total number of media units used was seven	15:09:00
14	and will be retained by Veritext.	15:09:03
15	THE REPORTER: And when do you want the	15:09:03
16	final?	15:09:33
17	MR. SNYDER: Final by June 17.	15:09:33
18	(Deposition Exhibit Number 4	
19	was marked for identification.)	
20	(Deposition Exhibit Number 5	
21	was marked for identification.)	
22	(Deposition Exhibit Number 6	
23	was marked for identification.)	
24	(Deposition Exhibit Number 8	
25	was marked for identification.)	

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1 (Deposition Exhibit Number 9
2 was marked for identification.)
3 (Deposition Exhibit Number 10
4 was marked for identification.)
5 (Deposition Exhibit Number 15
6 was marked for identification.)
7 (Deposition Exhibit Number 17
8 was marked for identification.)

9 (3:08 p.m.)

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1 STATE OF CALIFORNIA)
) ss.
2 COUNTY OF KERN)
3

4 I, IOANNIS KYMISSIS, Ph.D., do hereby
5 certify:

6 That I have read the foregoing
7 deposition;

8 That I have made such changes in form and/or
9 substance to the within deposition, as might be
10 necessary to render the same true and correct;

11 That having made such changes thereon, I
12 hereby subscribe my name to the deposition.

13 I declare, under penalty of perjury, that
14 the foregoing is true and correct.

15 Executed this ____ day of _____,
16 2025, at _____, California.

17
18
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25

IOANNIS KYMISSIS, Ph.D.

[illegible]

5 I, B. Suzanne Hull, a Certified Shorthand
6 Reporter in the State of California, holding
7 Certificate Number 13495, do hereby certify that
8 IOANNIS KYMISSIS, Ph.D., the witness named in the
9 foregoing deposition, was by me duly sworn; that said
10 deposition, was taken Saturday, June 14, 2025, at the
11 time and place set forth on the first page hereof.

12 That upon the taking of the deposition, the
13 words of the witness were written down by me in
14 stenotypy and thereafter transcribed by computer
15 under my supervision; that the foregoing is a true
16 and correct transcript of the testimony given by the
17 witness.

18 Pursuant to Federal Rule 30(e), transcript
19 review was requested.

20 I further certify that I am neither counsel
21 for nor in any way related to any party to said
22 action, nor in any way interested in the result or
23 outcome thereof.

24 | *///*

25	///
----	-----

1 Dated this 17th day of June, 2025, at
2 Bakersfield, California.

3
4
5
6


7 B. Suzanne Hull, CSR No. 13495

1 Ioannis Kymissis, Ph.D.

2 johnkym@gmail.com

3 JUNE 17, 2025

4 RE: Pictiva Displays International LTD v. Samsung Electronics
5 Co., Ltd., Et Al.

6 6/14/2025, Ioannis Kymissis, Ph.D., (#7338172).

7 The above-referenced transcript has been
8 completed by Veritext Legal Solutions and
9 review of the transcript is being handled as follows:

10 ___ Per CA State Code (CCP 2025.520 (a)-(e)) - Contact Veritext
11 to schedule a time to review the original transcript at
12 a Veritext office.

13 ___ Per CA State Code (CCP 2025.520 (a)-(e)) - Locked .PDF
14 Transcript - The witness should review the transcript and
15 make any necessary corrections on the errata pages included
16 below, notating the page and line number of the corrections.
17 The witness should then sign and date the errata and penalty
18 of perjury pages and return the completed pages to all
19 appearing counsel within the period of time determined at
20 the deposition or provided by the Code of Civil Procedure.
21 Contact Veritext when the sealed original is required.

22 ___ Waiving the CA Code of Civil Procedure per Stipulation of
23 Counsel - Original transcript to be released for signature
24 as determined at the deposition.

25 ___ Signature Waived - Reading & Signature was waived at the
time of the deposition.

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1 _X_ Federal R&S Requested (FRCP 30(e)(1)(B)) - Locked .PDF
2 Transcript - The witness should review the transcript and
3 make any necessary corrections on the errata pages included
4 below, notating the page and line number of the corrections.
5 The witness should then sign and date the errata and penalty
6 of perjury pages and return the completed pages to all
7 appearing counsel within the period of time determined at
8 the deposition or provided by the Federal Rules.
9 ___ Federal R&S Not Requested - Reading & Signature was not
10 requested before the completion of the deposition.

Pictiva Displays International LTD v. Samsung Electronics
Co., Ltd., Et Al.

Ioannis Kymissis, Ph.D. (#7338172)

E R R A T A S H E E T

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(Ioannis Kymissis, Ph.D.)

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

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