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Transcript of Ralf Otremba, Corporate Designee & Individually

Date: February 12, 2025

Case: Certain Semiconductor Devices and Products Containing the Same (337-TA-1414)

Planet Depos

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Michigan #8598 | Nevada #089F | New Mexico #566

1 UNITED STATES INTERNATIONAL TRADE COMMISSION

2 Washington, D.C.

3 -----x

4 In the Matter of :

5 CERTAIN SEMICONDUCTOR : Inv. No. 337-TA-1414

6 DEVICES AND PRODUCTS :

7 CONTAINING THE SAME :

8 -----x

9
10 [REDACTED]

11 [REDACTED]

12
13 Videotaped Deposition of INFINEON

14 By and through its Designated Representative

15 RALF OTREMBA

16 And in his Individual Capacity

17 Boston, Massachusetts

18 Wednesday, February 12, 2025

19 9:16 a.m. EST

20 Job No.: 570071

21 Pages: 1 - 159

22 Reported By: Karen Klerekoper, CSR-4250, RPR

1 Videotaped Deposition of RALF OTREMBA,
2 conducted at:

3
4
5 Wolf, Greenfield & Sacks
6 600 Atlantic Avenue
7 Boston, Massachusetts 02210
8 617.646.8000
9

10
11
12 Pursuant to Notice, before Isaac Weaver, Notary
13 Public in and for the State of Massachusetts.
14
15
16
17
18
19
20
21
22

A P P E A R A N C E S

ON BEHALF OF INNOSCIENCE COMPLAINT:

UMBER AGGARWAL, ESQUIRE

DEANNA SMILEY, ESQUIRE

FINNEGAN, HENDERSON, FARABOW, GARRETT &

DUNNER

901 New York Avenue NW

Washington, DC 20001

202.408.4000

ON BEHALF OF INFINEON RESPONDENT AND

WITNESS:

CHARLES T. STEENBURG, ESQUIRE

WOLF, GREENFIELD & SACKS

600 Atlantic Avenue

Boston, Massachusetts 02210

617.646.8000

ALSO PRESENT:

VIDEOGRAPHER ISSAC WEAVER, PLANET DEPOS

INTERPRETER (VIA ZOOM) DAVID RESUEHR

CHECK INTERPRETER PETRA GEHRUNG

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

4

INDEX

WITNESS:

PAGE:

RALF OTREMBA

EXAMINATION BY MR. AGGARWAL:

8

EXAMINATION BY MR. STEENBURG:

147

RE-EXAMINATION BY MR. AGGARWAL:

157

EXHIBIT:

PAGE:

(Exhibits attached to the transcript.)

Exhibit 1, deposition notice

11

Exhibit 2, personal deposition notice

12

Exhibit 3, US Patent 9,899,481 B2

45

Exhibit 4, US 2009/0212284 A1

55

Exhibit 5, US 2014/0210061 A1

75

(Exhibits continued on following page.)

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(Exhibits continued.)

Exhibit 6, determination of patent term adjustment	78
35 USC 154(b)	
Exhibit 7, declaration and assignment for patent	80
Exhibit 8, response to office action	85
Exhibit 9, US 10,290,566 B2	105
Exhibit 10, US 9,368,434 B2	115
Exhibit 11, Smart Power ICs	131
Exhibit 12, intro to GaN Enhancement mode	139
Exhibit 13, Figure 2	141
Exhibit 14, Figure 12	144
Exhibit 15, figure page 7	145

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

6

P R O C E E D I N G S

THE VIDEOGRAPHER: Here begins Media

09:16:18

Number 1 in the videotaped deposition of Ralf

09:16:20

Otremba in the Matter of Certain Semiconductors,

09:16:24

Devices, and Products containing the same, in the

09:16:28

United States International Trade Commission,

09:16:30

Washington, D.C., Case Number 337-TA-1414.

09:16:32

Today's date is February 12th, 2025. The

09:16:36

time on the video monitor is 9:16 a.m. The

09:16:39

Videographer today is Isaac Weaver, representing

09:16:44

Planet Depos. This video deposition is taking

09:16:47

place at 600 Atlantic Avenue, in Boston,

09:16:49

Massachusetts.

09:16:53

Would counsel please voice-identify

09:16:54

themselves and state whom they represent.

09:16:56

MR. AGGARWAL: Umber Aggarawal, from

09:16:58

Finnegan, representing Innoscience. With me I

have Deanna Smiley here.

09:17:06

MR. STEENBURG: Charlie Steenburg, from --

09:17:06

from Wolf Greenfield, representing the Infineon

09:17:09

respondents and the witness -- the Infineon

09:17:12

complainants and the witness. With me is

09:17:14

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Conducted on February 12, 2025

7

1	[REDACTED] and our check	09:17:16
2	interpreter, Petra Gehrung.	09:17:21
3	THE VIDEOGRAPHER: The court reporter	09:17:25
4	today is Karen Klerekoper, representing	09:17:27
5	Planet Depos. The witness and interpreters will	09:17:30
6	now be sworn.	09:17:32
7	(Oath stipulation read and agreed by	09:17:35
8	counsel and witness.)	09:17:39
9	THE VIDEOGRAPHER: And, Dr. Resuehr, are	
10	you able to raise your right hand for me?	
11	(Interpreters were sworn.)	
12	DAVID RESUEHR, having been duly sworn to	
13	interpret German to English and English to German,	
14	and will be designated by "answer," testified as	
15	follows:	09:17:52
16	PETRA GEHRUNG, having been duly sworn to	09:17:52
17	interpret German to English and English to German,	
18	testified as follows:	09:18:38
19	THE VIDEOGRAPHER: You may proceed.	09:18:38
20	(Witness was sworn.)	
21		
22		

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Conducted on February 12, 2025

8

1	RALF OTREMBA,	
2	having been first duly sworn, testified through	
3	the duly-sworn interpreter as follows:	09:18:42
4	EXAMINATION	09:18:42
5	BY MR. AGGARWAL:	09:18:42
6	Q Good morning, Mr. Otremba. Nice seeing	09:18:42
7	you today.	09:18:46
8	For the record, could you please state	09:18:46
9	your name?	09:18:47
10	A My name is Ralf Otremba.	09:18:59
11	Q What is your home address?	
12	[REDACTED]	09:19:02
13	[REDACTED]	09:19:11
14	Q I would like to go over some ground rules	09:19:13
15	today, if that's okay. For the record, I want to	09:19:15
16	explain that this deposition is involving a German	09:19:17
17	translator who will be translating Mr. Otremba's	09:19:21
18	responses.	09:19:21
19	Mr. Otremba, is your native language	09:19:21
20	German?	09:19:26
21	A German is my native language.	09:19:30
22	Q Do you -- do you also speak and understand	09:19:33

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Conducted on February 12, 2025

9

1	English?	09:19:35
2	A Partially I do speak and understand	09:19:36
3	English.	09:19:44
4	Q How do you describe your English speaking	09:19:44
5	skills?	09:19:52
6	A Capable of making -- of expressing myself	09:19:52
7	on day-to-day basis, but I have difficulty with a	09:20:17
8	specific terminology of law and if people are	09:20:21
9	speaking very fast.	09:20:25
10	Q How would you describe your English	09:20:27
11	reading skills?	09:20:33
12	A I can read well, but also there the	09:20:35
13	specific legal terminology is not existent.	09:20:51
14	Q So if I provide you documents in English,	09:20:55
15	you would understand them aside from the legal	09:20:59
16	terminology?	09:21:01
17	A I could read it well and, well,	09:21:03
18	understanding and comprehension it would depend on	09:21:23
19	how fast it's read to me and with what kind of an	09:21:26
20	accent or dialect it's read to me.	09:21:29
21	Q Okay. In today's deposition I'll be	09:21:32
22	asking you questions. One thing I do ask is that	09:21:34

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Conducted on February 12, 2025

10

1 you provide a verbal response. Hand gestures or
2 nodding won't go on the record.

09:21:38

09:21:41

3 So I would -- when I do ask you questions,
4 could you please respond verbally?

09:21:43

09:21:44

5 THE INTERPRETER: Interpreter has one
6 request, please, for the record.

09:22:03

09:22:05

7 MR. AGGARWAL: Sure.

8 THE INTERPRETER: I would ask both -- both
9 the -- both the attorneys and the witness to make
10 as short as possible sentences. Because if it
11 trails on, I might -- I might not get all of it.

09:22:06

09:22:07

09:22:09

09:22:11

12 I want to be as accurate as possible, okay?

09:22:14

13 MR. AGGARWAL: Understood.

09:22:16

14 THE INTERPRETER: Thank you.

09:22:17

15 Q Did you understand the last statement?

09:22:19

16 A From you I understood it, yes.

09:22:29

17 Q Is there any reason you cannot testify
18 truthfully today?

09:22:31

09:22:34

19 A No, I can testify truthfully today.

09:22:36

20 Q And if you need a break, please just let
21 me know. We'll plan on taking a break every hour
22 or so.

09:22:42

09:22:46

09:22:49

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Conducted on February 12, 2025

11

1	THE INTERPRETER: Come again. Every how	09:22:49
2	much?	09:22:55
3	MR. AGGARWAL: Hour or so.	09:22:56
4	A All right. Understood.	09:23:02
5	Q Have you been deposed before?	09:23:03
6	A No.	09:23:05
7	Q And when I ask you questions, unless	09:23:13
8	counsel instructs you not to answer, you do have	09:23:17
9	to answer the question.	09:23:19
10	Do you understand that?	09:23:20
11	A Understood. Understood. I understood.	09:23:22
12	Q I'm going to mark the first exhibit as --	09:23:43
13	first document as Exhibit 1.	09:23:46
14	(Marked for identification Exhibit 1,	09:23:48
15	deposition notice.)	09:23:49
16	Q Have you seen this document before,	09:24:13
17	Mr. Otremba?	09:24:15
18	THE INTERPRETER: Can the interpreter ask	09:24:20
19	to -- to repeat that, please? I heard paper	09:24:22
20	rustling.	09:24:26
21	MR. AGGARWAL: Sure. Can you hear me now?	09:24:26
22	THE INTERPRETER: Yes.	09:24:28

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Conducted on February 12, 2025

12

1	Q Mr. Otremba, have you seen this document	09:24:29
2	before?	09:24:32
3	A Yes, I have previously seen this document.	09:24:32
4	Q And do you understand you've been	09:24:39
5	designated for certain topics today?	09:24:41
6	A Yes, I understood.	09:24:51
7	Q Do you understand you've been designated	09:24:52
8	for topics 3 through 12, 21 through 23, 26, 29 to	09:24:54
9	30, and 115?	09:25:14
10	A Yes.	09:25:23
11	Q Are you prepared to testify with respect	09:25:26
12	to those topics?	09:25:28
13	A Yes.	09:25:29
14	Q I'm going to mark the next document	09:25:37
15	Exhibit 2.	09:25:51
16	(Marked for identification Exhibit 2,	09:25:52
17	personal deposition notice.)	09:25:53
18	Q Mr. Otremba, have you seen this document	09:26:07
19	before?	09:26:10
20	A Yes, I have seen it previously.	09:26:23
21	Q Do you understand that you're testifying	09:26:27
22	today under your personal capacity as well?	09:26:29

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Conducted on February 12, 2025

13

1 THE INTERPRETER: The interpreter asks to 09:26:35
2 specify personal capacity for interpretation. 09:26:37

3 MR. AGGARWAL: His knowledge testifying on 09:26:40
4 behalf of Infineon but also under his personal 09:26:46
5 capacity, so he has to speak towards his personal 09:26:49
6 knowledge. 09:26:53

7 A Yes, it's about personal knowledge and 09:27:11
8 Infineon, yes, yes. 09:27:14

9 Q Mr. Otremba, what did you do today to 09:27:17
10 prepare for today's deposition? 09:27:21

11 A I -- I looked at the data sheets that are 09:27:28
12 available for the patent from Infineon. And I 09:27:47
13 looked at or compared the release dates of -- of 09:28:04
14 those documents with -- with our patent. 09:28:09

15 Q You mentioned data sheets. 09:28:20

16 What data sheets did you look at? 09:28:22

17 A They were data sheets from Infineon about 09:28:25
18 gallium nitride's building elements with lateral 09:28:45
19 electricity flow. 09:28:48

20 Q Do you know what products those data 09:28:49
21 sheets related to? 09:28:52

22 A Well, I know the background of the data 09:28:54

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

14

1	sheets, yes.	09:29:06
2	Q Any specific products?	09:29:07
3	A Okay. Those are gallium nitride building	09:29:33
4	elements with the ability to block currents of 400	09:29:28
5	volts.	09:29:31
6	Q And who did you meet with to prepare for	09:29:35
7	your deposition?	09:29:38
8	A I talked with my coinventor, Klaus	09:29:54
9	Schiess, several times and talked to him on the	09:30:01
10	phone.	09:30:04
11	Q Anyone else?	09:30:04
12	A Nope, just with Klaus. That was what I	09:30:11
13	did.	09:30:19
14	Q Did you review the '481 patent in	09:30:19
15	preparation for this deposition?	09:30:28
16	THE INTERPRETER: Can you come again,	09:30:33
17	please? Interpreter asks to repeat that.	09:30:34
18	Q Did you review the '481 patent in	09:30:38
19	preparation for this deposition?	09:30:41
20	A Yes, I did.	09:30:51
21	Q Did you review the prosecution file	09:30:52
22	history for the '481 patent?	09:30:54

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

15

1	A	No.	09:31:17
2		CHECK INTERPRETER: He didn't mention the	09:31:19
3		'481 patent that was in your question.	09:31:25
4	A	I didn't understand. Can you repeat that,	09:31:41
5		please?	09:31:42
6	MR. AGGARWAL:	I think we can kind of	09:31:43
7		just -- unless it's a big issue, I don't think we	09:31:44
8		need to have continuous interruptions from the	09:31:46
9		check interpreter.	09:31:50
10	Q	Did you review any other patents in	09:31:52
11		preparation for your deposition?	09:32:12
12	A	Well, I looked at some of the references	09:32:12
13		that had been mentioned in the patent, yes.	09:32:14
14	Q	Which references?	09:32:15
15	A	I don't remember the numbers, but they	09:32:19
16		are -- they're listed in the patent.	09:32:28
17		Do you want to have the numbers?	09:32:40
18	Q	Yes, please.	09:32:41
19	A	7250641 B2.	09:32:48
20		7838097 B2.	09:33:08
21		2006/0033122 A1.	09:33:08
22		2009/0212284 A1.	09:33:25

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

16

1	2011/0049582 A1.	09:33:42
2	2011/0101466 A1.	09:34:01
3	2012/0022332 A1.	09:34:18
4	2012/0223322 A1.	09:34:37
5	2016/0252577 A1.	09:34:54
6	2015/0115313 A1.	09:35:10
7	2015/0116025 A1.	09:35:27
8	And then a German patent,	09:35:47
9	DE102014102910A1.	09:36:11
10	Q You mentioned you looked over many	09:36:14
11	documents in preparation for this deposition.	09:36:16
12	Did these documents refresh your	09:36:19
13	recollection?	09:36:34
14	A I think, yes.	09:36:34
15	Q Some of the patents you listed out are	09:36:36
16	your own patents or publications.	09:36:41
17	Did those refresh your recollection of	09:36:45
18	what those patents were about?	09:36:46
19	A I looked at everything, and I -- kind of	09:37:12
20	like, it -- it helped me remember things, but I	09:37:16
21	can't remember the entire list of everything right	09:37:19
22	now.	09:37:22

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1 Q Do you remember what those references
2 that -- that you're listed on for were generally
3 related to?

09:37:23

09:37:25

09:37:32

4 A They are gallium nitride building
5 elements, and in part they are also source sense
6 elements for a vertical -- a vertical building
7 element.

09:38:01

09:38:06

09:38:09

09:38:19

8 THE INTERPRETER: The interpreter has to
9 ask, because that German word I don't know in
10 English. It's technical.

09:38:26

09:38:28

09:38:32

11 What -- what is a...

09:38:37

12 THE INTERPRETER: Through-hole package.

09:38:37

13 Thank you.

09:38:40

14 Q You mentioned a vertical building element.

09:38:41

15 Is that a vertical transistor?

09:38:43

16 A The vertical building element is a
17 transistor in this case.

09:38:52

09:38:55

18 Q Would it be okay if we refer to that as a
19 "vertical transistor" for the deposition?

09:38:57

09:39:00

20 A It describes a vertical transistor because
21 there is a vertical current flow in this building
22 element, yes.

09:39:12

09:39:15

09:39:17

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

18

1	Q	Is that different from lateral electricity	09:39:19
2		flow you talked about before?	09:39:22
3	A	Yes, it's different.	09:39:29
4	Q	Did you bring anything today for notes	09:39:32
5		besides the binder you have?	09:39:38
6	A	I don't understand exactly what you mean.	09:39:51
7	Q	Beside the binder in front of you, is	09:39:53
8		there any other notes that you brought today for	09:39:56
9		the deposition?	09:39:58
10	A	No, I have no other things here with me.	09:40:08
11	Q	Did you take any notes in the documents in	09:40:10
12		the binder?	09:40:13
13	A	No.	09:40:21
14	Q	Mr. Otremba, can you tell me about your	09:40:23
15		educational background?	09:40:27
16	A	I'm an engineer for Fine Technologies; is	09:40:35
17		that right? Microsystem technology.	09:40:48
18		And I have a master's in physics.	09:40:53
19	Q	What were your undergrad studies in?	09:41:02
20	A	In physics or in the -- in my other	09:41:12
21		studies, the microsystem?	09:41:19
22	Q	Before your master's in physics, did you	09:41:22

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1	go to university for a different major?	09:41:25
2	A Yes. Before physics I did a -- I did	09:41:45
3	studies with microsystem technology.	09:41:48
4	Q How long were your studies for the	09:41:51
5	microsystem technologies?	09:41:54
6	A '88 started till '93, five years.	09:42:03
7	Q And how long were your graduate studies in	09:42:11
8	physics?	09:42:14
9	A I studied physics from 1993 to 1998, five	09:42:19
10	years.	09:42:28
11	Q Did you take any electrical engineering	09:42:28
12	courses as part of your undergrad or graduate	09:42:31
13	studies?	09:42:36
14	A Yes, in microsystem technology, part of it	09:42:51
15	is also electrical technology.	09:42:55
16	Q Did you take any microelectronics classes?	09:42:58
17	A So in -- as part of the microsystem	09:43:06
18	technology studies, there are several hours a week	09:43:30
19	dedicated to electronics, but I don't know exactly	09:43:33
20	how many they were.	09:43:37
21	Q Can you give some examples of some courses	09:43:38
22	you took?	09:43:43

1	A	I remember a practicum or work experience	09:43:49
2		for the control of stepper motors. And there was	09:44:01
3		a -- I'm sorry, there was a general -- a general	09:44:12
4		course for electronics as well.	09:44:15
5	There are also some combinations because,		09:44:31
6	well, with microsystem technology, well -- well,		09:44:34
7	like microsystem technology was part of it.		09:44:36
8	Q	Did you take courses in English?	09:44:40
9	MR. STEENBURG:	Objection, vague.	09:44:47
10	A	No.	09:44:48
11	Q	Did you speak English in your classes?	09:44:49
12	A	No.	09:44:57
13	Q	Did you read materials in English for your	09:44:58
14		classes?	09:45:01
15	A	Not that I could remember, no.	09:45:10
16	Q	Which courses would you say are most	09:45:12
17		applicable to your current job?	09:45:15
18	A	Not that easy. Microsystem technology, I	09:45:39
19		think, is closer than physics.	09:45:58
20	Q	Did you take any classes related to	09:46:01
21		semiconductors?	09:46:03
22	A	Not specifically classes on	09:46:24

1 semiconductors, but my master's thesis in physics

09:46:28

2 was actually on semiconductors.

09:46:33

3 Q Did you take any classes relating to

09:46:35

4 semiconductor packaging?

09:46:37

5 THE INTERPRETER: Interpreter needs to

09:46:42

6 verify. Did you say patents?

09:46:45

7 MR. AGGARWAL: Packaging.

09:46:48

8 THE INTERPRETER: Oh, packaging.

09:47:11

9 A No, not in the sense that we're talking of

09:47:11

10 packaging today.

09:47:13

11 Q And you mentioned that your thesis was

09:47:16

12 related to semiconductors.

09:47:20

13 Was it related to GaN semiconductors?

09:47:22

14 A No.

09:47:36

15 Q What is "GaN"?

09:47:37

16 A It's a combination -- GaN is a combination

09:47:48

17 semiconductor of -- made of gallium and nitride.

09:47:51

18 Q Is it okay if I call it GaN for the rest

09:47:56

19 of the deposition?

09:47:59

20 A Yes, that's all right for me.

09:48:04

21 Q How long have you been with Infineon?

09:48:06

22 A I have been with Infineon since it was

09:48:20

1 founded.

09:48:22

2 Q Do you know what year that was?

09:48:24

3 A I'm not quite sure. Maybe 2000, 2001.

09:48:28

4 But beforehand, I worked for Siemens

09:48:49

5 semiconductors. And Infineon was basically born

09:48:52

6 out of Siemens semiconductors.

09:48:57

7 Q What did you do at Siemens?

09:49:00

8 A Also, like I worked on low-voltage

09:49:16

9 capacity transistors.

09:49:23

10 Q Were any of those GaN transistors?

09:49:27

11 A No.

09:49:36

12 Q And when you say you worked on low-voltage

09:49:37

13 capacity transistors, can you explain what "worked

09:49:43

14 on" meant?

09:49:46

15 A Okay. They are low-voltage power

09:49:55

16 capacitors -- transistors. And I started there as

09:50:09

17 a project lead in the product development.

09:50:18

18 Q And what was your first role at Infineon?

09:50:29

19 A Project lead.

09:50:35

20 Q What was the project lead for?

09:50:38

21 A For the development of a low-voltage power

09:50:41

22 semiconductor.

09:50:53

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

23

1	Q	What year was that?	09:50:55
2	A	I started -- I started in '98 and I worked	09:51:03
3		until about 2000.	09:51:21
4	Q	What happened after 2000? Did you move to	09:51:26
5		a different role?	09:51:30
6	A	Yes. After 2000 I started developing into	09:51:31
7		the direction of my -- my job now, concept	09:51:46
8		engineering for power packages.	09:51:57
9	Q	So you've had your current role since	09:52:00
10		about 2000?	09:52:03
11	A	Context-wise, yes, but I -- I advanced	09:52:13
12		subject-wise.	09:52:21
13	Q	And how have your responsibilities changed	09:52:24
14		since 2000?	09:52:29
15	A	I did a technical letter career, and	09:52:55
16		through that I'm responsible for certain --	09:53:00
17		certain topic areas without responsibility for	09:53:03
18		personnel.	09:53:08
19	Q	So you don't supervise anyone?	09:53:10
20	A	Yes, I'm not responsible for employees.	09:53:21
21	Q	In your current role, are you working on	09:53:31
22		GaN transistors?	09:53:38

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1	A	Nope.	09:53:45
2	Q	Have you ever worked on GaN transistors at	09:53:47
3		Infineon?	09:53:51
4	A	I -- I gave support. A couple years ago,	09:54:08
5		the -- the GaN was also part of our work.	09:54:14
6	Q	Can you describe what kind of support you	09:54:23
7		gave?	09:54:25
8	A	I'm an expert for the cooling of building	09:54:37
9		elements, and with this expertise I also supported	09:54:43
10		GaN projects.	09:54:58
11	Q	Can you describe some benefits of GaN?	09:54:59
12	A	Yes. The biggest advantage is the fast	09:55:11
13		switchability.	09:55:19
14	Q	Anything else?	09:55:24
15	A	Also suitable to build -- to make building	09:55:33
16		elements with very low resistance, with low	09:55:44
17		ohmage.	09:55:49
18	Q	Can you describe some challenges with	09:55:51
19		working with GaN?	09:55:53
20	A	The interactions with the package is	09:56:14
21		different than with other semiconductor materials.	09:56:18
22	Q	Can you explain that a little bit more?	09:56:25

1 A The thermo -- thermodynamic stability is a
2 very important point for the stability of these
3 building elements. And here GaN acts different
4 than silicium or silicium carbide.

09:56:30

09:56:51

09:56:53

09:57:04

5 Q Do you work on HEMT devices?

09:57:12

6 A The support was also for high-electron
7 transistor, yes.

09:57:20

09:57:30

8 Q And are HEMT devices vertical devices?

09:57:31

9 MR. STEENBURG: Objection, vague.

09:57:41

10 A ...lateral nature.

09:57:51

11 (The court reporter asked for clarification.)

09:57:51

12 THE INTERPRETER: Interpreter has a
13 request. I heard -- I heard another party saying
14 objection. It's like the -- the volume is pretty
15 low. If there is an objection I need to know
16 about, I would request that you either speak up or
17 kind of, like, close to the microphone or
18 something.

09:57:54

09:57:56

09:57:57

09:58:00

09:58:04

09:58:06

09:58:08

19 MR. STEENBURG: I'll speak up. Is this
20 better?

09:58:09

09:58:11

21 THE INTERPRETER: That's perfect. Thank
22 you so much.

09:58:12

09:58:14

1	MR. STEENBURG: Apologies.	09:58:15
2	THE INTERPRETER: Don't worry, all good.	09:58:16
3	Q Are HEMT devices vertical devices?	09:58:22
4	MR. STEENBURG: Objection, vague.	09:58:44
5	A Can you ask the question a little bit more	09:58:47
6	precisely, please?	09:58:57
7	Q Sure. It's the same question I asked	09:58:58
8	before, which we didn't get on the record, are	09:59:00
9	HEMT devices vertical devices?	09:59:03
10	MR. STEENBURG: Objection, vague.	09:59:13
11	A Can you ask the question more precisely	09:59:21
12	somehow?	09:59:29
13	Q Mr. Otremba, you mentioned something about	09:59:29
14	lateral the last time I asked this question.	09:59:33
15	Could you repeat that answer, please?	09:59:35
16	A For me, these HEMT devices are	09:59:53
17	characterized by a lateral current flow.	09:59:58
18	Q So HEMT devices are lateral devices?	10:00:00
19	A The devices that I know or that I was	10:00:29
20	involved in had a lateral current flow, but I	10:00:32
21	can't speak for all of the devices that might be	10:00:36
22	there.	10:00:39

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

27

1	Q	Where is this lateral current flow in a	10:00:39
2		HEMT device?	10:00:44
3	A	On the surfaces of the chip.	10:00:46
4	Q	Is it part of the -- strike that.	10:01:01
5		Does a lateral flow happen on the 2DEG	10:01:04
6		layer?	10:01:12
7	A	I'm not enough of an expert on the device	10:01:18
8		physics. I have a certain idea, but I don't have	10:01:34
9		the expertise to give -- to really tell you.	10:01:37
10	Q	Can you provide that certain idea you	10:01:40
11		have?	10:01:44
12	A	The GaN device is characterized by the	10:01:44
13		two-dimensional electron gas, and within this gas,	10:02:04
14		the -- the current flow is also happening.	10:02:17
15	Q	And that current flow is lateral, correct?	10:02:24
16	A	Yes.	10:02:36
17	Q	Do the electrons flow the opposite	10:02:38
18		direction of the current flow?	10:02:43
19	A	So is this a question if you're thinking	10:02:58
20		about the -- the current flow physically or	10:03:02
21		electrotechnically?	10:03:06
22	Q	Physically.	10:03:10

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[REDACTED]

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Conducted on February 12, 2025

28

1	A	Physically the electrons are flowing.	10:03:15
2	Q	And what about electrotechnically?	10:03:18
3	A	Polarity reverses from plus to minus,	10:03:32
4		minus to plus.	10:03:35
5	Q	Mr. Otremba, you mentioned that the two --	10:03:37
6		2DEG layer is at the surface.	10:03:42
7		Can it also be further below the surface?	10:03:44
8	A	I'm not enough of a device expert to say	10:04:05
9		that that's actually possible or you could	10:04:08
10		actually do that.	10:04:12
11	Q	But you mentioned that it could be on the	10:04:12
12		surface, so you were able to answer that the	10:04:15
13		two -- the 2DEG layer could be on the surface.	10:04:17
14	A	No, I can't. If that's also -- also	10:04:35
15		possible to do that deeper down, I can't say.	10:04:40
16	Q	Have you ever seen a device with the 2DEG	10:04:43
17		deeper down?	10:04:48
18	A	No, I haven't seen that.	10:04:52
19	Q	Is it possible?	10:04:54
20	A	I can't judge that.	10:05:00
21	Q	What is the current flow for a vertical	10:05:03
22		transistor?	10:05:11

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

29

1	A	For a vertical transistor, the current	10:05:21
2		flow is vertical.	10:05:26
3	Q	What are the different layers of a HEMT	10:05:29
4		device?	10:05:35
5	A	I can't answer that.	10:05:36
6	Q	You never seen any publications regarding	10:05:43
7		a HEMT device and the layers within it?	10:05:48
8	A	I've seen that there are publications on	10:06:09
9		it, but I don't remember what the order of layers	10:06:12
10		is or -- or how they are really arranged. I do	10:06:18
11		know that it's a multilayer device.	10:06:44
12	Q	Do you have an understanding of what any	10:06:26
13		of the layers are?	10:06:28
14	A	I know that the layers have to do with the	10:06:49
15		two-dimensional electron glass -- gas, but I	10:06:51
16		really can't say which of the layers are	10:06:54
17		responsible for it.	10:06:57
18	Q	Do you have -- so you have an	10:06:58
19		understanding of what layers are a part of the	10:07:02
20		HEMT based on that?	10:07:05
21	A	I can't say that now.	10:07:07
22		[REDACTED]	10:07:22

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[REDACTED]

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30

1	[REDACTED]	10:07:30
2	[REDACTED]	10:07:44
3	[REDACTED]	10:07:56
4	[REDACTED]	10:08:00
5	[REDACTED]	10:08:07
6	[REDACTED]	10:08:26
7	[REDACTED]	10:08:31
8	[REDACTED]	10:08:34
9	[REDACTED]	10:08:38
10	[REDACTED]	10:08:41
11	[REDACTED]	10:08:45
12	[REDACTED]	10:08:57
13	[REDACTED]	10:09:01
14	[REDACTED]	10:09:02
15	[REDACTED]	10:09:06
16	[REDACTED]	10:09:09
17	[REDACTED]	10:09:12
18	[REDACTED]	10:09:16
19	[REDACTED]	10:09:30
20	[REDACTED]	10:09:31
21	[REDACTED]	10:09:33
22	[REDACTED]	10:09:46

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[REDACTED]

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Conducted on February 12, 2025

31

1	[REDACTED]	10:09:55
2	[REDACTED]	10:10:01
3	[REDACTED]	10:10:10
4	[REDACTED]	10:10:16
5	[REDACTED]	10:10:17
6	[REDACTED]	10:10:19
7	[REDACTED]	10:10:35
8	[REDACTED]	10:10:38
9	[REDACTED]	10:10:39
10	[REDACTED]	10:10:41
11	[REDACTED]	10:10:47
12	[REDACTED]	10:10:49
13	[REDACTED]	10:11:09
14	[REDACTED]	10:11:13
15	[REDACTED]	10:11:14
16	[REDACTED]	10:11:18
17	[REDACTED]	10:11:27
18	[REDACTED]	10:11:34
19	[REDACTED]	10:11:37
20	[REDACTED]	10:11:38
21	[REDACTED]	10:11:42
22	[REDACTED]	10:11:44

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[REDACTED]

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32

1	[REDACTED]	10:11:47
2	[REDACTED]	10:12:16
3	[REDACTED]	10:12:19
4	[REDACTED]	10:12:23
5	[REDACTED]	10:12:42
6	[REDACTED]	10:12:45
7	Q Do you understand what a prior art	10:12:51
8	reference is?	10:12:53
9	THE INTERPRETER: Interpreter wants to	10:12:58
10	hear that again. Prior what reference?	10:12:59
11	MR. AGGARWAL: Prior art reference.	10:13:01
12	THE INTERPRETER: Oh, prior art.	10:13:03
13	A I know that in the state-of-the-art you	10:13:20
14	should actually reference to or -- or make note of	10:13:24
15	the current state-of-the-art of the technology.	10:13:30
16	Q For a patent application, do you ever	10:13:33
17	analyze whether the proposed invention is	10:13:37
18	different from the prior art?	10:13:44
19	A As far as I know, the -- that check is	10:14:03
20	done during the process of making the application	10:14:32
21	for the patent, but not by the inventor	10:14:35
22	themselves.	10:14:40

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

33

1	Q Do you ever analyze changing the claims	10:14:41
2	during the patent application process?	10:14:46
3	THE INTERPRETER: Can you -- Interpreter	10:15:05
4	asks, can you rephrase that for me? I'm not sure	10:15:06
5	how to best translate that.	10:15:10
6	MR. AGGARWAL: Would amending the claims	10:15:10
7	be better?	10:15:13
8	CHECK INTERPRETER: (Speaking German) is	10:15:27
9	claims.	10:15:27
10	THE INTERPRETER: (Speaking German), thank	10:15:27
11	you.	10:15:32
12	A So the state-of-the-art is part of the --	10:15:36
13	the application that -- the patent office makes a	10:16:00
14	declaration, and that will be -- will be regarded	10:16:16
15	in the new claims.	10:16:25
16	Q Can you explain what you mean by "new	10:16:33
17	claims"?	10:16:37
18	A They can be claims that have a -- a	10:16:54
19	narrowed circle of demands, or claims that are	10:16:56
20	compiled from the combination of those claims, or	10:17:08
21	also that from the descriptive text passages are	10:17:18
22	integrated into the claims.	10:17:24

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

34

1	Q	And you analyze these new claims?	10:17:25
2	A	That actually is primarily done by the	10:17:33
3		patent experts, but in discussion or in talking	10:17:44
4		with the inventors.	10:17:53
5	Q	How many patents or patent applications	10:18:02
6		have you been a named inventor on, roughly?	10:18:05
7	A	I don't have the number explicitly in my	10:18:09
8		head, but it's going to be more than 200.	10:18:27
9	Q	Do you know how many of those are U.S.	10:18:30
10		patents?	10:18:33
11	A	They are U.S. patents.	10:18:38
12	Q	So you're familiar with the process to	10:18:41
13		obtain a U.S. patent?	10:18:45
14	A	The process I -- that I know of is how we	10:19:02
15		generate patents from our discovery -- from our	10:19:06
16		discoveries, but I'm -- I'm not an expert. I --	10:19:11
17		I'm not an expert on the -- on the law terms or on	10:19:24
18		all -- on all the legal terms about patents	10:19:29
19		themselves.	10:19:31
20	Q	The 200 or so U.S. patents that you	10:19:33
21		mentioned, what are they primarily directed to?	10:19:38
22	A	Primarily, these are patents for the	10:19:48

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[REDACTED]

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Conducted on February 12, 2025

35

1	optimizing -- the chip package application	10:20:07
2	interactions, chip package application	10:20:14
3	interactions.	10:20:19
4	[REDACTED]	10:20:20
5	[REDACTED]	10:20:27
6	[REDACTED]	10:20:48
7	[REDACTED]	10:20:52
8	[REDACTED]	10:21:00
9	[REDACTED]	10:21:00
10	[REDACTED]	10:21:02
11	[REDACTED]	10:21:04
12	[REDACTED]	10:21:07
13	[REDACTED]	10:21:19
14	[REDACTED]	10:21:22
15	[REDACTED]	10:21:24
16	[REDACTED]	10:21:39
17	[REDACTED]	10:21:41
18	[REDACTED]	10:21:45
19	[REDACTED]	10:21:47
20	[REDACTED]	10:22:02
21	[REDACTED]	10:22:10
22	[REDACTED]	10:22:18

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[REDACTED]

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Conducted on February 12, 2025

36

1	[REDACTED]	10:22:20
2	[REDACTED]	10:22:22
3	[REDACTED]	10:22:27
4	[REDACTED]	10:22:30
5	[REDACTED]	10:22:38
6	[REDACTED]	10:22:41
7	[REDACTED]	10:22:59
8	[REDACTED]	10:23:01
9	[REDACTED]	10:23:07
10	[REDACTED]	10:23:13
11	[REDACTED]	10:23:19
12	[REDACTED]	10:23:25
13	[REDACTED]	10:23:28
14	[REDACTED]	10:23:30
15	[REDACTED]	10:23:42
16	[REDACTED]	10:24:03
17	[REDACTED]	10:24:04
18	[REDACTED]	10:24:07
19	[REDACTED]	10:24:16
20	[REDACTED]	10:24:19
21	[REDACTED]	10:24:20
22	[REDACTED]	10:24:20

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[REDACTED]

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Conducted on February 12, 2025

37

1	[REDACTED]	10:24:21
2	[REDACTED]	10:24:24
3	[REDACTED]	10:24:36
4	[REDACTED]	10:24:39
5	[REDACTED]	10:24:43
6	[REDACTED]	10:24:46
7	[REDACTED]	10:24:50
8	[REDACTED]	10:24:58
9	[REDACTED]	10:25:00
10	[REDACTED]	10:25:08
11	[REDACTED]	10:25:09
12	[REDACTED]	10:25:12
13	[REDACTED]	10:25:15
14	[REDACTED]	10:25:24
15	[REDACTED]	10:25:28
16	[REDACTED]	10:25:29
17	[REDACTED]	10:25:31
18	[REDACTED]	10:25:34
19	[REDACTED]	10:25:38
20	[REDACTED]	10:25:40
21	[REDACTED]	10:25:41
22	[REDACTED]	10:25:50

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[REDACTED]

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Conducted on February 12, 2025

38

1	[REDACTED]	10:25:51
2	[REDACTED]	10:25:54
3	[REDACTED]	10:25:56
4	[REDACTED]	10:26:02
5	[REDACTED]	10:26:12
6	[REDACTED]	10:26:16
7	[REDACTED]	10:26:19
8	[REDACTED]	10:26:20
9	[REDACTED]	10:26:24
10	[REDACTED]	10:26:25
11	[REDACTED]	10:26:28
12	[REDACTED]	10:26:30
13	Q Are you familiar with the GS-065-011-1-L	10:26:37
14	product?	10:26:47
15	THE INTERPRETER: Can you repeat the last	10:26:55
16	numbers for me, please?	10:26:57
17	MR. AGGARWAL: Sure. I'll start with 065.	10:26:58
18	065 --	
19	THE INTERPRETER: Yes.	
20	MR. AGGARWAL: -- -011- --	10:27:01
21	THE INTERPRETER: Yes.	
22	MR. AGGARWAL: -- 1-L.	10:27:06

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

39

1	THE INTERPRETER: Yes. Dash L?	10:27:09
2	MR. AGGARWAL: Yes.	10:27:12
3	A Based on the number, I can't really assign	10:27:24
4	that.	10:27:27
5	Q Do you know what the GS products are?	10:27:27
6	A I can't say. I can't say like that, if	10:27:38
7	it's, like, something specific. I'm not sure.	10:27:42
8	Q Is there any product numbers that you know	10:27:45
9	of that you worked on with respect to the CoolMOS?	10:27:54
10	A I don't know the product numbers all by	10:28:08
11	heart. I can say the package variance, but not	10:28:13
12	the product numbers.	10:28:16
13	Q Is there a kind of a subcategory of	10:28:18
14	CoolMOS?	10:28:24
15	For example, the product number I listed	10:28:24
16	seems to be a GS product.	10:28:26
17	Is there something related to that for the	10:28:28
18	products you work on?	10:28:30
19	A I can't do anything with -- I don't know	10:28:43
20	what the GS is supposed to mean.	10:28:45
21	Q Let me rephrase. Is there a -- strike	10:28:47
22	that.	

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[REDACTED]

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Conducted on February 12, 2025

40

1	Have you worked on the GS-065-011-6-L	10:29:09
2	product?	10:29:21
3	A I cannot assign that number.	10:29:36
4	Q Are you aware Infineon acquired	10:29:39
5	GaN Systems?	10:29:43
6	A Yes.	10:29:49
7	Q Does Infineon still work on GaN System	10:29:51
8	products?	10:29:57
9	A I can't answer that. I'm not involved in	10:30:07
10	GaN.	10:30:11
11	[REDACTED]	10:30:12
12	[REDACTED]	10:30:16
13	[REDACTED]	10:30:20
14	[REDACTED]	10:30:28
15	MR. AGGARWAL: I think we can take a break	10:30:33
16	now, if you guys would like.	10:30:35
17	THE VIDEOGRAPHER: Let me take us off the	10:30:39
18	record.	10:30:40
19	MR. AGGARWAL: Yes, please.	
20	THE VIDEOGRAPHER: We are going off the	10:30:41
21	record. The time on the monitor is 10:30.	10:30:42
22	(Off the record.)	10:30:45

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Conducted on February 12, 2025

41

1	THE VIDEOGRAPHER: We are back on the	10:45:05
2	record. The time on the monitor is 10:44.	10:45:07
3	BY MR. AGGARWAL:	10:45:11
4	Q Mr. Otremba, did you talk to anyone about	10:45:14
5	your testimony during the break?	10:45:17
6	A No.	10:45:19
7	Q You mentioned you had about 200 or so U.S.	10:45:25
8	patents. Are those generally directed -- do -- do	10:45:29
9	many of them. Sorry. Strike that.	10:45:33
10	You mentioned that you had about 200 or so	10:45:35
11	U.S. patents.	10:45:38
12	Are some of them or a lot of them directed	10:45:39
13	towards vertical or lateral transistors?	10:45:42
14	THE INTERPRETER: Interpreter needs the	10:46:02
15	volume to be up. The volume has not changed. If	10:46:04
16	anything, it's actually worse than it was before,	10:46:07
17	please.	10:46:09
18	THE VIDEOGRAPHER: Okay. Can I take us	10:46:10
19	off the record?	10:46:11
20	MR. AGGARWAL: Yeah.	10:46:13
21	THE VIDEOGRAPHER: We are going off the	10:46:13
22	record. The time on the monitor is 10:46.	10:46:15

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42

1	(Off the record.)	10:46:25
2	THE VIDEOGRAPHER: We are back on the	10:47:10
3	record. The time on the monitor is 10:46.	10:47:11
4	BY MR. AGGARWAL:	10:47:19
5	Q You mentioned that you had about 200 or so	10:47:19
6	U.S. patents.	10:47:22
7	Are some of them or a lot of them directed	10:47:23
8	towards vertical or lateral transistors?	10:47:26
9	A Both types of semiconductors are strongly	10:47:41
10	represented with my patents.	10:47:44
11	Q Were you the first to invent vertical	10:47:48
12	transistors?	10:47:51
13	A No.	10:47:57
14	Q When were they invented?	10:47:59
15	A I don't know.	10:48:02
16	Q Were they invented by 1950?	10:48:05
17	MR. STEENBURG: Objection, scope.	10:48:16
18	A I also don't know when they were invented.	10:48:21
19	Q When was your first patent application	10:48:25
20	relating to vertical transistors?	10:48:31
21	A I think -- I'm not sure when that was.	10:48:51
22	Sometime 2000, 2001, 2002. It was a patent not	10:49:01

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43

1	about a vertical transistor, but with a vertical	10:49:13
2	transistor.	10:49:16
3	Q And when we say "vertical," with respect	10:49:20
4	to transistor, does that mean perpendicular to the	10:49:24
5	upper surface of the semiconductor die?	10:49:27
6	A The vertical current flow means that it is	10:49:38
7	vertical to the surface of the chip.	10:49:51
8	Q And that vertical flow goes through the	10:49:56
9	layers of the chip, right?	10:50:00
10	A Not necessarily through all layers, but it	10:50:14
11	goes through most layers.	10:50:18
12	Q Were you the first to invent lateral	10:50:22
13	transistors?	10:50:27
14	A No.	10:50:31
15	Q Roughly, when were they invented?	10:50:31
16	MR. STEENBURG: Objection, scope.	10:50:35
17	Objection, scope.	10:50:40
18	A I don't know.	10:50:43
19	Q Was it before 2000?	10:50:46
20	MR. STEENBURG: Objection, scope.	10:50:51
21	A (No verbal response).	10:50:58
22	Q Did you know of any lateral transistors in	10:50:58

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[REDACTED]

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44

1	2000?	10:51:00
2	A As far as I can remember, no.	10:51:09
3	Q How about 2005?	10:51:13
4	A It could be around that time frame that	10:51:22
5	I -- that I actually learned about that.	10:51:32
6	Q When was your first patent application	10:51:34
7	related to lateral transistors?	10:51:37
8	A I don't know.	10:51:46
9	Q Roughly?	10:51:47
10	A 2010 or '12.	10:51:49
11	Q When we say "lateral" with respect to	10:52:06
12	transistor, does that mean parallel to the upper	10:52:08
13	surface of the die?	10:52:12
14	A So lateral is -- is -- refers to the	10:52:34
15	current flow, and that -- in that case that would	10:52:39
16	be --	10:52:42
17	THE INTERPRETER: Please, interpreter ask	10:52:45
18	the witness...	10:52:48
19	A And it is parallel to the surface, and the	10:52:54
20	dominating part is in that direction.	10:52:57
21	Q So if the current flow is vertical at all,	10:52:59
22	then it's not a lateral transistor?	10:53:24

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45

1	A No, it's not -- it's not that clear-cut.	10:53:55
2	It's not that clear because there are also mixed	10:53:58
3	forms or, yeah, mixed variants.	10:54:01
4	But the lateral transistor is	10:54:04
5	characterized by the majority of the current	10:54:07
6	having a lateral flow as the vertical transistor	10:54:09
7	has the characteristics of having the majority of	10:54:11
8	the current flow being in a vertical direction.	10:54:15
9	MR. AGGARWAL: I would like to mark the	10:54:26
10	next Exhibit as Exhibit 3.	10:54:27
11	(Marked for identification Exhibit 3, US	10:54:29
12	Patent 9,899,481 B2.)	10:54:30
13	Q Have you seen this document before,	10:55:02
14	Mr. Otremba?	10:55:05
15	A Yes.	10:55:09
16	Q What is it?	10:55:11
17	A It's the patent writing that we're talking	10:55:13
18	about, that it's about.	10:55:23
19	Q Is it U.S. Patent Number 9,899,481?	10:55:27
20	A Yes.	10:55:43
21	Q Is this the patent that we've been	10:55:44
22	referencing as the '481 patent?	10:55:49

[REDACTED]

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Conducted on February 12, 2025

46

1	A	Yes.	10:55:56
2	Q	Are you listed as an inventor on this	10:55:56
3		patent?	10:55:59
4	A	Yes.	10:56:01
5	Q	What problems did this patent solve?	10:56:02
6	A	The patent includes an advantageous	10:56:11
7		electrical contacting 4A chip with a lateral	10:56:29
8		current flow in a lead frame basic --	10:56:40
9		THE WITNESS: (In English).	
10	A	-- package.	10:56:56
11	Q	Did you help prepare the patent	10:56:58
12		application for this patent?	10:57:01
13	A	The -- the application for the patent, no.	10:57:11
14	Q	Did you review the patent application?	10:57:15
15	A	Yes. Yes, I did.	10:57:24
16	Q	Did you conduct any prior art searches	10:57:27
17		relating to the subject matter of the '481 patent?	10:57:32
18	A	We also declared our own search results or	10:57:55
19		research results in the patent, yes.	10:58:00
20	Q	What was your involvement with those	10:58:03
21		search results?	10:58:06
22	A	I don't -- can't really say that.	10:58:23

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47

1	Q	You mentioned that you declared your own	10:58:27
2		search results.	10:58:33
3	Did you conduct that search yourself?		10:58:35
4	A	In the declaration or -- in the	10:58:48
5		declaration of the invention, we -- we declared	10:58:56
6		the state of art. And later on during the filing	10:58:58
7		phase, a patent research was conducted, but I	10:59:11
8		wasn't part of that anymore.	10:59:19
9	Q	So you weren't involved with the patent	10:59:23
10		search that you just mentioned?	10:59:26
11	A	In the beginning when we were declaring or	10:59:35
12		disclosing the invention, I was, but later on, not	10:59:51
13		anymore.	10:59:55
14	Q	What was the state-of-the-art at the time	10:59:56
15		you disclosed the invention?	10:59:59
16	A	These pieces or these -- these pieces were	11:00:14
17		used for vertical building elements. And for	11:00:19
18		that, they had a different layout on the internal	11:00:33
19		wiring.	11:00:36
20	Q	And just to clarify, vertical building	11:00:48
21		elements, that references vertical transistors?	11:00:51
22	A	Yes.	11:01:03

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Transcript of Ralf Otremba, Corporate Designee & Individually
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48

1	Q	So the '481 patent was directed towards	11:01:04
2		lateral transistors and the state-of-the-art was	11:01:08
3		directed towards vertical transistors?	11:01:18
4	A	That was one part of the state-of-the-art,	11:01:20
5		yes.	11:01:23
6	Q	Was there any other parts of the	11:01:23
7		state-of-the-art?	11:01:26
8	A	Yes. There was also lateral devices in --	11:01:28
9		that were built in this way but without the	11:01:44
10		advantageous usage of the source sense, in	11:01:51
11		combination with the source ground bond.	11:01:59
12	Q	Had you published on lateral transistors	11:02:03
13		before the '481 application was filed?	11:02:07
14	A	I'm not really sure about that. I did	11:02:25
15		publish and we did publish patents about CASS code	11:02:40
16		structures. And in these CASS codes they also use	11:02:44
17		GaN building elements for the lateral current	11:03:02
18		flow.	11:03:06
19	Q	Did you publish articles -- strike that.	11:03:08
20		Did you have publications related to	11:03:19
21		source sensing before the '481 patent application?	11:03:21
22	A	Yes.	11:03:32

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
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49

1	Q	So source sensing was known before the	11:03:33
2		'481 patent application?	11:03:38
3	A	Source sensing basically was known	11:03:43
4		beforehand, prior.	11:03:48
5	Q	Did you sign a declaration that stated	11:03:51
6		that you were a joint inventor of the '481 patent?	11:04:00
7	A	For the declaration of the -- or the first	11:04:23
8		discovery of declaration of the invention, it was	11:04:27
9		Klaus and me.	11:04:32
10	Q	Did you execute the declaration with your	11:04:33
11		signature and submit it to the patent office?	11:04:38
12	A	Yes, I did.	11:04:44
13	Q	Do you understand what that declaration	11:04:48
14		means?	11:04:50
15	A	I think, yes.	11:05:01
16	Q	What does it mean to you?	11:05:04
17	A	That in the disclosure of the invention I	11:05:06
18		take into account the state-of-the-art.	11:05:24
19	Q	Would you sign a declaration you did not	11:05:30
20		understand?	11:05:32
21	A	I don't understand, I'm not going to sign	11:05:41
22		it.	11:05:47

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
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50

1	Q	When did you start your work or research	11:05:47
2		related to the subject matter of the '481 patent?	11:05:50
3	MR. STEENBURG:	Objection, vague.	11:06:03
4	A	Klaus and I exchanged -- or talked to each	11:06:25
5		other intensely about different topics, and that	11:06:29
6		was one of them.	11:06:33
7	Q	When was that?	11:06:36
8	A	It started -- I've known Klaus for more	11:06:38
9		than 20 years as a colleague, and we regularly	11:07:01
10		discuss current topics, problems, but also ideas	11:07:12
11		how -- ideas for improvements.	11:07:17
12		And basically, this idea here also arose	11:07:26
13		by -- from our discussions that we were having.	11:07:32
14	Q	Is the subject matter of the '481 patent	11:07:39
15		related to other patents of yours?	11:07:43
16	A	One patent is also listed, yes, and it's	11:07:57
17		about using the source sense, or vertical	11:08:08
18		technology, in a through-hole.	11:08:14
19	Q	Which patent is that?	11:08:26
20	A	2,090,212,284.	11:08:27
21	Q	Can we reference that as the '284	11:08:40
22		publication from now on?	11:08:46

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

51

1	A	What is the '284 publication? Ah, okay,	11:09:03
2		the last two numbers. Yes, I understand.	11:09:10
3	Q	And just so I understand what you're	11:09:13
4		saying, the '284 publication disclosed vertical	11:09:14
5		transistors with source sensing?	11:09:18
6	A	It includes an especially advantageous,	11:09:38
7		how do you say, a delivery -- especially	11:09:43
8		advantageous construction is described in that	11:09:48
9		patent.	11:09:53
10	Q	Just to clarify, the '284 publication	11:09:54
11		discloses vertical transistors?	11:09:59
12	A	So in that patent we used a CoolMOS or a	11:10:03
13		SiC MOS building element with a vertical current	11:10:29
14		flow.	11:10:33
15	Q	And that would be a vertical transistor,	11:10:33
16		correct?	11:10:35
17	A	As a vertical transistor.	11:10:41
18	Q	And the '284 publication also discloses	11:10:44
19		that the vertical transistor has source sensing?	11:10:47
20	A	In a -- and especially advantageous	11:10:58
21		execution.	11:11:04
22	Q	So the only difference between the '284	11:11:06

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[REDACTED]

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52

1	publication and the '481 patent is the lateral	11:11:09
2	transistor versus the vertical transistor?	11:11:13
3	MR. STEENBURG: Objection,	11:11:25
4	mischaracterizes.	11:11:26
5	A No, it's not like that.	11:11:35
6	Q What else is the difference between the	11:11:38
7	two?	11:11:49
8	A In the '841, we used the die pad at the	11:11:49
9	same time as a source electrode, and with that,	11:12:02
10	the utility in a circuit is drastically enhanced.	11:12:09
11	Q Just to clarify, you mentioned '841.	11:12:18
12	Did you mean the '481 patent?	11:12:20
13	A Yes.	11:12:27
14	Q And you talked about Mr. Klaus Schiess as	11:12:32
15	your coinventor.	11:12:45
16	Can you explain your working relationship	11:12:49
17	with Mr. Schiess?	11:12:51
18	A For more than 20 years as a colleague, and	11:12:53
19	I've worked on a lot of topics together with him	11:13:25
20	and tagged along on a lot of topics with him. We	11:13:27
21	have a very trustworthy collegial relationship.	11:13:37
22	Q What's his job title?	11:13:43

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[REDACTED]

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53

1	A He's also concept engineer for packaging	11:13:50
2	topics.	11:13:58
3	Q Can you remind me, is that the same as	11:14:00
4	you?	11:14:03
5	A Basically, yes. He's just in a different	11:14:03
6	area, he's in a different class of building	11:14:18
7	elements for the GaN, and I'm on the building	11:14:21
8	element side for silicon and silicon carbide.	11:14:31
9	[REDACTED]	11:14:36
10	[REDACTED]	11:14:54
11	[REDACTED]	11:14:56
12	[REDACTED]	11:14:59
13	[REDACTED]	11:15:05
14	[REDACTED]	11:15:15
15	[REDACTED]	11:15:18
16	[REDACTED]	11:15:26
17	[REDACTED]	11:15:27
18	[REDACTED]	11:15:29
19	[REDACTED]	11:15:40
20	[REDACTED]	11:15:51
21	[REDACTED]	11:16:05
22	[REDACTED]	11:16:07

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54

1	[REDACTED]	11:16:10
2	[REDACTED]	11:16:13
3	[REDACTED]	11:16:16
4	[REDACTED]	11:16:22
5	[REDACTED]	11:16:30
6	[REDACTED]	11:16:35
7	[REDACTED]	11:16:47
8	[REDACTED]	11:16:55
9	[REDACTED]	11:17:01
10	[REDACTED]	11:17:07
11	[REDACTED]	11:17:12
12	[REDACTED]	11:17:14
13	[REDACTED]	11:17:17
14	[REDACTED]	11:17:38
15	[REDACTED]	11:17:41
16	[REDACTED]	11:17:45
17	[REDACTED]	11:17:48
18	[REDACTED]	11:17:51
19	[REDACTED]	11:18:01
20	[REDACTED]	11:18:09
21	Q I'd like to introduce an exhibit. I'm	11:18:24
22	going to mark this exhibit as Exhibit 4.	11:18:34

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[REDACTED]

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55

1	(Marked for identification Exhibit 4, US	11:18:37
2	2009/0212284 A1.)	11:18:38
3	Q Do you recognize this document?	11:19:01
4	A Yes.	11:19:04
5	Q What is it?	11:19:05
6	A It's the just mentioned usage of a	11:19:07
7	vertical building element with source sensing.	11:19:22
8	Q Are you listed as an inventor on this?	11:19:27
9	A Yes.	11:19:33
10	Q And is this the '284 publication we were	11:19:34
11	discussing?	11:19:39
12	A Yes.	11:19:43
13	Q Is Marco Seibt listed as an inventor on	11:19:46
14	here?	11:19:52
15	A Yes, second position.	11:19:52
16	Q Why wasn't he listed as an inventor on the	11:19:55
17	'481 patent?	11:19:59
18	A He had nothing to do with the topic.	11:20:04
19	[REDACTED]	11:20:15
20	[REDACTED]	11:20:19
21	[REDACTED]	11:20:40
22	[REDACTED]	11:20:43

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[REDACTED]

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56

1		11:20:50
2		11:21:07
3		11:21:10
4	Q That's the research relating to source	11:21:13
5	sensing; is that correct?	11:21:16
6	A Yes. And for the improvement of source	11:21:21
7	sensing to major improvements in the application.	11:21:37
8	Q Does that include -- sorry, strike that.	11:21:48
9	Does that include the leads of the	11:21:58
10	transistor providing a source sensing	11:22:01
11	functionality?	11:22:05
12	A One of the aspects is that an additional	11:22:26
13	little leg was generated to carry exactly the	11:22:30
14	source sense information.	11:22:35
15	Q And the '481 patent claims that leg	11:22:37
16	providing source sensing functionality, correct?	11:22:41
17	MR. STEENBURG: Objection, vague.	11:22:52
18	A In '481 there is also one with one leg for	11:23:08
19	source sensing.	11:23:14
20	Q And just to clarify, leg means a lead,	11:23:15
21	correct?	11:23:19
22	A There are different executions or	11:23:27

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[REDACTED]

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57

1	different variants of contacts. The legs, they	11:23:33
2	can stick through. There are also some that have	11:23:42
3	flat contacts, though, for --	11:23:51
4	THE INTERPRETER: SNP?	11:23:57
5	THE WITNESS: SMD, surface mount device,	11:23:59
6	(in English).	
7	THE INTERPRETER: Oh, surface mount	11:24:09
8	device.	
9	A For surface mount device installation.	11:24:10
10	But in principle in both of them there are --	11:24:21
11	contacts have been created to enable source	11:24:23
12	sensing.	11:24:27
13	Q Does the '481 patent talk about different	11:24:29
14	types of leads, L-E-A-D-S?	11:24:32
15	A In the respective drawings or diagrams,	11:24:50
16	there are different variants and executions of it	11:24:52
17	listed.	11:24:56
18	Q And when you say "it," you're talking	11:24:57
19	about the lead?	11:24:59
20	A Yes, leads are the contacts. But there	11:25:07
21	are different types of it.	11:25:12
22	Q And the leg you were referencing before is	11:25:14

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[REDACTED]

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58

1	a type of lead?	11:25:16
2	A Yes, exactly.	11:25:23
3	Q Just for the record, can you restate that	11:25:24
4	response?	11:25:26
5	A There are leads that are executed in the	11:25:27
6	form of little legs. And '284 are legs for a	11:25:38
7	through -- throughout -- through-hole mounting,	11:25:51
8	and '481 are leads for an SMD mounting.	11:26:04
9	Q And we just discussed [REDACTED] did research	11:26:09
10	and -- regarding the source-sensing functionality,	11:26:15
11	correct?	11:26:19
12	A It's one colleague who worked with it,	11:26:31
13	yes.	11:26:34
14	Q So why wasn't [REDACTED] listed as inventor of	11:26:34
15	the '481 patent, since that claims a lead with	11:26:39
16	source-sensing functionality?	11:26:41
17	A Yes, because '481 is an advantageous	11:27:01
18	execution of it where you have a lateral current	11:27:05
19	flow. And with that enables a die pad contact	11:27:08
20	with a source potential. And exactly that is not	11:27:25
21	possible in '284. And with that, the consequences	11:27:30
22	that are on '284 there is a high-voltage potential	11:27:43

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[REDACTED]

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Conducted on February 12, 2025

59

1	on the back.	11:27:46
2	And this has to be -- has to be mounted,	11:27:48
3	isolate -- in an isolated form to the cooling	11:27:59
4	body.	11:28:02
5	THE WITNESS: Yeah (in English).	11:28:03
6	A And so with that, there is a different	11:28:17
7	usage of building elements and also a different	11:28:19
8	type of performance increase or enhancement.	11:28:22
9	Q But the '481 patent still relies on	11:28:26
10	Marco's research and contribution of the	11:28:30
11	source-sensing functionality; is that correct?	11:28:33
12	MR. STEENBURG: Objection, vague.	11:28:44
13	A I don't think so, no. Because -- I don't	11:28:50
14	think so, no, because the -- the basic usage of	11:29:02
15	that type of contact was already known before the	11:29:05
16	'248 (as said).	11:29:09
17	Q Just to confirm, the basic usage of that	11:29:15
18	type of contact, you're referencing the	11:29:23
19	source-sensing functionality?	11:29:26
20	A Yes. Yes, it's about getting the source	11:29:36
21	potential as clean as possible to the gate driver.	11:29:47
22	Q Is there a way to disable that	11:29:54

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[REDACTED]

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60

1	source-sensing functionality?	11:29:59
2	A So many of the elements that are used	11:30:11
3	today only have three legs, and they -- they don't	11:30:23
4	offer source-sensing functionality, and they still	11:30:28
5	use to -- on a big scale nowadays. Because the	11:30:34
6	source-sensing functionality can also cause	11:30:45
7	disadvantages in the cost structure. And that's	11:30:49
8	why it's -- it makes sense to only use it or to	11:31:01
9	install it there where the frequencies are high	11:31:05
10	enough that you actually have a -- have utility	11:31:08
11	from it that it makes -- that -- that it's an	11:31:11
12	advantage.	11:31:14
13	Q Can you describe the disadvantages you	11:31:15
14	just referenced?	11:31:18
15	A So for one, the internal building element	11:31:21
16	wiring has to be more complex; and on the other	11:31:43
17	hand on the user side, there is more effort and,	11:31:51
18	with that, more costs.	11:31:58
19	Q Anything else?	11:32:02
20	A It could lead to limitation of the contact	11:32:17
21	surface on the chips, because an additional	11:32:25
22	contact pad is required on the chip, and this	11:32:33

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[REDACTED]

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Conducted on February 12, 2025

61

1	can't be used for further... It can be used for	11:32:43
2	additional bond -- wire -- wiring --	11:32:57
3	THE INTERPRETER: I don't know how to	11:33:09
4	translate that. It's like path, it's like the --	11:33:11
5	not power path. One second.	11:33:17
6	THE WITNESS: Current path, yeah (in	11:33:19
7	English).	11:33:23
8	A In the current path.	11:33:23
9	Q Can you turn to Figure 3 of the	11:33:25
10	'481 patent?	11:33:29
11	A Yes, I have in front of me.	11:33:39
12	Q Does this device provide source-sensing	11:33:41
13	functionality?	11:33:47
14	A Yes.	11:33:53
15	Q How so?	11:33:54
16	A The bond wire is contacting the source	11:33:56
17	surface on the chip with a special source-sensing	11:34:13
18	lead. And for that it's using the source wire	11:34:27
19	bond area on the chip.	11:34:34
20	Q The source-sensing lead is identified by	11:34:36
21	number 48, correct?	11:34:39
22	A Yes.	11:34:47

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[REDACTED]

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62

1	Q	And the bond wire you're referencing is	11:34:47
2	66?		11:34:54
3	A	66, yes.	11:34:55
4	Q	And the source electrode is 57?	11:34:58
5	A	Yes.	11:35:04
6	Q	How can you disable the source-sensing	11:35:05
7		functionality on this device?	11:35:11
8	A	I don't understand the question. Why	11:35:29
9		should I want to deactivate it?	11:35:31
10	Q	Is there a way to deactivate it?	11:35:34
11	A	If I don't choose the die pad structure in	11:35:50
12		the way that it's described or shown here, and I	11:35:54
13		would connect the leg 48 to the die pad 43, then I	11:36:04
14		would lose the advantage that I created a --	11:36:16
15	THE INTERPRETER:	What's it called?	11:36:22
16	THE WITNESS:	Dedicated (in English).	11:36:26
17	A	Oh, a dedicated path.	11:36:26
18	THE WITNESS:	Yeah.	11:36:37
19	A	The advantage of source-sensing is that I	11:36:37
20		can get directly to the source potential and I	11:36:41
21		don't have the loss via the other elements -- oh,	11:36:48
22		wire bond -- via the other wire bond elements.	11:36:55

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[REDACTED]

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63

1	Q So if you connect source-sensing	11:36:56
2	lead 48 -- I'm sorry. Strike that.	11:37:01
3	If you remove the bond wire 66 completely,	11:37:02
4	would that deactivate the source-sensing	11:37:07
5	functionality?	11:37:10
6	A Yes.	11:37:18
7	Q And would that -- strike that.	11:37:18
8	So removing a bond wire 66 would prevent	11:37:23
9	this device from providing source-sensing	11:37:27
10	functionality, correct?	11:37:31
11	A There would no more source-sensing	11:37:48
12	functionality would work via 48.	11:37:51
13	Q Can we go back to the '284 publication.	11:38:02
14	[REDACTED]	11:38:13
15	[REDACTED]	11:38:16
16	[REDACTED]	11:38:21
17	[REDACTED]	11:38:23
18	[REDACTED]	11:38:37
19	[REDACTED]	11:38:51
20	[REDACTED]	11:38:56
21	[REDACTED]	11:39:00
22	[REDACTED]	11:39:05

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[REDACTED]

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64

1	[REDACTED]	11:39:22
2	[REDACTED]	11:39:22
3	[REDACTED]	11:39:27
4	[REDACTED]	11:39:34
5	[REDACTED]	11:39:47
6	[REDACTED]	11:39:50
7	[REDACTED]	11:39:51
8	[REDACTED]	11:39:55
9	[REDACTED]	11:39:57
10	[REDACTED]	11:39:58
11	[REDACTED]	11:40:01
12	[REDACTED]	11:40:16
13	[REDACTED]	11:40:39
14	[REDACTED]	11:40:42
15	[REDACTED]	11:40:49
16	[REDACTED]	11:41:02
17	[REDACTED]	11:41:02
18	[REDACTED]	11:41:06
19	[REDACTED]	11:41:22
20	[REDACTED]	11:41:25
21	[REDACTED]	11:41:27
22	[REDACTED]	11:41:37

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[REDACTED]

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65

1		11:41:40
2		11:41:44
3		11:41:46
4		11:41:49
5		11:41:58
6		11:42:06
7		11:42:07
8		11:42:11
9		11:42:21
10		11:42:26
11		11:42:35
12		11:42:38
13		11:42:45
14	Q And why was Mr. Schiess not listed on this	11:42:47
15	patent?	11:42:55
16	MR. STEENBURG: Objection, vague.	11:42:57
17	A Which colleague do you mean?	11:43:07
18	Q Yes, Mr. Schiess.	11:43:10
19	A Klaus (indiscernible).	11:43:14
20	(The court reporter asked for clarification.)	11:43:22
21	A Klaus Schiess was not involved in this	11:43:26
22	topic.	11:43:29

[REDACTED]

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66

1	Q	In the '284 publication, one of the topics	11:43:30
2		was source-sensing functionality, correct?	11:43:37
3	A	Yes, '284 is an advantageous creation or	11:43:52
4		execution of the source-sensing functionality.	11:43:58
5	Q	And the '481 patent also deals with	11:44:02
6		source-sensing functionality?	11:44:05
7	A	Four -- '481 also includes a	11:44:13
8		source-sensing functionality. But in a different	11:44:16
9		advantageous execution.	11:44:24
10	Q	Does the '284 publication source-sensing	11:44:27
11		functionality relate at all to the '481 patent	11:44:30
12		source-sensing functionality?	11:44:34
13	A	In both the source-sensing functionality	11:44:57
14		is coupled to a building element.	11:45:04
15	Q	So there are some concepts of the	11:45:10
16		source-sensing functionality from the	11:45:14
17		'284 publication that apply to the '481 patent?	11:45:16
18	MR. STEENBURG:	Objection, vague.	11:45:33
19	A	In both, bond wire is used for the	11:45:44
20		contact.	11:45:47
21	Q	Did anyone help research the source	11:45:53
22		function -- sorry. Strike that.	11:46:06

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[REDACTED]

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67

1	Did anyone else help research the	11:46:06
2	source-sensing functionality related to the	11:46:10
3	'481 patent?	11:46:13
4	A The patent research, as far as I know, was	11:46:35
5	done by the -- the filing -- the filing process.	11:46:39
6	Q I'm sorry. I meant the research relate --	11:46:47
7	the technical research related to the	11:46:50
8	source-sensing functionality for the '481 patent.	11:46:53
9	A So when we were thinking about the utility	11:47:17
10	of this, the utility of source sensing had already	11:47:21
11	been demonstrated.	11:47:26
12	Q Did anyone help research the particular	11:47:35
13	combination you referenced earlier that's	11:47:37
14	referenced in the '481 patent?	11:47:41
15	A With Klaus in the -- in the description or	11:48:05
16	initial report of the invention, but later on I	11:48:10
17	don't know.	11:48:18
18	Q Do you know what the APEC trade show is?	11:48:18
19	A-P -- (Indiscernible crosstalk.)	11:48:28
20	THE INTERPRETER: Come again.	11:48:34
21	Q Sorry. Let me repeat that.	11:48:35
22	Do you know what the APEC trade show is,	11:48:35

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[REDACTED]

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68

1	A-P-E-C?	11:48:39
2	A I can't really put that in any category	11:48:39
3	like that. I don't know.	11:48:48
4	Q Do you know what the Applied Power	11:48:49
5	Electronics Conference is?	11:48:53
6	A I don't know it.	11:49:00
7	Q Do you attend technical conferences?	11:49:06
8	A Very rarely. If then, more like internal	11:49:16
9	ones.	11:49:25
10	Q When you say "internal ones," is that only	11:49:26
11	with Infineon employees?	11:49:30
12	A At least the primary part is only	11:49:39
13	Infineon.	11:49:44
14	Q You said you rarely go to conferences.	11:49:47
15	Do you remember any conferences you've	11:49:50
16	been to?	11:49:52
17	A About 20 years ago I was at an AEC, even	11:50:13
18	at the -- in the U.S.A.	11:50:18
19	Q What is AEC?	11:50:20
20	A I'm not 100 percent sure. It has to do	11:50:22
21	with automotive, but I'm not really sure about the	11:50:36
22	exact nomenclature.	11:51:19

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[REDACTED]

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69

1	Q Was that conference related to	11:50:41
2	transistors?	11:50:43
3	A Not only. It was more about automotive	11:50:47
4	applications and what trends.	11:51:01
5	Q Do you remember any companies having	11:51:10
6	booths there?	11:51:13
7	A I can't remember.	11:51:26
8	Q What did you do when you were at that	11:51:28
9	conference?	11:51:32
10	A I gave a -- I gave a lecture, or I gave a	11:51:38
11	talk.	11:51:42
12	Q Were any companies displaying products?	11:51:43
13	A I can't specifically remember.	11:52:01
14	Q Can you turn to claim 1 of the '481	11:52:02
15	patent?	11:52:09
16	A Yes. I have it in front of me.	11:52:24
17	Q Do you see where in claim 1 it says: The	11:52:27
18	third lead is coupled to the compound	11:52:40
19	semiconductor transistor device and provides a	11:52:42
20	source-sensing functionality?	11:52:46
21	THE INTERPRETER: Interpreter needs you to	11:52:50
22	repeat that in two -- broken into two sentences,	11:52:54

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[REDACTED]

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Conducted on February 12, 2025

70

1	please.	11:52:57
2	MR. AGGARWAL: Can we go off the record	11:52:58
3	really quickly?	11:53:01
4	THE INTERPRETER: Yeah. Oh, I'm sorry.	11:53:01
5	THE VIDEOGRAPHER: We are going off the	11:53:03
6	record. The time on the monitor is 11:52.	11:53:05
7	(Off the record.)	11:53:09
8	THE VIDEOGRAPHER: We are back on the	11:58:22
9	record. The time on the monitor is 11:58.	11:58:23
10	BY MR. AGGARWAL:	11:58:27
11	Q Can you turn to claim 1 of the patent?	11:58:33
12	A Yes. I have it in front of me.	11:58:36
13	Q The patent states, quote: The third lead	11:58:44
14	is coupled to the compound semiconductor	11:58:49
15	transistor device and provides a source-sensing	11:58:51
16	functionality, end quote.	11:58:53
17	What do you understand that to mean?	11:58:56
18	A This contact describes the connection	11:59:39
19	between the chip and the source sensing.	11:59:58
20	Q And can you explain what source-sensing	11:59:59
21	functionality means in this claim?	12:00:00
22	A It means that the leg has immediate	12:00:18

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71

1	contact to the source surface of the chip without	12:00:21
2	loss of -- is it? -- power via the current path.	12:00:32
3	Q And just to confirm, the leg that you	12:00:41
4	mentioned is the source-sensing leg or	12:00:43
5	source-sensing lead?	12:00:46
6	A Yes. It is the third lead.	12:01:04
7	Q And this claim language that we just	12:01:09
8	discussed, is that consistent with how people in	12:01:11
9	the field would understand this term to mean?	12:01:13
10	A Field work -- I don't understand.	12:01:30
11	Q Let me rephrase. Strike that.	12:01:35
12	This claim language we discussed, is that	12:01:40
13	consistent with how technical -- how it's	12:01:42
14	understood technically in the field?	12:01:46
15	A Okay. I understand now.	12:01:48
16	The customer who is going to use this	12:02:17
17	element will recognize that the third leg is for	12:02:19
18	the source sensing.	12:02:22
19	Q So there is no special meaning to this	12:02:28
20	claim phrase?	12:02:31
21	A The meaning is that I have a dedicated	12:02:40
22	third lead and make usable to generate the source	12:02:55

[REDACTED]

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Conducted on February 12, 2025

72

1	lead functionality. Otherwise, I could use the	12:02:59
2	leg differently as well.	12:03:12
3	Q And that meaning is generally understood	12:03:14
4	in your field to be what source-sensing lead would	12:03:18
5	be?	12:03:21
6	A Yes. Yes. It is -- meanwhile, it is	12:03:22
7	widespread.	12:03:33
8	Q We talked about Figure 3 earlier for the	12:03:34
9	source-sensing lead.	12:03:40
10	Is that a direct connection between the	12:03:41
11	source-sensing lead to the source electrode?	12:03:44
12	A Yes. Yes. Oh, via Number 66.	12:04:04
13	Q So the bond wire connections in that	12:04:14
14	figure show direct connections, correct?	12:04:16
15	A Yes.	12:04:24
16	Q What do you know about Infineon's	12:04:29
17	marketing efforts?	12:04:39
18	A I have to -- I have to pass. You have to	12:04:55
19	be a little bit more specific. I can't give an	12:04:59
20	answer like this.	12:05:01
21	Q Would you agree that Infineon marketing is	12:05:02
22	an important product to sell products -- let me	12:05:05

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Conducted on February 12, 2025

73

1	strike that.	12:05:07
2	Would you agree that Infineon marketing is	12:05:07
3	an important factor to sell products?	12:05:09
4	MR. STEENBURG: Objection. Objection,	12:05:13
5	scope.	12:05:21
6	A I think yes. Well, yes.	12:05:31
7	Q Based on your general knowledge in the	12:05:33
8	field, is there a general trend in the market to	12:05:36
9	use more GaN devices?	12:05:38
10	A I'm not the right one to really evaluate	12:06:18
11	that. I think partially, yes, but there is also	12:06:20
12	silicon carbide that might be a big role in other	12:06:24
13	areas.	12:06:28
14	Q Why do you say "partially, yes"?	12:06:28
15	A It's my personal opinion. It depends on	12:06:33
16	what applications can use the advantageous	12:06:56
17	structure of the -- of the GaN system, basically.	12:06:59
18	Okay.	12:07:07
19	Q So in your personal opinion, there is a	12:07:08
20	general trend for companies to use more GaN	12:07:11
21	devices?	12:07:14
22	A Not a general trend, an	12:07:26

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Conducted on February 12, 2025

74

1	application-specific trend.	12:07:32
2	Q In the application-specific trend, in that	12:07:35
3	companies are actually using more GaN devices for	12:07:39
4	that application specific trend?	12:07:45
5	MR. STEENBURG: Objection, scope.	12:07:58
6	A I can't say it so specifically. This is	12:08:12
7	my personal opinion and --	12:08:15
8	THE INTERPRETER: One moment.	12:08:26
9	A I think for circuits with very	12:08:28
10	high-frequency demands, GaN is a very attractive	12:08:32
11	solution.	12:08:36
12	Q So if companies are selling circuits with	12:08:38
13	high-frequency demands, they are likely utilizing	12:08:41
14	GaN devices more?	12:08:45
15	MR. STEENBURG: Objection, scope.	12:08:59
16	A It's just my opinion. I can't really say	12:09:06
17	anything about that.	12:09:09
18	Q Just to confirm, your opinion is yes to my	12:09:11
19	last question?	12:09:15
20	A Yes.	12:09:17
21	Q I would like to introduce another exhibit.	12:09:22
22	This will be Exhibit Number 5.	12:09:33

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Conducted on February 12, 2025

75

1	(Marked for identification Exhibit 5, US	12:09:36
2	2014/0210061 A1.)	12:09:37
3	MR. STEENBURG: We have been going about	12:09:55
4	an hour and 15 minutes. Are you getting close to	12:09:58
5	a break?	12:10:01
6	MR. AGGARWAL: Yeah. Three more	12:10:02
7	questions.	12:10:04
8	Q Do you recognize this document?	12:10:04
9	A Yes.	12:10:06
10	Q What is it?	12:10:09
11	A A patent application that I was also	12:10:10
12	involved in.	12:10:20
13	Q Are you listed as an inventor?	12:10:22
14	A Yes.	12:10:35
15	Q Can you review paragraph 87?	12:10:35
16	A Yes. I have it in front of me.	12:10:47
17	Q Do you see the last -- the second to last	12:10:50
18	sentence that states: The second chip 712	12:10:52
19	includes a source terminal 716 coupled to the pin	12:10:56
20	738, depicted as S, and if further contact,	12:11:01
21	connected to the pin 740, depicted as SS, for	12:11:05
22	source sense, for source sensing.	12:11:11

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Conducted on February 12, 2025

76

1	A	Yes, I see that.	12:11:41
2	Q	Can you look at Figure 7, please?	12:11:42
3	A	Yes.	12:11:49
4	Q	Do you see -- sorry.	12:11:49
5		Do you see pin 740 and an SS indicator?	12:11:51
6	A	Yes, I see it.	12:12:04
7	Q	Does this -- sorry.	12:12:05
8		Do those disclosures disclose	12:12:08
9		source-sensing functionality?	12:12:12
10	A	Yes. The structure is a source-sense	12:12:33
11		functionality, yes.	12:12:37
12	Q	And what year was this patent -- patent	12:12:38
13		publication published?	12:12:41
14	A	Filed on the 28th of January, 2013, and	12:12:43
15		published on the 31st of July, 2014.	12:13:11
16	Q	Both those dates are before the filing	12:13:16
17		date of the '481 patent, correct?	12:13:18
18	A	Yes.	12:13:28
19	Q	Have you received any awards for your work	12:13:29
20		in the '481 patent?	12:13:32
21	A	Not that I knew of, no. No awards.	12:13:50
22		You get a financial -- or you get money if	12:14:08

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Conducted on February 12, 2025

77

1	you -- if you put in a patent disclosure, but you	12:14:12
2	don't get an award or a prize in that sense.	12:14:17
3	Q Are there any alternatives to	12:14:21
4	source-sensing functionality that is not described	12:14:23
5	in the '481 patent?	12:14:26
6	A '481 describes an advantageous execution	12:14:45
7	of the source sensing. Basically, the customer	12:14:52
8	could also use a normal source, like, for the	12:15:05
9	source sensing.	12:15:08
10	A disadvantage would be that the -- what's	12:15:19
11	the...	12:15:22
12	THE INTERPRETER: Oh, the current path.	12:15:29
13	Current path maybe?	12:15:31
14	THE WITNESS: Yeah, current path (in	12:15:33
15	English).	12:15:35
16	A -- that the current path goes --	12:15:35
17	THE INTERPRETER: One second. Interpreter	12:15:39
18	needs to clarify. Okay.	12:15:39
19	A -- that the current path still plays a	12:15:51
20	role or plays into the source-sense signal. The	12:15:54
21	source sensing is basically also possible on the	12:16:01
22	level of the board.	12:16:04

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Conducted on February 12, 2025

78

1 Q That is not described in the '481 patent,
2 though, right?

3 A Not described, no. So this is why '481 is
4 not a patent that describes source sensing, but it
5 describes an advantageous execution of the source
6 sensing.

7 MR. AGGARWAL: I think we can take a
8 break.

9 THE VIDEOGRAPHER: We are going off the
10 record. The time on the monitor is 12:16.

11 (Luncheon recess.)

12 THE VIDEOGRAPHER: We are back on the
13 record. The time on the monitor is 13:05.

14 BY MR. AGGARWAL:

15 Q Mr. Otremba, did you speak about your
16 deposition testimony with counsel during the
17 break?

18 A No.

19 Q I'm going to introduce an exhibit. This
20 will be Exhibit Number 6.

21 (Marked for identification Exhibit 6,
22 determination of patent term adjustment 35 USC

12:16:07

12:16:11

12:16:14

12:16:29

12:16:32

12:16:40

12:16:40

12:16:42

12:16:45

12:16:46

12:16:51

13:05:14

13:05:16

13:05:20

13:05:22

13:05:24

13:05:26

13:05:29

13:05:42

13:05:51

13:05:53

[REDACTED]

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Conducted on February 12, 2025

79

1	154 (b) .)	13:05:54
2	Q Mr. Otremba, do you recognize this	13:06:11
3	document?	13:06:19
4	A Yes. It's also for the '481.	13:06:20
5	Q What is the document?	13:06:28
6	THE WITNESS: Determination of patent term	13:06:35
7	adjustment under 34 USC 1454 (in English).	13:06:37
8	THE INTERPRETER: Interpreter does not	13:06:45
9	need to interpret that.	13:06:46
10	Q Is there a title above that?	13:06:47
11	THE WITNESS: Issue notification (in	13:06:58
12	English).	
13	A Issue notification.	13:07:00
14	Q Do you see on the bottom left your name as	13:07:01
15	listed under the applicant section?	13:07:05
16	A Yep.	13:07:07
17	Q What is this document?	13:07:09
18	I can strike that question. I'll rephrase	13:07:40
19	it.	13:07:43
20	Is this document related to the '481	13:07:44
21	patent?	13:07:47
22	THE WITNESS: Yeah.	13:07:48

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Conducted on February 12, 2025

80

1	Q Did you see an attorney document number	13:07:48
2	next to the patent number on the top?	13:07:50
3	THE WITNESS: Attorney docket number, yes,	13:08:01
4	yep (in English).	13:08:03
5	Q Can you state that number, please?	13:08:03
6	A 1012-128752015 P5, as in papa, 1742 U.S.	13:08:11
7	Q I'll mark another document. This will be	13:08:57
8	Exhibit Number 7.	13:09:00
9	(Marked for identification Exhibit 7,	13:09:01
10	declaration and assignment for patent.)	13:09:02
11	Q Mr. Otremba, do you recognize this	13:09:23
12	document?	13:09:26
13	A Yes. It belongs to the patent number,	13:09:41
14	yes, A1 again.	13:09:48
15	Q Can you confirm that the docket number at	13:09:51
16	the top of the document is the same as the one you	13:09:54
17	saw in the other document?	13:09:57
18	A Yes, it's the same.	13:10:08
19	Q On the second page of this document, do	13:10:10
20	you see your signature?	13:10:13
21	A Yes, I see it.	13:10:20
22	Q On the first page of the document, can you	13:10:21

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Conducted on February 12, 2025

81

1	read the title of the document, please?	13:10:24
2	THE WITNESS: Declaration and assignment	13:10:31
3	for patent and design applications (in English).	13:10:34
4	Q And do you understand this -- what this	13:10:40
5	document is?	13:10:44
6	A I understand that this is a declaration	13:10:49
7	that I am the inventor.	13:11:04
8	Q Inventor of the '481 patent, correct?	13:11:07
9	A Yes.	13:11:13
10	Q On the first page about halfway down the	13:11:14
11	paper, do you see a sentence that says: I	13:11:22
12	acknowledge the duty to disclose information which	13:11:26
13	is material to patentability as defined in	13:11:28
14	Title 37 Code of Federal Regulations Section 1.56?	13:11:32
15	A I have seen the sentence, yes.	13:11:48
16	Q Since you signed this document, did you	13:11:50
17	understand that you had a duty to disclose	13:11:53
18	information to the U.S. patent office that is	13:11:55
19	material to patentability, correct?	13:11:58
20	A Yes, correct.	13:12:22
21	Q Did you understand this duty continued	13:12:24
22	until the grant of the patent?	13:12:28

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Conducted on February 12, 2025

82

1	A I can't really say anything about it, how	13:12:52
2	far that's necessary, I can't.	13:12:56
3	Q What is your understanding of material to	13:12:57
4	patentability?	13:12:59
5	A Summarize the state-of-the-art of state of	13:13:07
6	technology that is known to me at that time.	13:13:15
7	Q And at that time, by that, you mean the	13:13:27
8	time that the patent was pending at the patent	13:13:28
9	office?	13:13:31
10	A Basically, it's already part of the -- the	13:13:47
11	invention disclosure.	13:13:51
12	Q Did you ever become of any information	13:14:00
13	that was material to patentability that you	13:14:04
14	submitted to the U.S. patent office?	13:14:07
15	MR. STEENBURG: Objection, vague.	13:14:25
16	A Can you please rephrase the question? I	13:14:36
17	haven't quite understood it.	13:14:39
18	Q Did you ever become aware of any	13:14:41
19	information that was material to patentability for	13:14:42
20	the '481 patent?	13:14:45
21	A In the application, state-of-the-art or	13:15:11
22	state of technology is mentioned.	13:15:14

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Conducted on February 12, 2025

83

1	Q Can you identify where that is?	13:15:19
2	A First page, reference U.S. patent --	13:15:23
3	patent documents.	13:15:49
4	Q And in that list of patent documents, is	13:15:50
5	the '284 application listed?	13:15:55
6	A Yes, it's listed.	13:16:09
7	Q So you'd agree the '284 -- excuse me.	13:16:10
8	Strike that.	13:16:14
9	You would agree that the -- strike that.	13:16:15
10	You would agree that the '284 publication	13:16:18
11	is material to patentability as it relates to the	13:16:20
12	'481 patent?	13:16:23
13	A No. My assessment back then was that with	13:16:52
14	'481, we also are using a source-sensing	13:16:55
15	application but with a different advantageous	13:17:00
16	structure within the building element. Because	13:17:14
17	the source sensing itself was already known at	13:17:25
18	this time, already also before '284.	13:17:30
19	So that '284 is not really a reference for	13:17:45
20	source sensing, but an optimized execution of	13:17:50
21	such.	13:17:53
22	Q But the '284 application tells you the	13:17:58

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Conducted on February 12, 2025

84

1	state-of-the-art before the '481 patent, correct?	13:18:01
2	A Not for '481 because '481 is a different	13:18:16
3	kind of advantageous execution. Because '284 is	13:18:31
4	an application for the housing, the through-hole,	13:18:46
5	housing with a vertical transistor, and '481 is	13:18:53
6	for chip with a lateral electrical current	13:19:13
7	distribution and -- oh, and an advantageous	13:19:18
8	execution of this -- the build.	13:19:24
9	Q So the '284 publication tells you one way	13:19:34
10	of doing things and it informs why the '481 patent	13:19:36
11	is different, correct?	13:19:41
12	It tells -- that's it.	13:19:43
13	MR. STEENBURG: Objection,	13:19:46
14	mischaracterizes.	13:19:51
15	A Both of them want to establish the	13:20:08
16	source-sense content into the respective package	13:20:23
17	group, but they are independent of each other	13:20:24
18	because both are optimized to different chip	13:20:34
19	structures.	13:20:39
20	Q And to your knowledge, do you know why the	13:20:44
21	'284 publication was not submitted by Infineon to	13:20:47
22	the patent office?	13:20:51

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85

1	A	Talking for myself, I didn't think it was	13:21:12
2		relevant for this topic because source sensing in	13:21:15
3		itself was already known for both applications and	13:21:32
4		it was independently applied by both of them.	13:21:35
5	Q	I'm going to mark the next exhibit as	13:21:50
6		Exhibit Number 8.	13:21:54
7		(Marked for identification Exhibit 8,	13:21:55
8		response to office action.)	13:21:57
9	Q	Mr. Otremba, do you know what this	13:22:21
10		document is?	13:22:24
11	A	Okay, I recognize my name on it, but I	13:22:25
12		haven't quite understood yet what exactly it is.	13:22:46
13	Q	Do you also recognize the docket number	13:22:49
14		that is a little bit under your name?	13:22:51
15	A	Yes, I see it.	13:22:55
16	Q	Is that the same as the docket number on	13:23:02
17		the other documents?	13:23:04
18	A	Yes, it's the same.	13:23:14
19	Q	Would you agree that this document,	13:23:16
20		Exhibit 8, is related to the '481 patent?	13:23:19
21	A	Yes, there is a connection there.	13:23:26
22	Q	And on the first page in the top right, do	13:23:42

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Conducted on February 12, 2025

86

1	you see where it says "patent pending"?	13:23:45
2	A Yes, I see it.	13:23:55
3	Q Is it your understanding that this	13:23:56
4	document was created while the '481 patent was	13:23:58
5	still pending at the patent office?	13:24:04
6	A It looks like it. It seems that the	13:24:21
7	respective plans with discussions were adjusted	13:24:34
8	later on.	13:24:38
9	Q And can you read the title of the	13:24:40
10	document?	13:24:43
11	THE WITNESS: Response to office action.	13:24:46
12	Q Can you go to page 3 of the document,	13:24:56
13	please.	13:24:59
14	Can you please read the section header at	13:25:06
15	the top of the page 3?	13:25:09
16	THE WITNESS: Amendments to the claims.	13:25:23
17	Q And we've previously talked about new	13:25:25
18	claims and your analysis of new claims.	13:25:28
19	Does this remind you of that type of	13:25:32
20	analysis where you would create new claims?	13:25:35
21	MR. STEENBURG: Objection, vague.	13:25:38
22	A I remember because the part that is	13:26:24

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[REDACTED]

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Conducted on February 12, 2025

87

1 underlined was one that had been adjusted because 13:26:12
2 of the answer of the patent office. 13:26:17

3 Q Can you clarify what you mean by "I 13:26:20
4 remember"? 13:26:36

5 A The memory is that the underlined parts 13:26:36
6 are parts that had been adjusted in this document. 13:26:39
7 The content itself I cannot remember. 13:26:47

8 Q Did you suggest these claim amendments? 13:26:51

9 A I don't remember. I don't know. But what 13:27:04
10 usually is done if this adjustment has been made, 13:27:23
11 that it actually gets presented to the inventor 13:27:26
12 again. But that the -- they say the workup or the 13:27:29
13 dealing with the suggestion is actually up to the 13:27:43
14 individuals in the patent office. 13:27:46

15 Q And you mentioned an office action or 13:27:49
16 rejection by the patent office that this response 13:27:55
17 was to. 13:27:58

18 Did you look at that rejection from the 13:27:59
19 patent office? 13:28:02

20 A I cannot remember if we -- I can't 13:28:24
21 remember if we got the rejection first or first 13:28:37
22 the suggestions that contained the rejection. 13:28:40

[REDACTED]

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Conducted on February 12, 2025

88

1	Q	Given your experience with the other	13:28:46
2		patent applications, is this likely, that you were	13:28:47
3		given the rejection?	13:28:50
4	A	I can't -- I'm sorry. I can't talk about	13:29:03
5		probabilities. It's not generally the case. It	13:29:43
6		depends on what actually comes up against it,	13:29:45
7		what's being held against it, and how the	13:29:50
8		adjustment of the claims has to be done so that	13:30:01
9		the claim remains possible and if this claim still	13:30:04
10		has value.	13:30:11
11	Q	So you would look over the amended claims	13:30:18
12		once that set is presented to you?	13:30:22
13	THE WITNESS:	Yes. And the answer is yes,	
14		but I am not sure what exactly I have seen before	13:30:29
15		(in English).	13:30:33
16	Q	Can you turn to page 8. And I'm going to	13:30:33
17		reference pages 8 and 9 together.	13:30:48
18	A	Yes, I have it in front of me.	13:30:51
19	Q	Do you see the top -- the section header	13:30:53
20		at the top?	13:30:56
21	A	Yes.	13:31:00
22	THE WITNESS:	Remarks (in English).	13:31:01

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Conducted on February 12, 2025

89

1	Q Did you also review remarks like you	13:31:02
2	reviewed the claim amendments?	13:31:05
3	MR. STEENBURG: Objection, foundation,	13:31:20
4	assumes facts.	13:31:23
5	A In general, I look at the claims, but for	13:31:42
6	the rest, it just depends on how relevant it is.	13:31:46
7	Q And do you understand the remarks section	13:31:50
8	provides arguments against the rejection?	13:31:53
9	A Yes, there are arguments in there, but	13:32:20
10	they are dealt with in the patent office	13:32:22
11	themselves and they are brought into the	13:32:26
12	reformulated or re- -- reworked application.	13:32:29
13	Q Can you look at the paragraph starting at	13:32:35
14	the bottom of page 8 and going on to the next	13:32:37
15	page, on page 9.	13:32:40
16	A Yes, I have it in front of me.	13:32:51
17	Q And can you read the paragraph -- the	13:32:53
18	first full paragraph of page 9 as well.	13:33:06
19	A Read out loud or just read it myself?	13:33:26
20	Q Read it to yourself, please.	13:33:30
21	(Witness reviewing document.)	13:34:11
22	THE WITNESS: That is mentioned to me.	13:34:36

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[REDACTED]

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Conducted on February 12, 2025

90

1	It's not easy to get all this wordings -- juristic	13:34:37
2	wordings. Because this... (in English)	13:34:51
3	A For me, it's hard to make the -- the	13:34:51
4	juristic connection to it's hard for me to make a	13:35:00
5	good assessment.	13:35:05
6	Do you have concrete questions about that?	13:35:07
7	Q Yes. Is this discussing a specific	13:35:11
8	reference?	13:35:13
9	A Yes, it's about the reference '284.	13:35:14
10	Q And that was the reference we discussed	13:35:35
11	earlier, right, the '284 publication?	13:35:37
12	A Correct, that I also felt was not	13:35:52
13	relevant.	13:35:55
14	Q On page 9 on the first paragraph, do you	13:35:55
15	see where it says that the Otremba '284 fails to	13:35:58
16	teach the lateral transistor device?	13:36:02
17	A Yes, I see that.	13:36:25
18	Q That's consistent with your testimony	13:36:26
19	regarding the Otremba '284 publication, correct?	13:36:28
20	A '284, according to my memory, is a	13:36:48
21	vertical transistor.	13:36:51
22	THE INTERPRETER: Interpreter needs to get	13:37:11

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[REDACTED]

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Conducted on February 12, 2025

91

1	that repeated.	13:37:12
2	A I have no memory about the part that	13:37:17
3	refers to the lateral transistor device.	13:37:19
4	Q But you agree that the Otremba '284	13:37:23
5	publication teaches a vertical transistor?	13:37:28
6	A Yes.	13:37:37
7	Q And that is because it has current	13:37:39
8	electrodes on opposing surfaces, as this paragraph	13:37:43
9	says?	13:37:47
10	MR. STEENBURG: Objection, vague.	13:37:55
11	A My understanding of the vertical	13:38:02
12	transistor is that the current flow is vertical,	13:38:12
13	and this leads to the electrodes being on opposite	13:38:20
14	sides. But it's not always the case. It's not	13:38:25
15	forcibly necessary for a vertical transistor. In	13:38:33
16	this case, yes.	13:38:39
17	Q Does this paragraph say anything about	13:38:40
18	current flow?	13:38:45
19	A No, I don't find anything about the	13:38:54
20	current flow.	13:38:57
21	Q Do you agree this paragraph only	13:38:58
22	differentiates between lateral and vertical	13:39:00

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

92

1 transistors based on the electrode positioning? 13:39:03

2 A I can't -- I can't confirm it's like that 13:39:26

3 right now because I don't know with what the 13:39:29

4 reference of this paragraph is directly on to. 13:39:32

5 It's possible that it is described in more detail 13:39:42

6 what a vertical and a lateral transistor means 13:39:45

7 regarding to the current flow, but in this section 13:39:49

8 here it is not mentioned. 13:39:53

9 Q Can we go back to the '284 publication 13:39:57

10 itself? For the record, that's going to be 13:40:10

11 Exhibit 4. 13:40:19

12 A I have it in front of me. 13:40:27

13 Q Does this patent mention anything about 13:40:28

14 current flow when it describes a vertical 13:40:31

15 transistor? 13:40:34

16 A I don't remember exactly how exactly this 13:40:52

17 is set up. 13:40:54

18 Q Can you point to anything in the patent 13:40:57

19 that mentions current flow when it defines a 13:40:59

20 vertical transistor? 13:41:03

21 A Vertical transistors that are mentioned 13:41:08

22 here are IGBTs, for instance. 13:41:32

[REDACTED]

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Conducted on February 12, 2025

93

1	Q	Anything else?	13:41:50
2	A	Power MOSFETs. Power MOSFETs and IGBTs.	13:42:15
3	Q	Can you turn to paragraph 15?	13:43:00
4	A	Yes.	13:43:14
5	Q	I'm sorry, paragraph 20.	13:43:15
6	A	Yes, I have it in front of me.	13:43:27
7	Q	Does this paragraph describe a vertical	13:43:29
8		transistor?	13:43:33
9	A	Yes. By arrangement of the electrodes,	13:44:11
10		with a high cert- -- high degree of certainty, a	13:44:15
11		vertical transistor is being described.	13:44:19
12	Q	Does it mention anything about current	13:44:24
13		flow?	13:44:26
14	A	Indirectly via the load electrode. There	13:44:36
15		are, in this case, load electrodes on opposing	13:44:54
16		sides and it describes the -- the flow of current	13:44:58
17		from one electrode to the other.	13:45:02
18	Q	So the positioning of the electrodes	13:45:05
19		matters in that scenario?	13:45:10
20	MR. STEENBURG:	Objection, vague.	13:45:13
21	A	For me, the arrangement of the electrodes	13:45:18
22		within the housing is important, but it's not the	13:45:34

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94

1	only thing that is important for the current flow	13:45:37
2	and the arrangement of the electrodes.	13:45:44
3	There can be iterations where a vertical	13:45:53
4	current flow is not due to the arrangement of	13:46:11
5	electrodes on opposite sides. But the -- the	13:46:21
6	building plan's schematics here explicitly	13:46:30
7	describe it like this with the electrodes on the	13:46:32
8	top and on the bottom, and that resembles the	13:46:35
9	current flow as well.	13:46:39
10	Q Can you look at claim 1?	13:46:40
11	A Yes, I have it in front of me.	13:46:56
12	Q Does this claim a vertical transistor?	13:46:58
13	A Yes. Yes, here the two electrodes are on	13:47:18
14	opposite sides. Two load electrodes on opposite	13:47:25
15	sides.	13:47:34
16	Q Can you look at claim 16 and confirm that	13:47:35
17	also claims a vertical transistor?	13:47:38
18	A Yes, in this case also the talk is of	13:48:25
19	oppositely arranged load electrodes, and so in	13:48:28
20	this case a vertical transistor.	13:48:32
21	Q How about claim 20?	13:48:34
22	A Here, too, in this context we can assume	13:49:01

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[REDACTED]

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95

1	that it is about a vertical building element.	13:49:05
2	Q And then lastly, claim 23?	13:49:10
3	A Yes, claim 23 also suggests that here it	13:49:35
4	is about a vertical building element.	13:49:40
5	Q So all these claims we reviewed claim a	13:49:42
6	vertical transistor and they all recite electrodes	13:49:46
7	on opposite surfaces, correct?	13:49:49
8	A The load electrodes. Load electrodes	13:50:12
9	where the current goes over, goes across. It	13:50:19
10	means that with also the -- the current path is	13:50:28
11	defined or determined.	13:50:31
12	Q None of the claims mention current path or	13:50:35
13	current flow, correct?	13:50:40
14	A Correct, current or current flow is not	13:50:41
15	here.	13:50:56
16	Q Do you understand that claims are drafted	13:50:57
17	to explain the scope of the invention?	13:51:03
18	A I understand that the claims are	13:51:21
19	describing the building part themselves that are	13:51:29
20	claimed to this patent.	13:51:35
21	Q And as we discussed, these claims claim a	13:51:38
22	vertical transistor but only describe it based on	13:51:43

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96

1	the electrode structure -- electrode positioning?	13:51:55
2	THE INTERPRETER: Okay. Interpreter needs	13:52:22
3	him to break that down a little bit.	13:52:24
4	A In principle, this is correct. With the	13:52:38
5	electrode it's important to also regard the load.	13:52:40
6	And because it's a load electrode, it implies that	13:52:53
7	the -- the current flow goes from one of the	13:52:58
8	electrodes to the other one. So it's more than	13:53:00
9	just an electrode, it is a special electrode. A	13:53:10
10	power electrode.	13:53:19
11	THE WITNESS: A load electrode (in	13:53:21
12	English).	13:53:23
13	A It describes that there the -- the	13:53:31
14	current -- is it the power current goes over -- or	13:53:35
15	goes through it.	13:53:42
16	THE WITNESS: Yeah, yeah.	13:53:44
17	A That's why indirectly via the load	13:53:52
18	electrode, the -- the current path is defined, but	13:53:56
19	only with the electrodes.	13:54:02
20	Q Can we turn back to the applicant	13:54:06
21	response? Exhibit 8.	13:54:09
22	A Yes.	13:54:22

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97

1 Q And then on page -- page 9, please. The 13:54:22
2 same paragraph we were discussing before, do you 13:54:34
3 agree that the '284 publication teaches a vertical 13:54:37
4 transistor, but the '481 patent teaches a lateral 13:54:42
5 transistor? 13:54:46

6 A It describes the optimized arrangement for 13:55:30
7 a lateral -- a lateral element and the other one 13:55:34
8 for a vertical one. 13:55:41

9 Q And do you understand that this paragraph, 13:55:43
10 Infineon differentiated the '284 publication from 13:55:46
11 the '481 publication based on that lateral versus 13:55:50
12 vertical difference? 13:55:54

13 A Yes. That's why my assessment is also 13:56:25
14 that for '481, '284 was not necessary or relevant. 13:56:27

15 Q Can you we turn back to the '481 patent? 13:56:34
16 Please go -- please go to column 16, claim 5. 13:56:45

17 A Yes, I have it in front of me. 13:57:05

18 Q What does claim 5 claim? 13:57:07

19 A That claim, the vertical transistor is 13:57:38
20 described that has a drain electrode with -- with 13:57:53
21 the drain electrode on the -- on the reverse side 13:58:03
22 that contacts onto the die pad. 13:58:08

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98

1	Q But didn't the applicant response	13:58:11
2	differentiate the '481 patent from vertical	13:58:16
3	transistors?	13:58:49
4	A Yes. And '481, the main claim is in	13:58:49
5	reference to a vertical current flow. And	13:58:53
6	claim 5, I can only explain it like that there is	13:59:08
7	an additional building element in that package.	13:59:11
8	(Indiscernible crosstalk.)	13:59:18
9	A I think he said basically two chips are in	13:59:19
10	the package.	13:59:21
11	Q Do you see in claim 5 where it says, the	13:59:27
12	compound semiconductor device?	13:59:30
13	A Yes. Compound means that it's compounded	13:59:38
14	semiconductor, and it might be a silicon carbide	13:59:46
15	vertical building element in this case.	13:59:56
16	Q Do you see in claim 1 where it recites,	13:59:58
17	the compound semiconductor transistor device is a	14:00:02
18	lateral transistor device?	14:00:08
19	A Yes.	14:00:10
20	Q How can this same device be both lateral	14:00:11
21	and vertical?	14:00:15
22	A The chip can...	14:00:18

[REDACTED]

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99

1	MR. AGGARWAL: Can we go off the record?	14:01:22
2	THE VIDEOGRAPHER: Take us off the record.	14:01:24
3	We are going off the record, the time on the	14:01:26
4	monitor is 14:01.	14:01:28
5	(Off the record.)	14:01:30
6	THE VIDEOGRAPHER: We are back on the	14:14:29
7	record. The time on the monitor is 14:14.	14:14:31
8	BY MR. AGGARWAL:	14:14:35
9	Q Can you explain how the same device is	14:14:39
10	both lateral and vertical?	14:14:43
11	A I can only explain it if there are	14:15:12
12	different chips installed in the packet, one as	14:15:16
13	lateral and one as vertical, otherwise I couldn't	14:15:20
14	explain it.	14:15:23
15	Q And if this is only referencing a single	14:15:24
16	chip, then it would not be explainable, correct?	14:15:28
17	A Correct.	14:15:38
18	Q And you said you reviewed the claims	14:15:39
19	before they were submitted to the patent office?	14:15:57
20	MR. STEENBURG: Objection, vague.	14:16:10
21	A Yes. I didn't recognize that.	14:16:14
22	Q Did you or Infineon ever inform the patent	14:16:40

[REDACTED]

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100

1	office that this claim was unexplainable?	14:16:43
2	A I just -- I just realized that right now,	14:17:02
3	just now.	14:17:05
4	Q How do you define a vertical transistor?	14:17:09
5	A I would define a vertical transistor via	14:17:50
6	the vertical current flow, where the dominant part	14:17:55
7	of the current is running vertically.	14:18:04
8	Q Does the electrode -- strike that.	14:18:08
9	Does the electrode placement have anything	14:18:10
10	to do with it?	14:18:14
11	A Yes. In many cases the positioning of the	14:18:24
12	electrons is -- of the electrodes is also on	14:18:28
13	opposing sides, but there -- there are also cases	14:18:33
14	where this is not the case, where a vertical	14:18:39
15	building element could also have both electrodes	14:18:48
16	on the top side or surface.	14:18:51
17	Q So to define the transistor, you look at	14:18:54
18	two parts, current flow and electrode placement?	14:18:57
19	MR. STEENBURG: Objection,	14:19:01
20	mischaracterizes.	14:19:02
21	A I -- for my part, I focus on the -- the	14:19:04
22	current flow direction to differentiate between	14:19:40

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101

1	vertical and lateral parts, and also the -- the	14:19:43
2	wiring on the inside that has to do with the	14:19:49
3	package flow.	14:19:54
4	Q And we discussed earlier, the current	14:19:57
5	flow -- the -- the placement of the electrodes	14:20:00
6	impact current flow, correct?	14:20:03
7	A I would -- I would phrase it differently.	14:20:19
8	I would say the current flow influences the	14:20:22
9	placing of the electrodes, because the inner	14:20:25
10	structure of the chip basically determines if it's	14:20:41
11	going to be a vertical or a lateral building	14:20:44
12	element. And the electrodes on the top and/or	14:20:48
13	bottom are a consequence of the internal	14:20:55
14	structure.	14:21:04
15	Q What is the inner structure of the chip?	14:21:04
16	THE WITNESS: It seems we have lost him	14:21:24
17	again (in English).	14:21:26
18	MR. AGGARWAL: Can we go off the record?	14:21:27
19	THE VIDEOGRAPHER: Taking us off the	14:21:29
20	record. The time on the monitor is 14:21.	14:21:30
21	(Off the record.)	14:21:37
22	THE VIDEOGRAPHER: We are back on the	14:22:43

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102

1	record. The time on the monitor is 14:22.	14:22:45
2	BY MR. AGGARWAL:	14:22:49
3	Q What is the inner structure of the chip?	14:22:54
4	MR. STEENBURG: Objection, vague.	14:23:01
5	A For example, the -- the two-dimensional	14:23:09
6	electron -- electron gas that we mentioned with	14:23:14
7	the -- with the GaN, the gallium nitride.	14:23:16
8	Q Besides the 2DEG and the GaN layer, what	14:23:20
9	is there?	14:23:29
10	A There are PN transitions, drift zones,	14:23:32
11	highly doped impurities.	14:23:47
12	THE WITNESS: Yeah.	14:23:55
13	THE INTERPRETER: Doped, okay.	14:23:56
14	THE WITNESS: Yeah.	14:23:57
15	A There are highly doped areas. These	14:24:02
16	structures -- these structures define in the end	14:24:19
17	if it's going to be a vertical or a lateral	14:24:24
18	building element, but also how the placement of	14:24:27
19	the electrodes is sensible.	14:24:35
20	Q We previously discussed the 2DEG layer.	14:24:48
21	And you said it was on the surface --	14:24:57
22	THE INTERPRETER: You can go ahead. I	14:25:08

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103

1	have the transcript.	14:25:10
2	Q Okay. We previously discussed the 2DEG	14:25:10
3	layer, you said it was on the surface -- sorry.	14:25:14
4	Strike that.	
5	We previously discussed the 2DEG layer,	14:25:17
6	you said it was on the surface. Can you explain	14:25:21
7	where that surface is?	14:25:24
8	A Okay. It's not on the surface. It is on	14:25:25
9	the top side. So not on the surface of it, but	14:25:54
10	embedded on the top of the semiconductor.	14:25:56
11	Q Would it be on the same layer as the	14:25:59
12	electrodes?	14:26:02
13	A I -- I don't know. That exceeds my	14:26:19
14	knowledge. I've got to pass. I don't know.	14:26:24
15	Q What is electrode -- what layer is an	14:26:26
16	electrode on?	14:26:37
17	MR. STEENBURG: Objection, vague, scope.	14:26:47
18	A Electrodes that are relevant for me within	14:27:00
19	the package are part of the metallization.	14:27:03
20	Q And we discussed the GaN layer within the	14:27:14
21	inner workings of the chip.	14:27:21
22	Are there other compound structure layers	14:27:23

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104

1	in the chip?	14:27:27
2	A I know -- I know there are other layers,	14:27:40
3	but I don't know how many of them there are or how	14:27:52
4	they look. I only know that there are other	14:27:55
5	layers.	14:27:58
6	Q Can you give some examples of layers?	14:27:59
7	A Unfortunately, no.	14:28:01
8	Q You said you think there are other layers.	14:28:16
9	Can you provide any description of those	14:28:18
10	layers?	14:28:20
11	A No. I'm currently not in -- not capable	14:28:26
12	of describing that in more detail.	14:28:44
13	Q Is one of those other layers an aluminum	14:28:48
14	gallium nitride layer?	14:28:54
15	A Like I said, I could only -- like I said,	14:29:14
16	I could only speculate. I don't -- I don't know.	14:29:18
17	Q Do you understand that electrodes are	14:29:27
18	placed -- strike that.	14:29:30
19	Do you understand that layers are etched	14:29:35
20	before an electrode is placed onto the chip?	14:29:38
21	A I know that etching is one of the	14:29:43
22	processes that can be used to place electrodes on	14:30:08

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105

1	the chip, but I don't know concretely how and	14:30:11
2	where this is used.	14:30:15
3	Q Do you understand -- do you understand	14:30:16
4	that the layers are etched?	14:30:17
5	THE WITNESS: Seems we have lost him.	14:30:32
6	Okay (in English).	14:30:35
7	A Yes. I know that the structuring involves	14:30:47
8	etching, but I don't know the details about that.	14:30:52
9	Q Would the layer with the 2DEG be etched?	14:30:58
10	A That exceeds my knowledge. I don't know	14:31:29
11	the details about that. I can't really elaborate	14:31:32
12	on that now.	14:31:35
13	Q Wouldn't it be very harmful if the 2DEG	14:31:36
14	layer was etched?	14:31:42
15	A I can't say either. I'm not exactly sure	14:31:57
16	how the structure is actually integrated into the	14:32:00
17	semiconductor.	14:32:04
18	Q I would like to introduce an exhibit.	14:32:05
19	This will be Exhibit 9.	14:32:21
20	(Marked for identification Exhibit 9, US	14:32:22
21	10,290,566 B2.)	14:32:24
22	Q Do you recognize this document?	14:32:44

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106

1	A	Yes.	14:32:52
2	Q	What is this document?	14:33:05
3	A	The content I don't know, but I have to	14:33:13
4		get oriented first.	14:33:16
5		THE WITNESS: Okay. Yeah. Okay.	14:33:53
6	Q	What is this document?	14:33:54
7	A	Okay. Yes.	14:33:57
8		This document includes an advantageous	14:34:22
9		arrangement with a CASS code realization and an	14:34:25
10		additional diode.	14:34:30
11	Q	Is this the patent that you're inventor	14:34:32
12		on?	14:34:34
13	A	Yes. I'm one of the coinventors.	14:34:36
14	Q	Can you turn to Figure 6, please?	14:34:53
15	A	Yes.	14:35:11
16	Q	Do you see --	14:35:23
17	A	Yes.	14:35:23
18	Q	Do you see the 2DEG line in this figure?	14:35:25
19	A	Yes. Now I found it. Number 136.	14:35:31
20	Q	Are you sure it's not 150?	14:37:25
21		THE INTERPRETER: Interpreter needs that	14:38:00
22		repeated. Interpreter also need to turn off --	14:38:03

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107

1	because my internet is -- something's not right.	14:38:04
2	Can you please repeat that?	14:38:07
3	A Yes, Number 150 is correct. It's about an	14:38:26
4	electron gas, but I'm not an expert.	14:38:29
5	And in the invention, Oliver Haberlen was	14:38:45
6	a part of it. He's one of our experts on the	14:38:48
7	gallium nitride.	14:38:52
8	Q But you are an inventor on this patent,	14:38:54
9	correct?	14:38:57
10	A Yes.	14:39:00
11	Q And you read this patent --	14:39:00
12	A Yes.	
13	Q -- before it was submitted to the patent	14:39:02
14	office?	14:39:04
15	A Yes.	14:39:05
16	Q And you agree that the --	14:39:13
17	A Yes.	
18	Q -- 2DEG line 150 is within the gallium	14:39:15
19	nitride layer 135, correct?	14:39:19
20	A In the drawing, yes.	14:39:33
21	Q And you would also agree that the	14:39:39
22	electrodes are in the aluminum gallium nitride	14:39:41

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108

1	layer 136, correct?	14:39:45
2	A I can't judge that. Yeah, I can't really	14:39:57
3	judge that.	14:40:18
4	Q Does --	14:40:18
5	A Yeah, I can't really judge that. I'm --	14:40:19
6	I'm there for -- as an inventor for the things	14:40:21
7	like the flip chip and the CASS code for low	14:40:24
8	voltage, but I can't assess this.	14:40:27
9	Q What does Figure 6 show? Does it --	14:40:31
10	strike that.	
11	Doesn't Figure 6 show that source	14:40:36
12	electrode 137 and drain electrode 138 are in the	14:40:38
13	aluminum gallium nitride layer 136?	14:40:46
14	A The electrodes that I use for the rewiring	14:40:51
15	have to be either integrated on top or on the	14:41:23
16	bottom of the metallization.	14:41:26
17	I -- I need the metallization to -- with	14:41:39
18	bond materials or clips or other materials to	14:41:42
19	create a connection.	14:41:45
20	Q Do you also see layer 133, which is a	14:41:48
21	doped silicon layer, in Figure 6?	14:41:55
22	A Yes, I see it.	14:42:12

[REDACTED]

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109

1	Q	Do you see the substrate layer 132?	14:42:14
2	A	Yes, I see that too.	14:42:28
3	Q	Do you see the buffer layer 134?	14:42:30
4	A	Yes, I see it.	14:42:39
5	Q	And all these layers are defined in	14:42:40
6		Figure 6 in this -- in your patent?	14:42:46
7	A	Yes. Yes, they are described, but it's	14:42:59
8		very important that they are also the coinventors,	14:43:11
9		like this Oliver Haberlen who is -- yeah,	14:43:13
10		Oliver Haberlen who was responsible for the	14:43:20
11		gallium nitride.	14:43:25
12	Q	And what type of transistor is shown in	14:43:29
13		Figure 6?	14:43:33
14	A	It's the gallium nitride-based HEMT.	14:44:02
15	Q	And as you said earlier, a HEMT is a	14:44:07
16		lateral transistor?	14:44:18
17	A	To my knowledge, a HEMT is in most cases a	14:44:25
18		transistor with lateral electron flow. Yes, with	14:44:40
19		lateral electron flow.	14:44:47
20	Q	So it would be a lateral transistor	14:44:50
21		device, correct?	14:44:53
22	A	Yes.	14:44:56

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110

1	Q Can you turn to Figure 1, please?	14:44:57
2	A Yes. I have it in front of me.	14:45:12
3	Q Do you see -- what type of transistor	14:45:15
4	device is shown here?	14:45:21
5	A There are several chips in one package.	14:45:24
6	Q What about transistor 11?	14:45:34
7	A It is a high-voltage depletion motor	14:45:38
8	transistor.	14:45:57
9	Q Is that a lateral device?	14:46:02
10	A Yes, because under 12 with the arrows	14:46:11
11	indicated that there is a lateral current flow.	14:46:26
12	Q And you see that that lateral current flow	14:46:30
13	happens in the middle of this semiconductor	14:46:34
14	device?	14:46:38
15	A I don't think so. Just the arrow is	14:46:39
16	pointed towards the middle, but that doesn't	14:46:56
17	necessarily mean that the current flow goes	14:46:59
18	through the middle. Otherwise we would have to be	14:47:00
19	able to see the detailed structure within the	14:47:10
20	chip.	14:47:19
21	Drawings Number 6 and 7 show the current	14:47:27
22	flow again at the -- at the top of the building	14:47:36

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[REDACTED]

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111

1	element.	14:47:33
2	Q I would like to turn back to the '481	14:47:37
3	patent.	14:47:40
4	A Yes.	14:47:54
5	Q And it was your testimony today that this	14:47:55
6	patent describes a lateral transistor?	14:47:58
7	A We have here a lateral current flow and,	14:48:08
8	with that, a lateral transistor, yes.	14:48:17
9	Q Where in the patent does it describe a	14:48:20
10	lateral transistor?	14:48:22
11	A In the claims, the lateral transistor is	14:48:41
12	talked about, or described.	14:48:49
13	Q Anywhere in the specification?	14:48:52
14	A Figure 3, there is a	14:49:18
15	high-electron-mobility transistor included.	14:49:35
16	Q Anywhere else?	14:49:40
17	A Figure 4 also includes a HEMT,	14:50:50
18	high-electrode-mobility transistor.	14:51:04
19	Q When the patent differentiates between a	14:51:14
20	vertical and lateral transistor, doesn't it always	14:51:17
21	mention the arrangement of the electrodes?	14:51:29
22	A Not for me. For me, it's the -- the	14:51:54

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Conducted on February 12, 2025

112

1 current flow through the chip, which depends on
2 the inner structure of the chip. And this inner
3 structure then determines the electrodes.

14:51:57

14:52:00

14:52:09

4 So it's the other way around, the current
5 flow and the inner structure determines the
6 electrodes, not the electrodes determining the
7 inner structure and the current flow.

14:52:22

14:52:25

14:52:27

14:52:30

8 Q Where is that explained in the '481
9 patent?

14:52:33

14:52:36

10 A I can't remember that we explained that in
11 there.

14:52:38

14:52:53

12 Q Is that because the key is really the
13 electrode placement, which is described in the
14 specification?

14:53:00

14:53:02

14:53:05

15 MR. STEENBURG: Objection, vague, form.

14:53:18

16 THE INTERPRETER: Interpreter asks for a
17 shorter recapitulation of that for me to
18 translate.

14:53:53

14:53:55

14:54:02

19 A For our packages, the arrangement of the
20 electrodes is important for the rewiring. That's
21 why we referenced the electrodes here.

14:54:08

14:54:10

14:54:20

22 For the unambiguous determination of what

14:54:36

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Conducted on February 12, 2025

113

1	kind of chip it is, it is not correct, or maybe	14:54:40
2	even wrong, because it's inner structures of the	14:54:43
3	chip that are important determining factors.	14:54:46
4	Q Does a current flow between the source and	14:54:51
5	the drain?	14:54:54
6	A Yes, the current flows between the source	14:55:02
7	and drain.	14:55:19
8	Q So if I move the drain to the bottom,	14:55:20
9	wouldn't that change the current flow?	14:55:22
10	MR. STEENBURG: Objection, incomplete	14:55:33
11	hypothetical, calls for expert testimony.	14:55:35
12	A I can't -- I can't just put the drain	14:55:39
13	electrode on the -- on the bottom without	14:55:53
14	adjusting the inner structure. The inner	14:55:56
15	structure would have to be adjusted as well.	14:55:59
16	Otherwise I would lose the transistor's function.	14:56:04
17	But it is correct that the current flow is	14:56:14
18	from source to drain. But I can't just, like,	14:56:16
19	randomly, however I want to, arrange them.	14:56:24
20	And that's the background of the patent to	14:56:32
21	arrange this in an advantageous manner.	14:56:37
22	Q When you build a transistor, do you place	14:56:43

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Conducted on February 12, 2025

114

1	electrodes first or does the current flow first?	14:56:46
2	MR. STEENBURG: Objection, scope.	14:57:01
3	A The chip is made first with the electrodes	14:57:10
4	before current flow is established.	14:57:16
5	Q So based on where the electrodes are	14:57:21
6	placed, the current flow will change, correct?	14:57:23
7	A If -- no, because if I don't pay attention	14:57:54
8	to the inner structure during the structuring of	14:57:58
9	the electrodes, I won't get a functioning	14:58:02
10	transistor anymore.	14:58:09
11	I can't -- if I have -- yeah, I can't if	14:58:25
12	have a HEMT and put an electrode on the -- on the	14:58:29
13	back side, I can't just get a vertical electron	14:58:31
14	flow.	14:58:36
15	Q If a transistor is in the off state and it	14:58:41
16	has its source and drain on opposite surfaces,	14:58:51
17	would that not be a vertical transistor?	14:58:53
18	MR. STEENBURG: Objection, incomplete	14:59:09
19	hypothetical. It calls for expert testimony.	14:59:11
20	A Ultimately, it's the inner structure that	14:59:14
21	determines if a -- if electricity will flow, and	14:59:31
22	not the -- not the state -- the switch state.	14:59:36

[REDACTED]

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Conducted on February 12, 2025

115

1	Q So if the electrodes are placed on	14:59:44
2	opposite surfaces, it's not a vertical transistor	14:59:46
3	when it's in the off state?	14:59:49
4	A It stays a vertical transistor. Even if	14:59:53
5	it's not turned on, the state does not change if	15:00:14
6	it's a vertical transistor or not.	15:00:16
7	Q I would like to introduce another exhibit.	15:00:20
8	This will be Exhibit 10.	15:00:31
9	(Marked for identification Exhibit 10, US	15:00:33
10	9,368,434 B2.)	15:00:35
11	Q Do you recognize this document?	15:00:57
12	A I am the inventor of this patent.	15:01:13
13	Q Are there any other inventors on this	15:01:17
14	patent?	15:01:20
15	A Nope, no other inventors.	15:01:28
16	Q And this is patent number 9,368,434,	15:01:33
17	correct?	15:01:37
18	THE WITNESS: Yeah, correct.	15:01:48
19	Q Can you turn to column 5 --	15:01:49
20	A Yes, correct.	15:01:49
21	MR. AGGARWAL: Sorry.	
22	Q Can you turn to column 5 --	15:01:51

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116

1	(Indiscernible crosstalk.)	15:01:53
2	THE INTERPRETER: Can Counsel please	15:02:03
3	repeat that for the interpreter?	15:02:05
4	MR. AGGARWAL: Sure.	15:02:08
5	Q Can you turn to column 5, lines 49 to 58.	15:02:08
6	THE INTERPRETER: Thank you.	15:02:22
7	A Yeah.	15:02:22
8	Q Does this paragraph define a lateral	15:02:22
9	transistor?	15:02:26
10	MR. STEENBURG: Objection, vague.	15:02:44
11	A The described arrangement of the circuit	15:02:48
12	fits to a lateral transistor.	15:03:14
13	Q How does it define it?	15:03:20
14	MR. STEENBURG: Objection,	15:03:27
15	mischaracterizes, lack of foundation, assumes	15:03:28
16	facts.	15:03:44
17	A I indirectly surmise that to put the	15:04:00
18	source electrode onto the die pad.	15:04:04
19	Q Does this paragraph state: Is a lateral	15:04:08
20	transistor device, including a source electrode	15:04:13
21	47, a gate electrode 48, and a drain electrode 49	15:04:16
22	on its upper surface?	15:04:19

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Conducted on February 12, 2025

117

1	THE WITNESS: Yeah, it's stated here, yes	15:04:22
2	(in English).	
3	THE INTERPRETER: Oh, was it answered?	15:04:30
4	MR. AGGARWAL: Yes.	15:04:31
5	THE INTERPRETER: Okay.	15:04:33
6	Q And that's describing the first	15:04:34
7	semiconductor device 34, correct?	15:04:36
8	A Correct.	15:04:55
9	Q So semiconductor device 34 is a lateral	15:04:56
10	transistor, correct?	15:05:00
11	A The way it's described it's correct but	15:05:20
12	incomplete.	15:05:24
13	THE WITNESS: Incomplete, yeah (in	15:05:28
14	English).	15:05:29
15	THE INTERPRETER: I just -- I just --	15:05:31
16	interpreter just double-checked. Incomplete is	15:05:36
17	correct.	15:05:38
18	Q Was this not your pad that you wrote?	15:05:38
19	A I wrote it, yes.	15:05:42
20	Q And that paragraph only describes a	15:05:52
21	lateral transistor based on the electrode	15:05:57
22	placement, correct?	15:06:01

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(5)

15:06:44

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15:06:47

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15:07:09

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15:07:12

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15:07:17

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15:07:19

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15:07:40

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15:07:44

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15:07:44

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15:08:08

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15:08:12

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15:08:15

1

15:08:21

1

15:08:24

1

15:08:26

2

15:08:36

2

15:08:37

2

15:08:41

[REDACTED]

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Conducted on February 12, 2025

119

1	A	It is too true that transistor 34 was	15:09:28
2		included.	15:09:30
3	Q	And again, does this paragraph also	15:09:32
4		describe transistor device 34 as a lateral device?	15:09:34
5	A	In one iteration, yes, but in a different	15:10:29
6		iteration, a vertical device is described.	15:10:33
7	Q	And when it describes a lateral device,	15:10:36
8		how does it do so?	15:10:39
9	A	Here again, it's via the arrangement of	15:11:02
10		the electrodes on -- on the top.	15:11:06
11	Q	And it does not discuss anything about	15:11:09
12		current path here?	15:11:12
13	A	No, the current path is not described	15:11:15
14		closely.	15:11:28
15	Q	Can we turn back to the '481 patent.	15:11:29
16	A	I have it in front of me, yes.	15:11:47
17	Q	Can you please turn to Figure 3.	15:11:49
18	A	Yeah. I mean yes.	15:12:00
19	Q	What is shown in Figure 3?	15:12:04
20	A	The advantageous execution of --	15:12:08
21		advantageous execution of the -- advantageous	15:12:36
22		execution with a source sense contact, and a die	15:12:47

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Conducted on February 12, 2025

120

1	pad on source potential for a building element or	15:12:55
2	a chip with a lateral current flow.	15:13:03
3	Q What is identified as 51 through 54?	15:13:09
4	A Those, the drain connections, 51 to 54.	15:13:27
5	Q And what is 56?	15:13:32
6	A 56 is the --	15:13:39
7	THE INTERPRETER: Again, interpreter is	15:13:56
8	not familiar with that.	15:14:00
9	A It's the area -- the lead post area of the	15:14:17
10	contacts with --	15:14:20
11	THE INTERPRETER: I didn't get that. My	15:14:21
12	hearing cut out.	15:14:25
13	A Oh, the bond wires are contacted. The	15:14:30
14	drain connections themselves are partially outside	15:14:40
15	of the -- okay. The mold component.	15:14:44
16	But the wire bond contacts always have to	15:14:50
17	be within.	15:15:00
18	Q And what is 45 and 46?	15:15:07
19	THE INTERPRETER: Interpreter probably	15:15:42
20	needs to change internet again, guys. I didn't	15:15:43
21	get all of that, I'm sorry. I have to probably	15:15:45
22	change my connections.	15:15:48

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Conducted on February 12, 2025

121

1	MR. AGGARWAL: No worries. We can take a	15:15:49
2	break.	15:15:51
3	THE INTERPRETER: Okay. Can we take five	15:15:52
4	or whatever? Whatever you want. I'm just going	15:15:54
5	to see if I can fix this.	15:15:56
6	THE WITNESS: That would be half past	15:15:57
7	2:00?	15:15:59
8	THE VIDEOGRAPHER: Yes.	15:15:59
9	I'll take us off the record. The time on	15:15:59
10	the monitor is 15:15.	15:16:02
11	(Off the record.)	15:16:05
12	THE VIDEOGRAPHER: We are back on the	15:31:02
13	record. The time on the monitor is 15:30.	15:31:04
14	BY MR. AGGARWAL:	15:31:07
15	Q Can we go back to Figure 3 and	15:31:12
16	specifically identify what 45 and 46 is.	15:31:15
17	A In 45 and 46 are the contact areas for the	15:31:36
18	source contact. Outside of the --	15:31:42
19	THE WITNESS: Mold compound (in English).	
20	A Mold compound. Outside of the mold	15:31:55
21	compound.	15:31:57
22	Q And what is 49?	15:32:02

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Conducted on February 12, 2025

122

1	A	49 is the gate lead.	15:32:04
2	Q	How about 57, 58 and 59?	15:32:16
3	A	Those are the -- the contact areas on the	15:32:25
4		top of the chip for the bond wires, for the	15:32:39
5		respective electrodes (indiscernible) gate.	15:32:46
6	Q	What are these on top of?	15:32:52
7	A	Bond wires or 57, 58 and 59?	15:32:57
8	Q	57, 58 and 59.	15:33:18
9	A	57, 58, 59.	15:33:21
10		Those are the front side metallization	15:33:32
11		areas.	15:33:34
12	Q	And what are they on top of?	15:33:34
13	A	They are sitting on the semiconductor	15:33:37
14		material.	15:33:47
15	Q	Are the electrodes all on the upper	15:33:50
16		surface of the material?	15:33:53
17	A	Yes, in this case they are all arranged on	15:33:56
18		the upper area there.	15:34:10
19	Q	And just to confirm, when we say on top of	15:34:11
20		the material, you mean on top of the semiconductor	15:34:15
21		die, correct?	15:34:17
22	A	Correct, yes.	15:34:28

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Conducted on February 12, 2025

123

1	Q	And when you look at Figure 3 and Figure 4	15:34:29
2		together, you can tell it's a lateral device,	15:34:33
3		correct?	15:34:37
4	A	The problem is again that chip number 41	15:34:56
5		isn't described in detail.	15:35:08
6		I can't really tell just judging by the	15:35:31
7		arrangement, the electrodes on the top of the	15:35:34
8		device. It has to be a lateral transistor or	15:35:37
9		lateral device. It depends on what's on the	15:35:40
10		inside as well.	15:35:43
11	Q	Can you go to column 7, lines 50 to 53.	15:35:45
12	A	I have in front of me, yes.	15:36:29
13	Q	Doesn't that tell us that transistor	15:36:33
14		device 41 from Figures 3 and 4 is a lateral	15:36:37
15		transistor device?	15:36:41
16	THE WITNESS:	Yes.	15:36:45
17	A	Yes, but I can't recognize this	15:37:02
18		(indiscernible) from the cross-section of the	15:37:04
19		inner structures as well. But from looking at it	15:37:08
20		like this, it looks like it.	15:37:11
21	Q	You would agree that this patent is	15:37:13
22		directed towards a lateral device, correct?	15:37:15

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Conducted on February 12, 2025

124

1	A	Yes.	15:37:27
2	Q	In fact, the main purpose of this patent	15:37:29
3		is to talk about the lateral device, correct?	15:37:32
4	A	Correct, yes, by the lateral device.	15:37:51
5	Q	Where in the patent does it tell you about	15:37:56
6		the inner structure that defines a lateral device?	15:37:59
7	A	In the description of the figures, it says	15:38:50
8		in the description that it is a lateral building	15:38:53
9		element or a lateral device. But just from the	15:38:58
10		cross section I can't tell that it's a lateral	15:39:12
11		device. I would need to know the inner structure.	15:39:16
12		But it is correct that the patent deals with a	15:39:26
13		lateral device.	15:39:29
14	Q	And again, where in the patent does it	15:39:31
15		talk about the inner structure of the device	15:39:34
16		itself?	15:39:36
17	A	Well, because it's a package patent again,	15:39:55
18		the focus is more on the rewiring, and that's why	15:39:57
19		the focus is more geared towards electrodes.	15:40:06
20	Q	So you can't point to anywhere in the	15:40:11
21		patent that discusses an inner structure to define	15:40:12
22		it as a lateral device, correct?	15:40:16

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Conducted on February 12, 2025

125

1	MR. STEENBURG: Objection, vague.	15:40:19
2	A Yes, exactly. I can't remember that we	15:40:44
3	like went to this depth in describing it or in	15:40:47
4	this patent, no.	15:40:50
5	Q So if a colleague of yours was looking at	15:40:51
6	Figures 3 and 4, he would understand it to be a	15:41:17
7	lateral device?	15:41:20
8	MR. STEENBURG: Objection, vague,	15:41:29
9	incomplete hypothetical.	15:41:30
10	A I think the package colleagues would	15:41:49
11	recognize it as such, but I think that the device	15:41:52
12	colleagues who are dealing with the inner	15:41:56
13	structure, for them, it wouldn't be -- would be	15:41:59
14	absolutely clear.	15:42:03
15	Q So packaging colleagues would recognize	15:42:03
16	Figures 3 and 4 to represent a lateral device?	15:42:07
17	A Yes. Yes, I think so.	15:42:19
18	Q Can we go to column 3, lines 14 and 25.	15:42:22
19	A 15 and...	
20	Q 14 and 25.	15:43:12
21	A Yes, I have it in front of me.	15:43:36
22	Understood.	15:43:39

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Conducted on February 12, 2025

126

1	Q	So when we talk about lateral direction,	15:43:41
2		the patent explains it just has to mean generally	15:43:50
3		parallel to the lateral direction, correct?	15:43:53
4	A	Correct, yes.	15:43:58
5	Q	So if it's generally parallel, it doesn't	15:44:13
6		have to be absolutely parallel?	15:44:19
7	A	It does not have to be absolutely	15:44:29
8		parallel. For the lateral current path, it does	15:44:40
9		not have to be completely lateral.	15:44:42
10	Q	Can we go to column 5, line 64 through	15:44:49
11		column 6, line 3.	15:44:57
12	A	Yes, I have it in front of me.	15:45:11
13	Q	The patent defines a vertical device as	15:45:14
14		one having a vertical drip path and electrodes	15:45:18
15		arranged on opposing surfaces, correct?	15:45:20
16	MR. STEENBURG:	Objection, assumes facts.	15:45:23
17	A	Yes, that's actually an expansion.	15:45:56
18	Q	Can you explain the expansion?	15:46:06
19	A	Silicon carbide building element is what	15:46:51
20		is described here.	15:47:01
21	Q	Can you point us to where you're	15:47:06
22		referencing silicon carbide?	15:47:07

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Conducted on February 12, 2025

127

1	A	Column 6, rows 3 to 6.	15:47:14
2	Q	That just says an example of a vertical	15:47:36
3		device is a silicon carbide device, correct?	15:47:39
4	A	An example of a compound semiconductor	15:48:02
5		with vertical current flow is mentioned, yes.	15:48:05
6	Q	But the way the patent defines a vertical	15:48:08
7		device is based on the current -- the electrode	15:48:12
8		placement and the vertical drip path, correct?	15:48:16
9	A	Yes, and I think that's a leftover of the	15:48:40
10		(coughing) -- oh, of the claim adjustment. But	15:49:09
11		it's not relevant anymore in the current form.	15:49:19
12	Q	And a quick point on that, do you remember	15:49:25
13		when we discussed your duty to update the patent	15:49:27
14		office?	15:49:30
15	A	I didn't realize until now when claims	15:49:45
16		didn't fit anymore.	15:49:59
17	Q	Do you plan to submit a revision to the	15:50:00
18		USPTO?	15:50:03
19	A	I can't say how we have to deal with that	15:50:05
20		now. I'm not an expert. We have to discuss that	15:50:24
21		with our -- with our patent experts.	15:50:27
22	Q	And do you understand that a duty of	15:50:36

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Conducted on February 12, 2025

128

1	candor is a personal duty to yourself? Can we	15:50:50
2	strike that, actually?	15:51:01
3	Do you understand that a duty of candor is	15:51:03
4	an obligation on an individual basis?	15:51:06
5	A I really don't know that very -- all that	15:51:20
6	very well, so that's why it's important to speak	15:51:33
7	to our patent experts. I don't know how it has to	15:51:36
8	be dealt with erroneous formulations or erroneous,	15:51:46
9	yeah, formulations like that.	15:51:51
10	Q Can we go back to column 5, lines 54 to	15:51:55
11	60?	15:51:59
12	A I have it in front of me.	15:52:11
13	Q Does this paragraph define lateral devices	15:52:12
14	as one with electrodes all on the upper surface	15:52:15
15	and a lateral drip path?	15:52:19
16	MR. STEENBURG: Objection, vague.	15:52:33
17	A Yes, according to my understanding it	15:52:42
18	describes the lateral device.	15:52:45
19	Q A lateral drip path is just lateral flow	15:52:49
20	of the current -- lateral current flow, correct?	15:52:53
21	A I can't really make a valid statement	15:53:03
22	about a lateral drip path is what you would find	15:53:30

[REDACTED]

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Conducted on February 12, 2025

129

1	with a lateral current flow.	15:53:37
2	THE INTERPRETER: Let the interpreter	15:53:40
3	double-check with the witness.	15:53:49
4	A As a package expert, I can't judge the	15:54:05
5	lateral drip path is to be judged the same way as	15:54:07
6	lateral current flow path -- current path.	15:54:11
7	Q Why did you mention lateral drip path in	15:54:15
8	your patent, then?	15:54:19
9	A From this statement, I can't really say	15:54:59
10	how far the drip path actually is equivalent to	15:55:27
11	the -- to the current path.	15:55:31
12	Q So you have no understanding of what	15:55:34
13	lateral drip path means?	15:55:36
14	MR. STEENBURG: Objection,	15:55:43
15	mischaracterizes.	15:55:44
16	A I'm not a device expert.	15:55:49
17	Q But this patent is on the lateral device,	15:55:52
18	as we discussed earlier, correct?	15:55:55
19	A Correct.	15:56:07
20	Q And the claims recite a lateral device,	15:56:08
21	correct?	15:56:11
22	A Correct. Where the focus of the invention	15:56:23

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

130

1	is the advantageous arrangements of the -- the	15:56:33
2	focus is on the internal -- internal rewiring or	15:56:48
3	wire bonding -- bonding.	15:56:54
4	Q But it's of the lateral device, correct?	15:56:56
5	A Correct.	15:57:07
6	Q And the specification explains a	15:57:07
7	lateral -- and the specification explains a	15:57:10
8	lateral device is one with a lateral drip path,	15:57:11
9	but that has no meaning to you?	15:57:14
10	A But I'm not really capable of saying how	15:57:40
11	far the lateral drip path is identical with the	15:57:43
12	lateral current flow.	15:57:47
13	Q What is the meaning it has to you?	15:57:48
14	A Meaning that I can contact the project to	15:57:52
15	a lateral building element within the package.	15:58:12
16	And the advantageous utilization of the wire bond	15:58:36
17	contact with the die pad.	15:58:40
18	(The court reporter asked for clarification.)	15:58:43
19	A The core of the invention is the	15:59:08
20	advantageous usage of the wire bond contact and	15:59:11
21	the die pad. And this is a description of the	15:59:16
22	chip that then takes advantage of the advantageous	15:59:31

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

131

1	packaging.	15:59:40
2	Q I'm going to introduce another exhibit.	15:59:55
3	This will be -- can you tell me what the	15:59:58
4	last one was? Was it 10?	
5	Okay. This will be Exhibit 11.	16:00:06
6	(Marked for identification Exhibit 11,	16:00:08
7	Smart Power ICs.)	16:00:11
8	Q Have you seen this document before?	16:00:22
9	A I can't remember seeing this document	16:00:35
10	previously.	16:00:37
11	Q Do you understand this is -- provides	16:00:42
12	scanned pages from a textbook?	16:00:44
13	THE WITNESS: Yes.	16:00:48
14	A Yes.	16:00:55
15	Q Do you know any of these authors on the	16:00:56
16	first page?	16:01:00
17	A No.	16:01:14
18	Q Can you flip to page 4?	16:01:18
19	MR. STEENBURG: I don't have a page 4,	16:01:50
20	Counsel.	16:01:53
21	MR. AGGARWAL: Sorry, I said the wrong	16:01:53
22	page.	16:01:54

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[REDACTED]

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Conducted on February 12, 2025

132

1	Q	Can you flip to page 7. And the pages are	16:01:55
2		on the top.	16:02:04
3		Do you see a Figure 1.6?	16:02:12
4	A	Yes.	16:02:18
5	Q	What type of transistor is in Figure 1.6?	16:02:20
6	A	Current flow in a vertical structure, so	16:02:26
7		it's a vertical transistor.	16:02:43
8	Q	Where are the electrodes placed on the	16:02:47
9		structure?	16:02:57
10	A	On the opposing side. The source on the	16:03:08
11		top and the drain on the bottom.	16:03:17
12	Q	Do you see the caption for Figure 1.6?	16:03:21
13	A	No, I don't see.	16:03:30
14	Q	It says, current flow in a vertical	16:03:39
15		structure?	16:03:42
16	A	Okay.	16:03:47
17	Q	So vertical structure indicates that it's	16:03:49
18		a vertical device, correct?	16:03:52
19	MR. STEENBURG:	Objection, scope. Calls	16:03:57
20		for expert testimony again.	16:03:59
21	A	Again, I'm a package expert. I -- it's	16:04:18
22		really hard for me to, like, give, you know,	16:04:21

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

133

1	testimony to the inner structures.	16:04:24
2	Q I thought the inner structures were what	16:04:26
3	tells you what is lateral and vertical?	16:04:29
4	A Tells the device expert how the	16:04:47
5	arrangement or the current flow is in the end.	16:04:49
6	The package expert, I -- I use the electrodes	16:05:20
7	where they are arranged, so in this case on top	16:05:24
8	and bottom. But the reason why they are arranged	16:05:27
9	where they are, I can't really deduce from this	16:05:39
10	picture. That's why for me, as package expert, I	16:05:43
11	chose opposing sides. For me that means it's a --	16:05:56
12	it's a -- a vertical device.	16:06:00
13	Q So you understand as a pack -- package	16:06:03
14	expert that it's a vertical device because the	16:06:05
15	electrodes are on opposing sides, correct?	16:06:07
16	MR. STEENBURG: Objection, scope. Calls	16:06:20
17	for expert testimony.	16:06:22
18	THE INTERPRETER: Interpreter needs to	16:06:38
19	clarify one term.	16:06:41
20	A It's the source and electrodes on opposing	16:06:48
21	sides. For me as packaging expert, for me that	16:06:51
22	means a vertical device.	16:06:54

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

134

1	Q Can we flip to page 8, please?	16:06:55
2	Do you see Figures 1.7A, 1.7B and 1.7C?	16:06:58
3	A Yes.	16:07:14
4	Q And as you can see, the electrodes are all	16:07:15
5	in the upper surface, so, as you were saying,	16:07:18
6	would that mean these are all lateral devices?	16:07:21
7	MR. STEENBURG: Objection, scope. Calls	16:07:34
8	for expert testimony.	16:07:36
9	A I can't -- I can't deduct this from these	16:07:50
10	structures, really. Specifically see the picture.	16:08:10
11	When we chose both structures lateral and vertical	16:08:30
12	in terms of current flow, I can't really assign	16:08:35
13	this properly.	16:08:41
14	Q Are you referencing specifically to 1.7C?	16:08:45
15	A Yes.	16:08:56
16	Q So you're saying this is a combination, so	16:08:59
17	it would be incorrect to label this as a vertical	16:09:04
18	transistor, correct?	16:09:07
19	MR. STEENBURG: Object. Objection, scope.	16:09:10
20	Calls for expert testimony.	16:09:19
21	A I really can't assess this. It has traits	16:09:26
22	of both for me.	16:09:35

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

135

1	Q I understand. In view of the '481 patent,	16:09:38
2	would you say it would be incorrect to say it's a	16:09:42
3	vertical transistor or a lateral transistor?	16:09:47
4	MR. STEENBURG: Objection, scope. Calls	16:10:02
5	for expert testimony.	16:10:04
6	A No, I wouldn't say that. No, I wouldn't	16:10:08
7	say that because for the -- or for the design, we	16:10:22
8	used the advantages of a lateral current flow.	16:10:25
9	With this advantage we could put the die pad on	16:10:36
10	the source potential. And at the same time we	16:10:40
11	could arrange a source sense right next to it	16:10:47
12	without jeopardizing --	16:11:01
13	(Indiscernible crosstalk.)	16:11:06
14	THE WITNESS: Creepage distance, creepage	
15	distance (in English).	16:11:11
16	A Creepage areas or jeopardizing the	16:11:11
17	high-voltage capacity. Without a deeper	16:11:16
18	understanding of what's going on on the inside, I	16:11:35
19	really can't tell you. But as a package man, if I	16:11:37
20	look at the arrangement of the electrodes, that's	16:11:37
21	what I go by.	16:11:41
22	Q Can you repeat the last part, Doctor? I	16:11:41

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[REDACTED]

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Conducted on February 12, 2025

136

1	look at the arrangement that's...	16:11:46
2	THE INTERPRETER: Yep. I'm going to ask	16:11:49
3	the witness to repeat that so that I get it the	16:11:53
4	same, okay?	16:11:58
5	A I use the arrangement to generate an	16:11:59
6	advantage in the package. For that I don't need	16:12:15
7	the understanding of what the inner structure	16:12:25
8	looks like. But still the arrangement is	16:12:27
9	advantageous.	16:12:37
10	Q I know we talked a lot there, I might	16:12:41
11	summarize a few points and ask some questions	16:12:44
12	following up.	16:12:48
13	So from a packaging perspective, this is a	16:12:48
14	lateral or -- and vertical transistor, it would be	16:13:07
15	both, correct?	16:13:12
16	A No. It is undoubtedly a lateral element.	16:13:26
17	Q And just to clarify, lateral element means	16:13:38
18	lateral device?	16:13:42
19	MR. STEENBURG: Objection, vague.	16:13:50
20	THE WITNESS: We lost him (in English).	16:14:07
21	MR. AGGARWAL: Can we go off the record?	16:14:09
22	THE VIDEOGRAPHER: Yeah, I will take us	16:14:10

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

137

1	off.	16:14:12
2	THE INTERPRETER: I'm there. Sorry. Zoom	16:14:13
3	hung up on me this time. This was not my fault.	16:14:17
4	MR. AGGARWAL: You sound clear.	16:14:21
5	THE INTERPRETER: Thank you.	16:14:25
6	MR. AGGARWAL: I'm ready to go back on, if	16:14:26
7	you guys are okay with it. Let's keep going.	16:14:28
8	THE VIDEOGRAPHER: Back on.	16:14:33
9	Q And I'll repeat the last question.	16:14:35
10	Lateral element means lateral device,	16:14:36
11	correct?	16:14:39
12	MR. STEENBURG: Objection.	16:14:39
13	A In this context, yes, the lateral current	16:14:40
14	flow is the main thing about this, but in this	16:14:55
15	context, yes.	16:14:57
16	Q I know there was a lot of back-and-forth.	16:14:58
17	Just to clarify, Figure 1.7C is a lateral device	16:15:27
18	from your perspective?	16:15:32
19	MR. STEENBURG: Objection, scope, expert	16:15:46
20	testimony, asked and answered.	16:15:50
21	A I cannot really define the inner	16:15:57
22	structure, so I can't really say what it is.	16:16:01

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

138

1	Q	Didn't you say it was a lateral element?	16:16:08
2	A	No, it has aspects of both. There are	16:16:15
3		areas that show both a lateral and a horizontal	16:16:32
4		current flow. For me, it seems to be a	16:16:37
5		combination of both, but I can't really assign it.	16:16:45
6	Q	But you wouldn't call this either a	16:16:52
7		lateral element or a lateral device or a vertical	16:16:54
8		device?	16:17:00
9	A	I really can't -- can't tell what it is.	16:17:08
10		I can't assign it. Maybe it's something really	16:17:12
11		special.	16:17:15
12	Q	What else could it be besides a lateral	16:17:16
13		device or a vertical device?	16:17:25
14	A	I don't know. No idea. Don't know.	16:17:34
15	Q	Did you say it could be a combination	16:17:37
16		device?	16:17:42
17	A	For me, it looks like -- for me, it looks	16:17:54
18		like a combination, but I can't really assign it	16:17:57
19		without a doubt, so I can't say it.	16:18:00
20	Q	So if it was a combination device, it	16:18:02
21		would be incorrect to call it a vertical device,	16:18:04
22		correct?	16:18:07

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Conducted on February 12, 2025

139

1	MR. STEENBURG: Objection, scope, calls	16:18:14
2	for expert testimony, asked and answered.	16:18:16
3	A I don't even know if it's a combination.	16:18:24
4	To me, it looks like it, but I really can't tell.	16:18:27
5	Q Do you see the figure caption for	16:18:31
6	Figure 1.7?	16:18:45
7	A Yes.	16:18:52
8	Q Does that indicate it's a lateral device?	16:18:53
9	MR. STEENBURG: Objection, vague.	16:19:01
10	A Nope. It says horizontal structures.	16:19:05
11	Q Why would that not be a lateral device?	16:19:13
12	A I really can't tell you if there is a	16:19:27
13	difference there between lateral and horizontal.	16:19:29
14	I don't know.	16:19:33
15	Q But you would agree that Figure 1.7C is	16:19:37
16	not like the vertical device in Figure 1.6?	16:19:43
17	MR. STEENBURG: Objection, vague.	16:19:58
18	A Yes, they are different, yes. But if	16:20:09
19	these differences are sufficient to put them into	16:20:21
20	different categories of devices, I do not know.	16:20:24
21	Q I would like to introduce another exhibit.	16:20:30
22	(Marked for identification Exhibit 12,	16:20:35

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

140

1	intro to GaN Enhancement mode.)	16:20:36
2	Q This will be Exhibit 12. This is a	16:20:37
3	document Infineon cited as Exhibit 43 to its	16:21:32
4	complaint.	16:21:36
5	Have you seen this document before?	16:21:37
6	A I cannot remember.	16:21:52
7	Q Are you familiar that Infineon acquired	16:21:55
8	GaN Systems?	16:21:58
9	A Yes.	16:22:07
10	Q How does Infineon incorporate GaN Systems	16:22:08
11	devices in its products?	16:22:21
12	MR. STEENBURG: Objection, scope, vague.	16:22:30
13	A I don't know.	16:22:38
14	Q Can you read the title of this document?	16:22:42
15	THE WITNESS: An Introduction to GaN	16:22:50
16	Enhancement Mode HEMT (in English).	16:22:52
17	Q And that's the same HEMT we have been	16:22:56
18	talking about earlier today, correct?	16:22:58
19	A In this contents, yes.	16:23:15
20	Q Can you move to page 3 of this document?	16:23:20
21	A Yes. I have it in front of me.	16:23:27
22	Q Do you see the figure in the middle that	16:23:29

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[REDACTED]

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Conducted on February 12, 2025

141

1	shows a transistor device in the on state?	16:23:31
2	A Yes, I see it.	16:23:40
3	Q Is this a lateral device?	16:23:42
4	MR. STEENBURG: Objection, scope.	16:23:48
5	A In my opinion, although I'm not a device	16:23:57
6	expert, I would think that that's a lateral	16:24:09
7	device.	16:24:12
8	Q Where are the electrodes on this device?	16:24:12
9	A They are all on the top.	16:24:22
10	Q And is that the 2DEG layer on the dotted	16:24:30
11	red line?	16:24:46
12	A Yes. It's also noted here. That's why I	16:25:07
13	would say it is that line there.	16:25:11
14	Q I'm going to introduce another exhibit.	16:25:28
15	This will be Exhibit 13.	16:25:36
16	(Marked for identification Exhibit 13,	16:25:39
17	Figure 2.)	16:25:40
18	Q Do you recognize this figure?	16:26:00
19	A Nope.	16:26:06
20	Q What does this figure look like to you?	16:26:07
21	MR. STEENBURG: Objection, foundation.	16:26:12
22	A I can't really assign it.	16:26:21

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

142

1	Q Do you have patents with figures like	16:26:25
2	this?	16:26:29
3	MR. STEENBURG: Objection, vague.	16:26:36
4	A It could be if they are colleagues from	16:26:39
5	the respective device group.	16:26:53
6	Q Do you remember that one patent we	16:26:55
7	discussed with Figure 6 that had a similar figure	16:26:58
8	like this?	16:27:01
9	MR. STEENBURG: Objection, vague.	16:27:08
10	Q It's going to be the '566 patent, and that	16:27:16
11	is Exhibit 9.	16:27:26
12	A That's the -- that's the patent where	16:27:30
13	Oliver Haberlen was part of. He was the -- the	16:27:36
14	GaN expert.	16:27:44
15	Q So you had patents with figures that are	16:27:46
16	similar to the one on -- in front of you?	16:27:48
17	MR. STEENBURG: Objection, vague.	16:27:58
18	A I can't really judge that because I don't	16:28:08
19	really know what it's -- what exactly it's about	16:28:10
20	here.	16:28:15
21	Q Do you see the HT1 indicator?	16:28:16
22	A Yes, I see it.	16:28:25

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[REDACTED]

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Conducted on February 12, 2025

143

1	Q Do you see that that represents a	16:28:26
2	high-side transistor?	16:28:29
3	A Yes. I see the -- the labeling or the	16:28:35
4	writing.	16:28:39
5	Q Do you see the source, gate and drain	16:28:40
6	electrodes?	16:28:43
7	A Yes. It's labeled on the -- on the top of	16:28:51
8	the build element.	16:28:57
9	Q Do you see the TD1 identifier?	16:28:58
10	A Yes, I see it.	16:29:08
11	Q Do you see how that's identified as the	16:29:10
12	two-dimensional electron gas layer?	16:29:12
13	A Yes. I see the writing.	16:29:23
14	Q So what type of device is this?	16:29:25
15	MR. STEENBURG: Objection, vague, scope,	16:29:31
16	calls for expert testimony.	16:29:33
17	A From my feeling, I would say it's a --	16:29:40
18	it's a lateral building element, but I'm not a	16:30:04
19	device expert.	16:30:06
20	Q And just to confirm, lateral building	16:30:07
21	element means lateral device?	16:30:10
22	A Yep.	16:30:24

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[REDACTED]

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Conducted on February 12, 2025

144

1	Q I'm going to introduce another exhibit.	16:30:26
2	This will be Exhibit 14.	16:30:32
3	(Marked for identification Exhibit 14,	16:30:34
4	Figure 12.)	16:30:35
5	Q Do you recognize this figure?	16:30:56
6	A No. I can't really tell like this.	16:31:02
7	Q Do you see the identifier 170 on here?	16:31:25
8	A Yes, I see it.	16:31:35
9	Q Do you see the source, gate and drain	16:31:37
10	electrodes on there?	16:31:43
11	A Yes, I see them.	16:31:51
12	Q Do you see identifier 40B?	16:31:53
13	A Yes, I see it.	16:32:06
14	Q Do you understand that 40B is the	16:32:07
15	semiconductor chip?	16:32:10
16	A It's labeled, yes.	16:32:20
17	Q And would this be a lateral device, as	16:32:22
18	well, from the packaging perspective?	16:32:31
19	MR. STEENBURG: Objection, scope,	16:32:37
20	foundation, calls for expert testimony.	16:32:43
21	A Has overall a very different structure	16:32:55
22	than a regular package. There is no lead frame	16:32:57

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

145

1	structure with die pads. There is a lead frame,	16:33:13
2	but only a support structure, so I can't really	16:33:16
3	assign this.	16:33:26
4	Q I'm going to introduce another exhibit.	16:33:49
5	This will be Exhibit 15.	16:34:00
6	(Marked for identification Exhibit 15,	16:34:02
7	figure page 7.)	16:34:04
8	Q Do you see this diagram?	16:34:35
9	A Yes, I have it in front of me.	16:34:40
10	Q Do you see that as -- identified as a	16:34:42
11	Group 3 nitride compound semiconductor transistor?	16:34:44
12	A I can recognize it because of the writing	16:34:58
13	on it, yes.	16:35:01
14	Q Do you see the arrow showing current flow?	16:35:02
15	A I see those arrows, yes.	16:35:13
16	Q Do you see how the current flow is equally	16:35:16
17	vertical and equally lateral?	16:35:20
18	MR. STEENBURG: Objection, assumes facts.	16:35:34
19	A Yes.	16:35:35
20	MR. STEENBURG: Document speaks for	16:35:36
21	itself.	16:35:38
22	Q What type of device is shown here?	16:35:40

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

146

1	MR. STEENBURG: Objection, scope, calls	16:35:47
2	for expert testimony.	16:35:49
3	A I can't really assign it like that.	16:35:55
4	Because like you said, the current flow and	16:36:08
5	lateral and vertical directions, the same.	16:36:10
6	Q Would that make it -- strike that.	16:36:17
7	Would that prevent you from defining this	16:36:23
8	as a lateral or vertical transistor?	16:36:27
9	MR. STEENBURG: Objection, scope, calls	16:36:35
10	for expert testimony.	16:36:36
11	A I lack the expertise, definitely.	16:36:41
12	Q But this shows you what the current flow	16:36:47
13	is. In previous testimony, that helps you	16:36:50
14	indicate whether it's a lateral or vertical	16:36:53
15	device, correct?	16:36:57
16	THE INTERPRETER: I want to ask him to	16:37:20
17	repeat a little bit of that.	16:37:20
18	A This could be an example that apart from	16:37:34
19	lateral or vertical, there are further	16:38:01
20	classifications of structures. Like I said, I'm	16:37:39
21	not the expert in that.	16:37:43
22	Q So you wouldn't be able to define this	16:37:48

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[REDACTED]

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Conducted on February 12, 2025

147

1	when the current flow is equally vertical and	16:37:50
2	equally lateral?	16:37:53
3	MR. STEENBURG: Objection, scope, calls	16:38:03
4	for expert testimony.	16:38:06
5	A I cannot assign that.	16:38:10
6	MR. AGGARWAL: If you give us five -- can	16:38:28
7	we go off the record, please?	16:38:30
8	THE VIDEOGRAPHER: We are going off the	16:38:32
9	record. The time on the monitor is 16:38.	16:38:33
10	(Off the record.)	16:38:39
11	THE VIDEOGRAPHER: We are back on the	16:46:27
12	record. The time on the monitor is 16:46.	16:46:28
13	MR. AGGARWAL: We are ready to pass the	16:46:34
14	witness. I do have additional comment after any	16:46:36
15	redirect, but we are ready to pass.	16:46:38
16	MR. STEENBURG: All right. I do have a	16:46:40
17	few questions following up on certain questions	16:46:43
18	asked before.	16:46:48
19	EXAMINATION	16:46:49
20	BY MR. STEENBURG:	16:46:49
21	[REDACTED]	16:46:50
22	[REDACTED]	16:46:52

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

148

1	[REDACTED]	16:46:58
2	[REDACTED]	16:47:08
3	[REDACTED]	16:47:32
4	[REDACTED]	16:47:33
5	[REDACTED]	16:47:33
6	[REDACTED]	16:47:38
7	[REDACTED]	16:47:44
8	[REDACTED]	16:47:47
9	Q Sir, for my initial questions, if you	16:47:48
10	could pull out Exhibits 4 and 8.	16:47:52
11	A Yes. I have them both in front of me.	16:48:23
12	Q Okay. And confirm, Exhibit 8 should be	16:48:26
13	the response to office action?	16:48:30
14	A Yes, I can confirm.	16:48:46
15	Q And then Exhibit 4 should be the Otremba	16:48:48
16	'284 publication?	16:48:54
17	A Yes.	16:49:02
18	Q If you could turn to page 9 of Exhibit 8.	16:49:03
19	A Yes.	16:49:17
20	Q You were asked some questions about the	16:49:20
21	first full paragraph on page 9, starting with the	16:49:25
22	words "in rejecting prior claim 1."	16:49:31

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

149

1	A	Yes.	16:49:52
2	Q	Do you recall that?	16:49:53
3	A	Not verbatim, but yes.	16:49:54
4	Q	Do you recall you were asked some	16:50:05
5		questions about whether this paragraph says	16:50:07
6		anything about current flow?	16:50:10
7	A	Yes.	16:50:29
8	Q	And let me read you what -- what was taken	16:50:30
9		down as a portion of your response from -- from	16:50:38
10		approximately page 76 of the rough transcript.	16:50:48
11		And I -- what we have is: I can't confirm	16:50:58
12		it's like that right now because I don't know what	16:51:02
13		the reference of this paragraph is directly or to.	16:51:14
14		Do you see the reference in that	16:51:22
15		paragraph to paragraph 15 of Otremba '284?	16:51:39
16	A	Paragraph 15?	16:52:06
17	Q	Yeah, the sentence beginning: Further,	16:52:09
18		paragraph 15 describes the vertical structure of	16:52:11
19		the semiconductor chips taught by Otremba '284?	16:52:18
20	A	Yes.	16:52:38
21	Q	If you could turn now to Exhibit 4. And	16:52:39
22		if you could turn to page 1 after the figures. If	16:52:48

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

150

1	you could read to yourself the entirety of	16:53:01
2	paragraph 15 of Otremba '284.	16:53:04
3	THE WITNESS: Okay.	16:53:21
4	A Okay.	16:53:21
5	THE WITNESS: I read it (in English).	16:55:00
6	A All right, I read it.	16:55:02
7	Q Does paragraph 15 of Otremba '284 say	16:55:04
8	something about current flow and the direction of	16:55:08
9	current flow?	16:55:12
10	THE INTERPRETER: The interpreter has a	16:55:25
11	question. It says here -- does it say something	16:55:28
12	about current flow in the direction of current	16:55:29
13	flow? Is that what you said?	16:55:31
14	MR. STEENBURG: I said current flow and	16:55:33
15	the direction of current flow.	16:55:34
16	THE INTERPRETER: Thank you.	16:55:47
17	A Yes.	16:55:47
18	THE WITNESS: That electrical currents can	16:55:49
19	flow in a direction perpendicular to the main	16:55:51
20	surface of the semiconductor chip (in English).	16:55:55
21	Q Let me read it. That's the sentence	16:56:05
22	beginning: In one embodiment semiconductor chips	16:56:06

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

151

1	having a vertical structure?	16:56:10
2	A Yes, exactly.	16:56:20
3	Q May be involved, that is to say, the	16:56:21
4	semiconductor chips may be fabricated?	16:56:29
5	A Yes.	16:56:44
6	Q In such a way that electric currents can	16:56:45
7	flow in a direction perpendicular to the main	16:56:49
8	surface of the semiconductor chips?	16:56:52
9	A Yes.	16:56:58
10	Q You can put Exhibits 4 and 8 aside.	16:57:14
11	If you could pull back up the '481 patent?	16:57:24
12	A Yes, I have it in front of me.	16:57:43
13	Q I know -- if I recall, you said several	16:57:45
14	times that you're not a device expert; is that	16:57:52
15	correct?	16:57:57
16	A Yes, correct.	16:57:57
17	Q I will -- let me describe two different	16:58:06
18	possible ways of characterizing the '481 patent.	16:58:21
19	And once I do that, if could you tell me	16:58:37
20	either if -- if one of the two descriptions is	16:58:42
21	more accurate than the other or if neither one is	16:58:47
22	very accurate.	16:58:50

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

152

1	A	Okay.	16:59:09
2	Q	So would you on the one -- you know, if --	16:59:10
3		if person 1 described the '481 patent as a patent	16:59:19
4		on a lateral transistor, and if person 2 described	16:59:27
5		the '481 patent as a patent on how to package a	16:59:46
6		lateral transistor, would you say that one of	16:59:54
7		those two descriptions is better than the other?	17:00:14
8	A	For me, description 2 would be more	17:00:26
9		fitting.	17:00:29
10	Q	That is the '481 patent is a patent on how	17:00:29
11		to package a lateral transistor?	17:00:35
12	A	Yes.	17:00:47
13	Q	If you could turn to column 15 of the '481	17:00:48
14		patent.	17:00:54
15		Do you recall earlier today you were asked	17:01:08
16		some questions concerning the reference to a third	17:01:13
17		lead as coupled?	17:01:21
18	THE INTERPRETER:	Can you repeat that last	17:01:43
19		thing? Third lead coupled as what?	17:01:45
20	MR. STEENBURG:	Third lead as coupled to	17:01:46
21		these compound semiconductor transistor device.	17:01:47
22	A	Yes.	17:01:58

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[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

153

1	Q And provide the source-sensing	17:01:58
2	functionality?	17:02:02
3	A Yes.	17:02:08
4	Q I want to talk about that phrase, "coupled	17:02:09
5	to." If you could turn to column 3 of the '481	17:02:11
6	patent.	17:02:25
7	A Yes, I have it in front of me.	17:02:34
8	Q And if you can read to yourself the	17:02:36
9	paragraph that starts on line 34 of column 3 and	17:02:39
10	ends on line 40 of column 3.	17:02:43
11	A Okay, yes.	17:03:21
12	Q Is it accurate to understand that	17:03:22
13	paragraph is saying that --	17:03:26
14	(Indiscernible crosstalk.)	17:03:33
15	THE INTERPRETER: Sorry. Go ahead.	17:03:34
16	MR. STEENBURG: I'm sorry. Go ahead and	17:03:35
17	translate.	17:03:37
18	Q That if there's a reference in the patent	17:03:44
19	to coupled to -- actually, strike that.	17:03:47
20	Is it accurate to understand that	17:03:56
21	paragraph first is saying that if there's a	17:03:58
22	reference in the patent to one element being	17:04:02

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

154

1	coupled to another element?	17:04:04
2	THE WITNESS: Yes.	17:04:11
3	MR. AGGARWAL: Objection to scope.	17:04:22
4	Q Well, let me back up for a second.	17:04:27
5	Is it your understanding that under the	17:04:49
6	explanation of the phrase "coupled to" in this	17:04:56
7	paragraph, that if there is a reference to element	17:05:00
8	A being coupled to element B, that encompasses	17:05:18
9	scenarios in which element A is directly coupled	17:05:36
10	to element B?	17:05:40
11	MR. AGGARWAL: Objection, scope.	17:05:49
12	Q And also encompasses scenarios in which	17:05:50
13	intervening element C is between element A and	17:05:56
14	element B?	17:06:01
15	MR. AGGARWAL: Objection, scope, compound.	17:06:14
16	A I haven't really understood your question.	17:06:31
17	Q Do you understand this paragraph on column	17:06:34
18	3 as drawing a distinction between the phrases	17:06:42
19	"coupled to" and "directly coupled to"?	17:06:47
20	MR. AGGARWAL: Objection, scope.	17:07:13
21	A My understanding would be that directly	17:07:29
22	coupled to means it's a direct connection and	17:07:32

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

155

1	coupled to could mean that there might be an	17:07:35
2	intertwining or connecting element in between	17:07:37
3	them.	17:07:40
4	Q If we turn back to claim 1 of the patent.	17:07:41
5	A Yes, I have it in front of me.	17:07:55
6	Q And we look back to that line 61. The	17:07:57
7	reference to the third lead being, quote, coupled	17:08:06
8	to the compound semiconductor transistor device.	17:08:09
9	A Yes.	17:08:23
10	Q Based on the understanding you just	17:08:24
11	mentioned, would you understand that language as	17:08:26
12	meaning that the third lead could be coupled to	17:08:30
13	the compound semiconductor device --	17:08:37
14	MR. AGGARWAL: Objection.	17:08:49
15	Q -- even if there is a connecting element	17:09:01
16	between the two?	17:09:04
17	MR. AGGARWAL: Objection, scope.	17:09:10
18	A Yes, that is my understanding, yes.	17:09:15
19	Q At the beginning of the deposition,	17:09:18
20	counsel for Innoscience noted a number of topics	17:09:40
21	on which you had been designated to speak on	17:09:45
22	Infineon's behalf.	17:09:53

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

156

1	Do you recall that?	17:09:49
2	A Not designated, so... I have to admit I	17:10:18
3	don't really know what you mean with that.	17:10:27
4	Q Do you recall, though, there were a number	17:10:30
5	of topics that counsel referred you to at the	17:10:32
6	beginning?	17:10:38
7	THE WITNESS: Um-hmm.	17:10:41
8	Q For example, topic 9, starting: The	17:10:51
9	conception of the subject matter claimed in each	17:10:54
10	asserted claim of the asserted patents.	17:10:56
11	A I didn't understand that.	17:11:27
12	THE INTERPRETER: Can we rephrase that?	17:11:31
13	The interpreter is asking to rephrase.	17:11:31
14	Q Sure. If you could pull up Exhibit 1.	17:11:35
15	I'm sorry, exhibit -- no, it's Exhibit 1. If you	17:11:47
16	could turn to page 6.	17:12:02
17	A Yes.	17:12:07
18	Q Do you see a reference to topic 9,	17:12:08
19	beginning: The conception of the subject matter	17:12:16
20	claimed in each asserted claim?	17:12:18
21	A Yes, I see it.	17:12:27
22	Q Were you prepared today to testify	17:12:28

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

157

1 concerning the conception of the claim 1 of the
2 '481 patent?

17:12:32

17:12:38

3 A Yes.

17:12:53

4 MR. STEENBURG: I have no further
5 questions at this time, subject to any redirect.

17:13:07

17:13:09

6 MR. AGGARWAL: I just have one question.

17:13:13

7 RE-EXAMINATION

17:13:16

8 BY MR. AGGARWAL:

17:13:16

9 Q Can we go to Exhibit -- '284 application.

17:13:16

10 A Yes, I have it in front of me.

17:13:32

11 Q And just for the record, this is
12 Exhibit 4.

17:13:36

17:13:38

13 In paragraph 15, that you just recently
14 reviewed, do you see where it says "vertical
15 structure"?

17:13:38

17:13:42

17:13:46

16 A Yes, vertical structure.

17:14:08

17 (Indiscernible crosstalk.)

17:14:11

18 Q Does that mean vertical device?

17:14:11

19 A Yes, in this content, it means vertical
20 device.

17:14:17

17:14:26

21 MR. AGGARWAL: Thanks, that's all I had.

17:14:27

22 And we did want to just mention that we

17:14:32

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Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

158

1 want to keep this deposition open in light of 17:14:34
2 Infineon's late document production yesterday and 17:14:38
3 any supplementations they're going to make for 17:14:40
4 their contentions or any other discovery responses 17:14:42
5 based on those documents. 17:14:44

6 So we are going to keep this deposition 17:14:45
7 open. 17:14:47

8 MR. STEENBURG: Well, we can obviously 17:15:14
9 disagree about that. There were four documents 17:15:15
10 produced yesterday and numerous other documents 17:15:18
11 produced long before that. 17:15:20

12 THE VIDEOGRAPHER: And can I get orders 17:15:41
13 for anybody? 17:15:44

14 MR. STEENBURG: I think we have a standing 17:15:45
15 order. 17:15:47

16 MR. AGGARWAL: Yeah. Thank you. 17:15:47

17 THE VIDEOGRAPHER: This marks the end of 17:15:50
18 the deposition of Mr. Otremba. We are going off 17:15:56
19 the record at 17:15. 17:15:59

20 (Deposition concluded at 5:15 p.m. EST.

21 Signature of the witness was not
22 requested.)

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Conducted on February 12, 2025

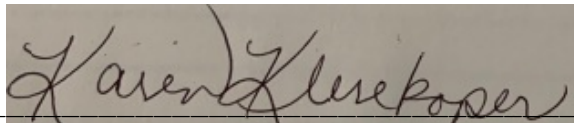
159

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outcome.

IN WITNESS WHEREOF, I have hereunto set my hand
and affixed my notarial seal this 13th day of
February 2025.

MY COMMISSION EXPIRES: December 4, 2031



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A			
a-p	91:19, 92:13,	87:11, 87:13,	31:5, 32:5,
67:19	93:12, 94:21,	88:6, 105:16,	147:14, 149:22
a-p-e-c	95:1, 95:4,	126:17, 128:2,	again
68:1	105:8, 105:11,	129:10, 153:19	11:1, 14:16,
al	107:3, 110:6,	additional	32:10, 65:3,
4:17, 4:18,	111:12, 118:5,	56:12, 60:21,	67:20, 80:14,
15:21, 15:22,	118:6, 119:11,	61:2, 98:7,	87:12, 101:17,
16:1, 16:2,	122:2, 124:3,	106:10, 147:14	110:22, 118:6,
16:3, 16:4,	124:5, 124:15,	address	118:7, 119:3,
16:5, 16:6,	126:1, 128:22,	8:11	119:9, 120:7,
16:7, 55:2,	137:14, 140:18,	adjusted	120:20, 123:4,
75:2, 80:14	142:19, 148:20,	86:7, 87:1,	124:14, 124:17,
ability	149:5, 149:6,	87:6, 113:15	132:20, 132:21
14:4	150:8, 150:12,	adjusting	against
able	153:4, 158:9	113:14	88:6, 88:7,
7:10, 28:12,	above	adjustment	89:8
32:2, 37:6,	79:10	5:3, 78:22,	aggarawal
110:19, 146:22	absolutely	79:7, 87:10,	6:16
about	125:14, 126:6,	88:8, 127:10	aggarwal
13:7, 13:17,	126:7	admit	3:3, 4:6, 4:8,
16:18, 18:2,	accent	156:2	6:16, 8:5, 10:7,
18:14, 23:3,	9:20	advanced	10:13, 11:3,
23:10, 25:16,	according	23:11	11:21, 13:3,
26:13, 27:20,	90:20, 128:17	advantage	15:6, 21:7,
28:2, 30:12,	account	24:12, 60:12,	32:11, 33:6,
34:18, 36:5,	49:18	62:14, 62:19,	38:17, 38:20,
41:4, 41:7,	accurate	130:22, 135:9,	38:22, 39:2,
41:10, 42:5,	10:12, 151:21,	136:6	40:15, 40:19,
43:1, 44:3,	151:22, 153:12,	advantageous	41:3, 41:20,
44:5, 45:18,	153:20	46:6, 48:10,	42:4, 45:9,
48:14, 48:15,	acknowledge	51:6, 51:8,	70:2, 70:10,
50:5, 50:17,	81:12	51:20, 58:17,	75:6, 78:7,
52:14, 54:11,	acquired	66:3, 66:9,	78:14, 99:1,
54:12, 57:13,	40:4, 140:7	73:16, 77:6,	99:8, 101:18,
57:19, 59:20,	across	78:5, 83:15,	102:2, 115:21,
64:2, 64:11,	95:9	84:3, 84:7,	116:4, 117:4,
64:17, 65:1,	action	106:8, 113:21,	121:1, 121:14,
65:7, 67:9,	5:6, 85:8,	119:20, 119:21,	131:21, 136:21,
68:17, 68:21,	86:11, 87:15,	130:1, 130:16,	137:4, 137:6,
69:3, 72:8,	148:13	130:20, 130:22,	147:6, 147:13,
72:16, 74:17,	acts	136:9	154:3, 154:11,
75:3, 78:15,	25:3	advantages	154:15, 154:20,
81:10, 82:1,	actually	135:8	155:14, 155:17,
86:17, 88:4,	21:2, 28:9,	aec	157:6, 157:8,
90:6, 90:9,	28:10, 32:14,	68:17, 68:19	157:21, 158:16
91:2, 91:17,	34:2, 35:11,	affixed	ago
	41:16, 44:5,	159:15	24:4, 30:2,
	60:10, 74:3,	after	54:7, 54:9,
		23:4, 23:6,	

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

161

63:18, 65:9,
68:17
agree
72:21, 73:2,
83:7, 83:9,
83:10, 85:19,
91:4, 91:21,
97:3, 107:16,
107:21, 123:21,
139:15
agreed
7:7
ah
51:1
ahead
102:22, 153:15,
153:16
all
10:11, 11:4,
21:20, 26:2,
26:21, 34:18,
39:10, 43:10,
44:21, 64:7,
66:11, 90:1,
95:5, 95:6,
109:5, 120:21,
122:15, 122:17,
128:5, 128:14,
134:4, 134:6,
141:9, 147:16,
150:6, 157:21
along
52:20
already
59:15, 67:10,
82:10, 83:17,
83:18, 85:3
also
3:18, 8:22,
9:12, 13:4,
17:5, 19:15,
20:5, 22:8,
24:5, 24:9,
24:15, 25:6,
27:14, 28:7,
28:14, 30:3,
31:18, 33:21,
42:18, 45:2,

46:18, 48:8,
48:16, 50:10,
50:12, 50:16,
51:18, 53:1,
54:14, 54:19,
56:18, 57:2,
59:7, 60:6,
63:21, 64:4,
65:1, 66:5,
66:7, 73:11,
75:11, 77:8,
77:21, 79:4,
83:14, 83:18,
85:13, 89:1,
90:12, 94:17,
94:18, 95:3,
95:10, 96:5,
97:13, 100:12,
100:13, 100:15,
101:1, 102:18,
106:22, 107:21,
108:20, 109:8,
111:17, 118:21,
119:3, 141:12,
154:12
alternatives
77:3
although
141:5
aluminum
104:13, 107:22,
108:13
always
91:14, 111:20,
120:16
amended
88:11
amending
33:6
amendments
86:16, 87:8,
89:2
analysis
86:18, 86:20
analyze
32:17, 33:1,
34:1

announce
30:4
another
25:13, 74:21,
80:7, 115:7,
131:2, 139:21,
141:14, 144:1,
145:4, 154:1
answer
7:14, 11:8,
11:9, 26:15,
28:12, 29:5,
40:9, 72:20,
87:2, 88:13
answered
117:3, 137:20,
139:2
any
10:17, 14:2,
15:10, 18:8,
18:11, 19:11,
19:16, 20:20,
21:3, 22:10,
29:6, 29:12,
36:3, 37:18,
38:4, 39:8,
40:11, 43:22,
46:16, 48:6,
54:17, 68:2,
68:15, 69:5,
69:12, 76:19,
77:3, 82:12,
82:18, 104:9,
115:13, 131:15,
147:14, 157:5,
158:3, 158:4,
159:11
anybody
158:13
anymore
47:8, 47:13,
54:6, 114:10,
127:11, 127:16
anyone
14:11, 23:19,
31:5, 31:10,
31:22, 41:4,
66:21, 67:1,

67:12
anything
18:4, 24:14,
39:19, 41:16,
60:19, 74:17,
82:1, 91:17,
91:19, 92:13,
92:18, 93:1,
93:12, 100:9,
119:11, 149:6
anywhere
111:13, 111:16,
124:20
apart
146:18
apec
67:18, 67:22
apologies
26:1, 35:12
applicable
20:17
applicant
79:15, 96:20,
98:1
application
31:16, 31:21,
32:5, 32:16,
32:20, 33:2,
33:13, 35:1,
35:2, 42:19,
44:6, 46:12,
46:13, 46:14,
48:13, 48:21,
49:2, 56:7,
74:4, 75:11,
82:21, 83:5,
83:15, 83:22,
84:4, 89:12,
157:9
**application-spec-
ific**
74:1, 74:2
applications
34:5, 69:4,
73:16, 81:3,
85:3, 88:2
applied
68:4, 85:4

apply
66:17
approximately
149:10
area
35:5, 53:6,
61:19, 120:9,
122:18
areas
23:17, 36:7,
36:9, 36:13,
73:13, 102:15,
121:17, 122:3,
122:11, 135:16,
138:3
arguments
89:8, 89:9
arose
50:12
around
44:4, 112:4
arrange
113:19, 113:21,
135:11
arranged
29:10, 94:19,
122:17, 126:15,
133:7, 133:8
arrangement
93:9, 93:21,
94:2, 94:4,
97:6, 106:9,
111:21, 112:19,
116:11, 119:9,
123:7, 133:5,
135:20, 136:1,
136:5, 136:8
arrangements
130:1
arrow
110:15, 145:14
arrows
110:10, 145:15
art
32:7, 32:11,
32:12, 32:18,
46:16, 47:6
articles
48:19

aside
9:15, 151:10
asked
25:11, 26:7,
26:14, 65:20,
130:18, 137:20,
139:2, 147:18,
148:20, 149:4,
152:15
asking
9:22, 156:13
asks
13:1, 14:17,
33:4, 112:16
aspects
56:12, 138:2
asserted
156:10, 156:20
assess
108:8, 134:21
assessment
83:13, 90:5,
97:13
assign
39:3, 40:3,
134:12, 138:5,
138:10, 138:18,
141:22, 145:3,
146:3, 147:5
assignment
5:5, 80:10,
81:2
assume
94:22
assumes
89:4, 116:15,
126:16, 145:18
atlantic
2:6, 3:15, 6:12
attached
4:13
attend
68:7
attention
114:7
attorney
80:1, 80:3
attorneys
10:9

attractive
74:10
austria
38:3, 38:7
authors
131:15
automotive
68:21, 69:3
available
13:12
avenue
2:6, 3:7, 3:15,
6:12
award
77:2
awards
76:19, 76:21
aware
40:4, 82:18
B
b
5:4, 79:1
b2
4:16, 5:7, 5:8,
15:19, 15:20,
45:12, 105:21,
115:10
back
30:3, 41:1,
42:2, 59:1,
63:13, 64:20,
70:8, 78:12,
83:13, 92:9,
96:20, 97:15,
99:6, 101:22,
111:2, 114:13,
119:15, 121:12,
121:15, 128:10,
137:6, 137:8,
147:11, 151:11,
154:4, 155:4,
155:6
back-and-forth
137:16
background
13:22, 18:15,
113:20

ballpark
37:6
based
29:20, 39:3,
73:7, 92:1,
95:22, 97:11,
114:5, 117:21,
127:7, 155:10,
158:5
basic
46:8, 59:14,
59:17
basically
22:5, 30:6,
49:3, 50:12,
53:5, 73:17,
77:7, 77:21,
82:10, 98:9,
101:10
basis
9:7, 128:4
because
10:10, 17:9,
17:20, 20:5,
45:2, 58:17,
59:13, 59:14,
60:5, 60:21,
83:16, 84:2,
84:3, 84:18,
85:2, 86:22,
87:1, 90:2,
91:7, 92:3,
96:6, 101:9,
107:1, 110:10,
112:12, 113:2,
114:7, 124:17,
133:14, 135:7,
142:18, 145:12,
146:4, 149:12
become
82:12, 82:18
been
7:12, 7:16,
8:2, 11:5, 12:4,
12:7, 15:13,
21:21, 21:22,
34:6, 45:21,
57:11, 64:5,

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
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163

67:11, 68:16,
75:3, 87:1,
87:6, 87:10,
140:17, 155:21
before
2:12, 11:5,
11:16, 12:2,
12:19, 18:2,
18:22, 19:2,
26:8, 41:16,
43:19, 45:13,
48:13, 48:21,
49:1, 57:22,
59:15, 76:16,
83:18, 84:1,
88:14, 97:2,
99:19, 104:20,
107:13, 114:4,
131:8, 140:5,
147:18, 147:21,
158:11, 159:3
beforehand
22:4, 49:4
beginning
47:11, 149:17,
150:22, 155:19,
156:6, 156:19
begins
6:2
behalf
3:2, 3:11,
13:4, 155:22
behavior
64:15
being
31:13, 45:8,
54:16, 88:7,
91:13, 93:11,
153:22, 154:8,
155:7
belongs
80:13
below
28:7
benefits
24:11
beside
18:7

besides
18:5, 37:19,
102:8, 138:12
best
33:5, 35:12
better
25:20, 33:7,
152:7
between
51:22, 52:6,
70:19, 72:10,
91:22, 100:22,
111:19, 113:4,
113:6, 139:13,
154:13, 154:18,
155:2, 155:16
big
15:7, 60:5,
73:12
biggest
24:12
binder
18:5, 18:7,
18:12
bit
24:22, 26:5,
72:19, 85:14,
96:3, 146:17
block
14:4
board
77:22
body
59:4
bond
48:11, 61:2,
61:16, 61:19,
62:1, 62:22,
63:3, 63:8,
66:19, 72:13,
108:18, 120:13,
120:16, 122:4,
122:7, 130:16,
130:20
bonding
130:3
booths
69:6

born
22:5
boston
1:17, 2:7,
3:16, 6:12
both
10:8, 10:9,
42:9, 57:10,
65:12, 66:13,
66:19, 76:16,
84:15, 84:18,
85:3, 85:4,
98:20, 99:10,
100:15, 134:11,
134:22, 136:15,
138:2, 138:3,
138:5, 148:11
bottom
79:14, 89:14,
94:8, 101:13,
108:16, 113:8,
113:13, 132:11,
133:8
break
10:20, 10:21,
40:15, 41:5,
75:5, 78:8,
78:17, 96:3,
121:2
bring
18:4
broken
69:22
brought
18:8, 89:11
buffer
109:3
build
24:15, 84:8,
113:22, 143:8
building
13:18, 14:3,
17:4, 17:6,
17:14, 17:16,
17:21, 24:8,
24:15, 25:3,
47:17, 47:20,
48:17, 51:13,

53:6, 53:7,
55:7, 59:7,
60:15, 66:14,
83:16, 94:6,
95:1, 95:4,
95:19, 98:7,
98:15, 100:15,
101:11, 102:18,
110:22, 120:1,
124:8, 126:19,
130:15, 143:18,
143:20
built
48:9
[REDACTED]

C

call
21:18, 138:6,
138:21
called
31:2, 53:19,
62:15
calls
113:11, 114:19,
132:19, 133:16,
134:7, 134:20,
135:4, 139:1,
143:16, 144:20,
146:1, 146:9,
147:3
can't
16:21, 26:21,
28:14, 28:15,
28:20, 29:5,
29:16, 29:21,
30:15, 31:3,
36:6, 36:12,
37:4, 37:10,
38:5, 39:3,
39:6, 39:19,
40:9, 46:22,
54:1, 61:1,
68:2, 69:7,
69:13, 72:19,
74:6, 74:16,
82:1, 82:2,

87:20, 88:4,
92:2, 105:11,
105:15, 108:2,
108:5, 108:8,
112:10, 113:12,
113:18, 114:11,
114:13, 123:6,
123:17, 124:10,
124:20, 125:2,
127:19, 128:21,
129:4, 129:9,
131:9, 133:9,
134:9, 134:12,
134:21, 135:19,
137:22, 138:5,
138:9, 138:10,
138:18, 138:19,
139:4, 139:12,
141:22, 142:18,
144:6, 145:2,
146:3, 149:11
candor
128:1, 128:3
cannot
10:17, 40:3,
87:7, 87:20,
118:15, 137:21,
140:6, 147:5
capable
9:6, 104:11,
130:10
capacitors
22:16
capacity
1:16, 12:22,
13:2, 13:5,
22:9, 22:13,
135:17
caption
132:12, 139:5
carbide
25:4, 35:7,
53:8, 73:12,
98:14, 126:19,
126:22, 127:3
career
23:15
carry
56:13

case
6:7, 17:17,
44:15, 88:5,
91:14, 91:16,
93:15, 94:18,
94:20, 98:15,
100:14, 122:17,
133:7, 159:11
cases
100:11, 100:13,
109:17
cass
48:15, 48:16,
106:9, 108:7
categories
139:20
category
35:17, 68:2
cause
60:6
[REDACTED]
centrally
30:8
cert
93:10
certain
1:5, 6:4, 12:5,
23:16, 23:17,
27:8, 27:10,
147:17, 147:22
certainty
93:10
certificate
159:2
certify
159:5
challenges
24:18
change
113:9, 114:6,
115:5, 120:20,
120:22
changed
23:13, 41:15
changing
33:1

characteristics
45:7
characterized
26:17, 27:12,
45:5
characterizing
151:18
charles
3:13
charlie
6:19
check
3:21, 7:1,
15:2, 15:9,
32:19, 33:8
chip
27:3, 35:1,
35:2, 36:18,
43:7, 43:9,
46:7, 60:22,
61:17, 61:19,
64:12, 64:13,
65:11, 70:19,
71:1, 75:18,
84:6, 84:18,
98:22, 99:16,
101:10, 101:15,
102:3, 103:21,
104:1, 104:20,
105:1, 108:7,
110:20, 112:1,
112:2, 113:1,
113:3, 114:3,
120:2, 122:4,
123:4, 130:22,
144:15, 150:20
chips
60:21, 98:9,
99:12, 110:5,
149:19, 150:22,
151:4, 151:8
choose
62:11
chose
133:11, 134:11
[REDACTED]

circle
33:19
circuit
52:10, 55:22,
116:11, 118:17
circuits
74:9, 74:12
cited
140:3
claim
69:14, 69:17,
70:11, 70:21,
71:7, 71:12,
71:20, 87:8,
88:9, 89:2,
94:10, 94:12,
94:16, 94:21,
95:2, 95:3,
95:5, 95:21,
97:16, 97:18,
97:19, 98:4,
98:6, 98:11,
98:16, 100:1,
127:10, 148:22,
155:4, 156:10,
156:20, 157:1
claimed
31:10, 95:20,
156:9, 156:20
claims
33:1, 33:6,
33:9, 33:15,
33:17, 33:18,
33:19, 33:20,
33:22, 34:1,
56:15, 58:15,
86:16, 86:18,
86:20, 88:8,
88:11, 89:5,
94:17, 95:5,
95:12, 95:16,
95:18, 95:21,
99:18, 111:11,
127:15, 129:20
clarification
25:11, 65:20,
130:18
clarify
47:20, 51:10,

52:11, 56:20,	column	98:12, 98:13,	connect
77:18, 87:3,	97:16, 115:19,	98:17, 103:22,	62:13, 63:1
133:19, 136:17,	115:22, 116:5,	121:19, 121:20,	connected
137:17	118:18, 123:11,	121:21, 127:4,	75:21
class	125:18, 126:10,	145:11, 152:21,	connecting
53:6	126:11, 127:1,	154:15, 155:8,	155:2, 155:15
classes	128:10, 152:13,	155:13	connection
19:16, 20:11,	153:5, 153:9,	compounded	70:18, 72:10,
20:14, 20:20,	153:10, 154:17	98:13	85:21, 90:4,
20:22, 21:3	combination	comprehension	108:19, 154:22
classifications	21:16, 33:20,	9:18	connections
146:20	48:11, 65:12,	concept	72:13, 72:14,
clean	67:13, 134:16,	23:7, 53:1	120:4, 120:14,
59:21	138:5, 138:15,	conception	120:22
clear	138:18, 138:20,	156:9, 156:19,	consequence
45:2, 125:14,	139:3	157:1	101:13
137:4	combinations	concepts	consequences
clear-cut	20:5	66:15	58:21
45:1	come	concerning	consistent
clips	11:1, 14:16,	152:16, 157:1	71:8, 71:13,
108:18	67:20	concluded	90:18
close	comes	158:20	construction
25:17, 75:4	88:6	concrete	51:8
closely	comment	35:15, 90:6	contact
119:14	147:14	concretely	58:19, 59:15,
closer	commission	105:1	59:18, 60:20,
20:19	1:1, 6:6,	conduct	60:22, 66:20,
code	159:18	46:16, 47:3	70:18, 71:1,
48:15, 81:14,	companies	conducted	75:20, 119:22,
106:9, 108:7	69:5, 69:12,	2:2, 47:7	121:17, 121:18,
codes	73:20, 74:3,	conducting	122:3, 130:14,
48:16	74:12	56:2	130:17, 130:20
coinventor	compared	conference	contacted
14:8, 52:15	13:13	68:5, 69:1,	120:13
coinventors	compiled	69:9	contacting
106:13, 109:8	33:20	conferences	46:7, 61:16
colleague	complainants	68:7, 68:14,	contacts
50:9, 52:18,	6:22	68:15	57:1, 57:3,
54:9, 58:12,	complaint		57:11, 57:20,
65:17, 125:5	3:2, 140:4		97:22, 120:10,
colleagues	completely		120:16
36:6, 53:10,	63:3, 126:9	confirm	contained
53:16, 53:19,	complex	59:17, 71:3,	87:22
64:5, 64:7,	60:16	74:18, 80:15,	containing
125:10, 125:12,	component	92:2, 94:16,	1:7, 6:5
125:15, 142:4	120:15	122:19, 143:20,	content
collegial	compound	148:12, 148:14,	84:16, 87:7,
52:21	69:18, 70:14,	149:11	106:3, 157:19

contentions	109:21, 113:1,	156:14, 156:16	crosstalk
158:4	113:17, 114:6,	couldn't	67:19, 98:8,
contents	115:17, 115:18,	99:13	116:1, 135:13,
140:19	115:20, 117:7,	counsel	153:14, 157:17
context	117:8, 117:10,	3:22, 6:14,	csr
94:22, 137:13,	117:11, 117:17,	7:8, 11:8,	1:22
137:15	117:22, 118:4,	78:16, 116:2,	currently
context-wise	122:21, 122:22,	131:20, 155:20,	35:5, 104:11
23:11	123:3, 123:22,	156:5, 159:10	currents
continued	124:3, 124:4,	countries	14:4, 150:18,
4:20, 5:1,	124:12, 124:22,	35:22, 37:18,	151:6
81:21	126:3, 126:4,	38:1	customer
continuous	126:15, 127:3,	country	71:16, 77:7
15:8	127:8, 128:20,	35:8	cut
contribute	129:18, 129:19,	couple	120:12
32:6, 55:19,	129:21, 129:22,	24:4, 37:12,	
63:17	130:4, 130:5,	53:10	D
contributed	132:18, 133:15,	coupled	
63:15	134:18, 136:15,	66:14, 69:18,	
contribution	137:11, 138:22,	70:14, 75:19,	dash
59:10	140:18, 146:15,	152:17, 152:19,	39:1
control	151:15, 151:16,	152:20, 153:4,	data
20:2	159:6	153:19, 154:1,	13:11, 13:15,
cooling	correction	154:6, 154:8,	13:16, 13:17,
24:8, 59:3	35:10	154:9, 154:19,	13:20, 13:22
coolmos	cost	154:22, 155:1,	date
35:20, 36:14,	60:7	155:7, 155:12	6:8, 76:17
36:22, 37:20,	costs	course	dates
39:9, 39:14,	60:18	20:4	13:13, 76:16
51:12	coughing	courses	david
core	127:10	19:12, 19:21,	3:20, 7:12
130:19	could	20:8, 20:16	day
correct	8:8, 9:17,	court	159:15
27:15, 51:16,	10:4, 20:15,	7:3, 25:11,	day-to-day
56:5, 56:16,	26:15, 28:9,	65:20, 130:18	9:7
56:21, 58:11,	28:11, 28:13,	create	dc
59:11, 61:21,	44:4, 60:20,	86:20, 108:19	3:8
63:10, 66:2,	72:1, 77:8,	created	deal
72:14, 76:17,	100:15, 104:15,	57:11, 62:14,	16:9
81:8, 81:19,	104:16, 135:9,	86:4	deactivate
81:20, 84:1,	135:11, 138:12,	creation	62:9, 62:10,
84:11, 90:12,	138:15, 142:4,	66:3	63:4
90:19, 95:7,	146:18, 148:10,	creepage	deal
95:13, 95:14,	148:18, 149:21,	135:14, 135:16	127:19
96:4, 99:16,	149:22, 150:1,	cross	dealing
99:17, 101:6,	151:11, 151:19,	124:10	87:13, 125:12
107:3, 107:9,	152:13, 153:5,	cross-section	deals
107:19, 108:1,	155:1, 155:12,	123:18	66:5, 124:12

dealt
89:10, 128:8
deanna
3:4, 6:18
december
159:18
declaration
5:5, 33:14,
47:4, 47:5,
49:5, 49:7,
49:8, 49:10,
49:13, 49:19,
80:10, 81:2,
81:6
declared
46:18, 47:1,
47:5
declaring
47:11
dedicated
19:19, 62:16,
62:17, 71:21
deduce
133:9
deduct
134:9
deeper
28:15, 28:17,
135:17
define
100:4, 100:5,
100:17, 102:16,
116:8, 116:13,
124:21, 128:13,
137:21, 146:22
defined
81:13, 95:11,
96:18, 109:5
defines
92:19, 124:6,
126:13, 127:6
defining
146:7
definitely
146:11
degree
93:10
delivery
51:7

demands
33:19, 74:10,
74:13
demonstrated
67:11
[REDACTED]
department
31:19, 53:12,
53:13, 53:18,
63:20
depend
9:18
depends
73:15, 88:6,
89:6, 112:1,
123:9
depicted
75:20, 75:21
depletion
110:7
depos
3:19, 6:11, 7:5
deposed
11:5
deposition
1:13, 2:1,
4:14, 4:15, 6:3,
6:11, 8:16,
9:21, 11:15,
12:17, 13:10,
14:7, 14:15,
14:19, 15:11,
16:11, 17:19,
18:9, 21:19,
78:16, 155:19,
158:1, 158:6,
158:18, 158:20
depth
125:3
describe
9:4, 9:10,
24:6, 24:11,
24:18, 30:5,
60:13, 93:7,
94:7, 95:22,
111:9, 118:21,
119:4, 151:17

described
51:8, 62:12,
77:4, 78:1,
78:3, 92:5,
93:11, 97:20,
109:7, 111:12,
112:13, 116:11,
117:11, 119:6,
119:13, 123:5,
126:20, 152:3,
152:4
describes
17:20, 70:18,
77:6, 78:4,
78:5, 92:14,
93:16, 96:13,
97:6, 111:6,
117:20, 119:7,
128:18, 149:18
describing
95:19, 104:12,
117:6, 125:3
description
30:6, 35:19,
67:15, 104:9,
124:7, 124:8,
130:21, 152:8
descriptions
151:20, 152:7
descriptive
33:21
design
81:3, 135:7
designate
148:1
designated
1:14, 7:14,
12:5, 12:7,
155:21, 156:2
detail
92:5, 104:12,
123:5
detailed
110:19
details
105:8, 105:11
determination
5:3, 78:22,

79:6, 112:22
determined
95:11
determines
31:15, 101:10,
112:3, 112:5,
114:21
determining
112:6, 113:3
developing
23:6
development
22:17, 22:21,
65:10
device
27:2, 27:7,
27:12, 28:8,
28:16, 29:4,
29:7, 29:11,
57:5, 57:8,
57:9, 61:12,
62:7, 63:9,
69:19, 70:15,
90:16, 91:3,
98:12, 98:17,
98:18, 98:20,
99:9, 109:21,
110:4, 110:9,
110:14, 116:20,
117:7, 117:9,
118:21, 119:4,
119:6, 119:7,
123:2, 123:8,
123:9, 123:14,
123:15, 123:22,
124:3, 124:4,
124:6, 124:9,
124:11, 124:13,
124:15, 124:22,
125:7, 125:11,
125:16, 126:13,
127:3, 127:7,
128:18, 129:16,
129:17, 129:20,
130:4, 130:8,
132:18, 133:4,
133:12, 133:14,
133:22, 136:18,

137:10, 137:17,	24:21, 25:3,	disable	distance
138:7, 138:8,	29:3, 32:18,	59:22, 62:6	135:14, 135:15
138:13, 138:16,	47:18, 50:5,	disadvantage	distinction
138:20, 138:21,	53:5, 53:6,	77:10	154:18
139:8, 139:11,	56:22, 57:1,	disadvantages	distribution
139:16, 141:1,	57:13, 57:16,	60:7, 60:13	84:7
141:3, 141:5,	57:21, 59:6,	disagree	docket
141:7, 141:8,	59:7, 66:8,	158:9	80:3, 80:15,
142:5, 143:14,	83:15, 84:2,	disclose	85:13, 85:16
143:19, 143:21,	84:11, 84:18,	30:4, 76:8,	doctor
144:17, 145:22,	99:12, 119:5,	81:12, 81:17	135:22
146:15, 151:14,	139:18, 139:20,	disclosed	document
152:21, 155:8,	144:21, 151:17	47:15, 51:4	11:13, 11:16,
155:13, 157:18,	differentiate	discloses	12:1, 12:3,
157:20	98:2, 100:22	51:11, 51:18	12:14, 12:18,
devices	differentiated	disclosing	45:13, 55:3,
1:6, 6:5, 25:5,	97:10	30:17, 47:12	75:8, 79:3,
25:8, 26:3,	differentiates	disclosure	79:5, 79:17,
26:9, 26:16,	91:22, 111:19	32:4, 49:17,	79:20, 80:1,
26:18, 26:19,	differently	77:1, 82:11	80:7, 80:12,
26:21, 48:8,	72:2, 101:7	disclosures	80:16, 80:17,
73:9, 73:21,	difficulty	54:15, 76:8	80:19, 80:22,
74:3, 74:14,	9:7	discoveries	81:1, 81:5,
128:13, 134:6,		30:22, 34:16	81:16, 85:10,
139:20, 140:11	diode	discovery	85:19, 86:4,
diagram	106:10	34:15, 49:8,	86:10, 86:12,
118:14, 145:8	direct	158:4	87:6, 89:21,
diagrams	72:10, 72:14,	discuss	105:22, 106:2,
57:15	154:22	50:10, 119:11,	106:6, 106:8,
dialect	directed	127:20	115:11, 131:8,
9:20	34:21, 41:8,	discussed	131:9, 140:3,
die	41:12, 42:7,	58:9, 71:8,	140:5, 140:14,
43:5, 44:13,	48:1, 48:3,	71:12, 90:10,	140:20, 145:20,
52:8, 58:19,	123:22	95:21, 101:4,	158:2
62:11, 62:13,	direction	102:20, 103:2,	documents
97:22, 116:18,	23:7, 27:18,	103:5, 103:20,	9:14, 13:14,
118:9, 118:10,	44:20, 45:8,	127:13, 129:18,	16:11, 16:12,
119:22, 122:21,	100:22, 126:1,	142:7	18:11, 83:3,
130:17, 130:21,	126:3, 150:8,	discusses	83:4, 85:17,
135:9, 145:1	150:12, 150:15,	124:21	158:5, 158:9,
difference	150:19, 151:7	discussing	158:10
51:22, 52:6,	directions	55:11, 90:7,	doing
97:12, 139:13	146:5	97:2	84:10
differences	directly	discussion	dominant
139:19	62:20, 92:4,	34:3, 147:22	100:6
different	149:13, 154:9,	discussions	dominating
18:1, 18:3,	154:19, 154:21	50:13, 86:7	44:20
19:1, 23:5,		displaying	done
		69:12	31:12, 32:20,

34:2, 36:9,
40:11, 67:5,
87:10, 88:8
doped
102:11, 102:13,
102:15, 108:21
dotted
141:10
double-check
129:3
double-checked
117:16
doubt
138:19
down
28:15, 28:17,
31:1, 81:10,
96:3, 149:9
dr
7:9
drafted
95:16
drain
97:20, 97:21,
108:12, 113:5,
113:7, 113:8,
113:12, 113:18,
114:16, 116:21,
120:4, 120:14,
132:11, 143:5,
144:9
drastically
52:10
drawing
107:20, 154:18
drawings
57:15, 110:21
drift
102:10
drip
126:14, 127:8,
128:15, 128:19,
128:22, 129:5,
129:7, 129:10,
129:13, 130:8,
130:11
driver
59:21

due
94:4
duly
7:12, 7:16, 8:2
duly-sworn
8:3
dunner
3:6
during
32:20, 33:2,
41:5, 47:6,
78:16, 114:8
duty
81:12, 81:17,
81:21, 127:13,
127:22, 128:1,
128:3

E

each
50:4, 84:17,
156:9, 156:20
earlier
67:13, 72:8,
90:11, 101:4,
109:15, 129:18,
140:18, 152:15
easy
20:18, 90:1
educational
18:15
effort
60:17
efforts
72:17
either
25:16, 105:15,
108:15, 138:6,
151:20
elaborate
105:11
electric
151:6
electrical
19:11, 19:15,
46:7, 64:22,
84:6, 150:18
electricity
13:19, 18:1,

114:21
electrode
52:9, 62:4,
72:11, 92:1,
93:14, 93:17,
96:1, 96:5,
96:6, 96:9,
96:10, 96:11,
96:18, 97:20,
97:21, 100:8,
100:9, 100:18,
103:15, 103:16,
104:20, 108:12,
112:13, 113:13,
114:12, 116:18,
116:20, 116:21,
117:21, 127:7
electrodes
91:8, 91:13,
93:9, 93:15,
93:18, 93:21,
94:2, 94:5,
94:7, 94:13,
94:14, 94:19,
95:6, 95:8,
96:8, 96:19,
100:12, 100:15,
101:5, 101:9,
101:12, 102:19,
103:12, 103:18,
104:17, 104:22,
107:22, 108:14,
111:21, 112:3,
112:6, 112:20,
112:21, 114:1,
114:3, 114:5,
114:9, 115:1,
119:10, 122:5,
122:15, 123:7,
124:19, 126:14,
128:14, 132:8,
133:6, 133:15,
133:20, 134:4,
135:20, 141:8,
143:6, 144:10
electron
27:13, 29:15,
102:6, 107:4,

109:18, 109:19,
114:13, 143:12
electronic
36:17
electronics
19:19, 20:4,
68:5
electrons
27:17, 28:1,
100:12
electrotechnical-ly
27:21, 28:2
element
17:7, 17:14,
17:16, 17:22,
51:13, 53:8,
55:7, 60:15,
66:14, 71:17,
83:16, 95:1,
95:4, 97:7,
98:7, 98:15,
100:15, 101:12,
102:18, 111:1,
120:1, 124:9,
126:19, 130:15,
136:16, 136:17,
137:10, 138:1,
138:7, 143:8,
143:18, 143:21,
153:22, 154:1,
154:7, 154:8,
154:9, 154:10,
154:13, 154:14,
155:2, 155:15
elements
13:18, 14:4,
17:5, 17:6,
24:9, 24:16,
25:3, 47:17,
47:21, 48:17,
53:7, 59:7,
60:2, 62:21,
62:22
else
14:11, 24:14,
31:14, 52:6,
53:9, 60:19,

67:1, 93:1,
111:16, 138:12
embedded
103:10
embodiment
150:22
employed
159:11
employees
23:20, 68:11
enable
57:11
enables
58:19
encompasses
154:8, 154:12
end
70:16, 102:16,
133:5, 158:17
ended
54:16
ends
153:10
engineer
18:16, 53:1
engineering
19:11, 23:8
english
7:13, 7:17,
9:1, 9:3, 9:4,
9:10, 9:14,
17:10, 20:8,
20:11, 20:13,
35:11, 36:19,
46:9, 53:22,
57:6, 59:5,
61:7, 62:16,
77:15, 79:7,
79:12, 80:4,
81:3, 88:15,
88:22, 90:2,
96:12, 101:17,
105:6, 117:2,
117:14, 118:9,
121:19, 135:15,
136:20, 140:16,
148:7, 150:5,
150:20

enhanced
52:10
enhancement
5:10, 59:8,
140:1, 140:16
enough
27:7, 28:8,
60:10
enter
30:22, 31:1,
32:2, 32:3
entire
16:21, 32:4,
65:11
entirety
150:1
entry
31:12
equally
145:16, 145:17,
147:1, 147:2
equivalent
129:10
erroneous
128:8
especially
51:6, 51:7,
51:20
esquire
3:3, 3:4, 3:13
est
1:19, 158:20
establish
84:15
established
114:4
estimate
37:3
etched
104:19, 105:4,
105:9, 105:14
etching
104:21, 105:8
evaluate
73:10
evaluated
30:9
evaluation
64:6

even
31:1, 68:17,
113:2, 115:4,
139:3, 155:15
ever
24:2, 28:16,
31:21, 32:16,
33:1, 82:12,
82:18, 99:22
every
10:21, 11:1
everybody
31:13
everything
16:19, 16:21
exact
68:22
exactly
18:6, 19:19,
56:13, 58:2,
58:20, 85:12,
88:14, 92:16,
105:15, 125:2,
142:19, 151:2
examination
4:6, 4:7, 8:4,
147:19
example
39:15, 102:5,
127:2, 127:4,
146:18, 156:8
examples
19:21, 35:13,
104:6
exceeds
103:13, 105:10
exchanged
50:4
excuse
83:7
execute
49:10
executed
58:5
executing
118:11
execution
32:1, 51:21,

58:18, 66:4,
66:9, 77:6,
78:5, 83:20,
84:3, 84:8,
119:20, 119:21,
119:22
executions
56:22, 57:16
exhibit
4:11, 4:14,
4:15, 4:16,
4:17, 4:18, 5:3,
5:5, 5:6, 5:7,
5:8, 5:9, 5:10,
5:11, 5:12,
5:13, 11:12,
11:13, 11:14,
12:15, 12:16,
45:10, 45:11,
54:21, 54:22,
55:1, 74:21,
74:22, 75:1,
78:19, 78:20,
78:21, 80:8,
80:9, 85:5,
85:6, 85:7,
85:20, 92:11,
96:21, 105:18,
105:19, 105:20,
115:7, 115:8,
115:9, 131:2,
131:5, 131:6,
139:21, 139:22,
140:2, 140:3,
141:14, 141:15,
141:16, 142:11,
144:1, 144:2,
144:3, 145:4,
145:5, 145:6,
148:12, 148:15,
148:18, 149:21,
156:14, 156:15,
157:9, 157:12
exhibits
4:13, 4:20,
5:1, 148:10,
151:10
existent
9:13

expansion
126:17, 126:18
experience
20:1, 88:1
expert
24:8, 27:7,
28:8, 31:18,
34:16, 34:17,
107:4, 113:11,
114:19, 127:20,
129:4, 129:16,
132:20, 132:21,
133:4, 133:6,
133:10, 133:14,
133:17, 133:21,
134:8, 134:20,
135:5, 137:19,
139:2, 141:6,
142:14, 143:16,
143:19, 144:20,
146:2, 146:10,
146:21, 147:4,
151:14
expertise
24:9, 27:9,
146:11
experts
34:3, 107:6,
127:21, 128:7
expires
159:18
explain
8:16, 22:13,
24:22, 33:16,
52:16, 70:20,
95:17, 98:6,
99:9, 99:11,
99:14, 103:6,
126:18
explainable
99:16
explained
112:8, 112:10
explains
126:2, 130:6,
130:7
explanation
154:6

explicitly
34:7, 94:6
expressing
9:6
F
[REDACTED]
fabricated
151:4
fact
124:2
factor
73:3
factors
113:3
facts
89:4, 116:16,
126:16, 145:18
fails
90:15
familiar
34:12, 38:13,
120:8, 140:7
far
30:2, 32:19,
44:2, 54:14,
63:19, 67:4,
82:2, 129:10,
130:11
farabow
3:5
fast
9:9, 9:19,
24:12
fault
137:3
february
1:18, 6:8,
159:16
federal
81:14
feeling
143:17
feldvoss
65:7
felt
90:12

few
136:11, 147:17
field
71:9, 71:10,
71:14, 72:4,
73:8
fifties
37:7
figure
5:11, 5:12,
5:13, 61:9,
72:8, 72:14,
76:2, 106:14,
106:18, 108:9,
108:11, 108:21,
109:6, 109:13,
110:1, 111:14,
111:17, 118:15,
119:17, 119:19,
121:15, 123:1,
132:3, 132:5,
132:12, 137:17,
139:5, 139:6,
139:15, 139:16,
140:22, 141:17,
141:18, 141:20,
142:7, 144:4,
144:5, 145:7
figures
118:13, 123:14,
124:7, 125:6,
125:16, 134:2,
142:1, 142:15,
149:22
file
14:21, 31:16
filed
48:13, 76:14
filing
32:6, 47:6,
67:5, 76:16
financial
76:22, 159:12
find
91:19, 128:22
fine
18:16
finnegan
3:5, 6:17

first
8:2, 11:12,
11:13, 22:18,
42:11, 42:19,
43:12, 44:6,
49:7, 80:22,
81:10, 83:2,
85:22, 87:21,
89:18, 90:14,
106:4, 114:1,
114:3, 117:6,
131:16, 148:21,
153:21
fit
127:16
fits
116:12, 118:16
fitting
152:9
five
19:6, 19:9,
121:3, 147:6
fix
121:5
flat
57:3
flip
108:7, 131:18,
132:1, 134:1
flow
13:19, 17:21,
18:2, 26:17,
26:20, 27:1,
27:5, 27:14,
27:15, 27:17,
27:18, 27:20,
28:21, 29:2,
43:6, 43:8,
44:15, 44:21,
45:6, 45:8,
46:8, 48:18,
51:14, 58:19,
91:12, 91:18,
91:20, 92:7,
92:14, 92:19,
93:13, 93:16,
94:1, 94:4,
94:9, 95:13,

95:14, 96:7,
98:5, 100:6,
100:18, 100:22,
101:3, 101:5,
101:6, 101:8,
109:18, 109:19,
110:11, 110:12,
110:17, 110:22,
111:7, 112:1,
112:5, 112:7,
113:4, 113:9,
113:17, 114:1,
114:4, 114:6,
114:14, 114:21,
120:2, 127:5,
128:19, 128:20,
129:1, 129:6,
130:12, 132:6,
132:14, 133:5,
134:12, 135:8,
137:14, 138:4,
145:14, 145:16,
146:4, 146:12,
147:1, 149:6,
150:8, 150:9,
150:12, 150:13,
150:14, 150:15,
150:19, 151:7
flowing
28:1
flows
113:6
focus
100:21, 124:18,
124:19, 129:22,
130:2
folks
30:18, 37:1,
37:11, 37:12,
37:18, 38:6,
38:10
following
4:20, 136:12,
147:17
follows
7:15, 7:18, 8:3
forcibly
91:15

foregoing
159:4, 159:5
forget
147:21
forgotten
53:21
form
58:6, 59:3,
112:15, 127:11
formal
29:22
format
36:18
forms
45:3
formulate
32:3
formulations
128:8, 128:9
found
106:19
foundation
89:3, 116:15,
141:21, 144:20
founded
22:1
four
66:7, 158:9
frame
44:4, 46:8,
144:22, 145:1
frequencies
60:9
front
18:7, 61:11,
69:16, 70:12,
75:16, 88:18,
89:16, 92:12,
93:6, 94:11,
97:17, 110:2,
119:16, 122:10,
123:12, 125:21,
126:12, 128:12,
140:21, 142:16,
145:9, 148:11,
151:12, 153:7,
155:5, 157:10
full
89:18, 148:21

function
66:22, 113:16
functionality
56:11, 56:16,
58:10, 58:16,
59:11, 59:19,
60:1, 60:4,
60:6, 61:13,
62:7, 63:5,
63:10, 63:12,
63:16, 64:8,
65:4, 66:2,
66:4, 66:6,
66:8, 66:11,
66:12, 66:13,
66:16, 67:2,
67:8, 69:20,
70:16, 70:21,
72:1, 76:9,
76:11, 77:4,
153:2
functioning
114:9
further
28:7, 61:1,
75:20, 146:19,
149:17, 157:4

G

gallium
13:18, 14:3,
17:4, 21:17,
102:7, 104:14,
107:7, 107:18,
107:22, 108:13,
109:11, 109:14
gan
5:10, 21:13,
21:15, 21:16,
21:18, 22:10,
23:22, 24:2,
24:5, 24:10,
24:11, 24:19,
25:3, 27:12,
40:5, 40:7,
40:10, 40:12,
48:17, 53:7,
73:9, 73:17,

73:20, 74:3,
74:10, 74:14,
102:7, 102:8,
103:20, 118:7,
140:1, 140:8,
140:10, 140:15,
142:14
garrett
3:5
gas
27:13, 29:15,
102:6, 107:4,
143:12
gate
59:21, 116:21,
122:1, 122:5,
143:5, 144:9
gave
24:4, 24:7,
69:10
geared
124:19
gehrung
3:21, 7:2, 7:16
general
20:3, 73:7,
73:8, 73:20,
73:22, 89:5
generally
17:2, 41:8,
72:3, 88:5,
126:2, 126:5
generate
34:15, 71:22,
136:5
generated
56:13
german
7:13, 7:17,
8:16, 8:20,
8:21, 16:8,
17:9, 33:8,
33:10
germany
██████████ 36:2,
36:14, 37:1,
37:19, 38:11
gestures
10:1

getting
59:20, 75:4
give
19:21, 27:9,
72:19, 104:6,
132:22, 147:6
given
88:1, 88:3,
147:22
glass
29:15
go
8:14, 10:2,
19:1, 63:13,
68:14, 70:2,
86:12, 92:9,
97:16, 99:1,
101:18, 102:22,
121:15, 123:11,
125:18, 126:10,
128:10, 135:21,
136:21, 137:6,
147:7, 153:15,
153:16, 157:9
goes
43:8, 43:11,
77:16, 95:9,
96:7, 96:14,
96:15, 110:17
going
11:12, 12:14,
34:8, 40:20,
41:21, 49:21,
54:22, 70:5,
71:16, 75:3,
78:9, 78:19,
85:5, 88:16,
89:14, 92:10,
99:3, 101:11,
102:17, 121:4,
131:2, 135:18,
136:2, 137:7,
141:14, 142:10,
144:1, 145:4,
147:8, 158:3,
158:6, 158:18
good
8:6, 26:2, 90:5

graduate
19:7, 19:12
grant
81:22
great
53:17
greenfield
2:5, 3:14, 6:20
ground
8:14, 48:11
group
84:17, 142:5,
145:11
gs
39:5, 39:16,
39:20
gs---1-1
38:13
gs---6-1
40:1
guys
40:16, 120:20,
137:7

H
haberlen
107:5, 109:9,
109:10, 142:13
half
121:6
halfway
81:10
hand
7:10, 10:1,
60:17, 159:14
happen
27:5, 36:3
happened
23:4
happening
27:14
happens
110:13
hard
90:3, 90:4,
132:22
harmful
105:13

head
34:8
header
86:14, 88:19
hear
11:21, 32:10
heard
11:19, 25:13
hearing
120:12
heart
39:11
held
88:7
help
46:11, 66:21,
67:1, 67:12
helped
16:20, 63:21,
64:13
helps
146:13
hemt
25:5, 25:8,
26:3, 26:9,
26:16, 26:18,
27:2, 29:3,
29:7, 29:20,
109:14, 109:15,
109:17, 111:17,
114:12, 140:16,
140:17
henderson
3:5
here
6:2, 6:18,
18:10, 25:3,
50:12, 55:14,
62:12, 92:8,
92:22, 94:6,
94:13, 94:22,
95:3, 95:15,
110:4, 111:7,
112:21, 117:1,
119:9, 119:12,
126:20, 141:12,
142:20, 144:7,
145:22, 150:11

hereby
159:4
hereunto
159:14
high
60:9, 93:10
**high-electrode-m-
obility**
111:18
high-electron
25:6
**high-electron-mo-
bility**
111:15
high-frequency
74:10, 74:13
high-side
143:2
high-voltage
35:5, 58:22,
110:7, 135:17
highly
102:11, 102:15
history
14:22
[REDACTED]
home
8:11
horizontal
138:3, 139:10,
139:13
hour
10:21, 11:3,
75:4
hours
19:18
housing
84:4, 84:5,
93:22
hosings
35:21
however
113:19
htl
142:21
hundred
37:9

hundreds	113:3, 128:6	individual	124:21, 125:12,
37:7	improvement	1:16, 128:4	133:1, 133:2,
hung	55:22, 56:6	individually	136:7, 137:21
137:3	improvements	31:13	innoscience
hypothetical	50:11, 56:7	individuals	3:2, 6:17,
113:11, 114:19,	impurities	87:14	155:20
125:9	102:11	infineon	inside
I	in-house	1:13, 3:11,	101:2, 123:10,
ics	3:22	6:20, 6:21, 7:1,	135:18
5:9, 131:7	include	13:4, 13:8,	install
idea	56:8, 56:9	13:12, 13:17,	60:9
27:8, 27:10,	included	21:21, 21:22,	installation
50:12, 138:14	111:15, 119:2	22:5, 22:18,	57:9
ideas	includes	24:3, 30:13,	installed
50:10, 50:11	46:6, 51:6,	30:16, 30:18,	99:12
identical	66:7, 75:19,	35:4, 40:4,	instance
130:11	106:8, 111:17,	40:7, 40:12,	38:3, 92:22
identification	118:11	68:11, 68:13,	instructs
11:14, 12:16,	including	72:21, 73:2,	11:8
45:11, 55:1,	116:20	84:21, 97:10,	integrated
75:1, 78:21,	incomplete	99:22, 140:3,	33:22, 105:16,
80:9, 85:7,	113:10, 114:18,	140:7, 140:10,	108:15
105:20, 115:9,	117:12, 117:13,	147:22	intense
131:6, 139:22,	117:16, 125:9	infineon's	56:1
141:16, 144:3,	incorporate	72:16, 155:22,	intensely
145:6	140:10	158:2	50:5
identified	incorrect	influences	interactions
61:20, 120:3,	134:17, 135:2,	101:8	24:20, 35:2,
143:11, 145:10	138:21	inform	35:3
identifier	increase	99:22	interest
143:9, 144:7,	59:8	information	159:12
144:12	independent	1:10, 31:6,	internal
identify	84:17	56:14, 81:12,	47:18, 60:15,
83:1, 121:16	independently	81:18, 82:12,	68:8, 68:10,
igbts	85:4	82:19, 148:1	101:13, 130:2
92:22, 93:2	index	informs	international
immediate	4:1	84:10	1:1, 6:6
70:22	indicate	initial	internet
impact	139:8, 146:14	67:16, 148:9	107:1, 120:20
101:6	indicated	inner	interpret
implies	110:11	101:9, 101:15,	7:13, 7:17,
96:6	indicates	102:3, 103:21,	79:9
important	132:17	112:2, 112:5,	interpretation
25:2, 72:22,	indicator	112:7, 113:2,	13:2
73:3, 93:22,	76:5, 142:21	113:14, 114:8,	interpreted
94:1, 96:5,	indirectly	114:20, 118:15,	35:10
109:8, 112:20,	93:14, 96:17,	123:19, 124:6,	interpreter
	116:17	124:11, 124:15,	3:20, 3:21,

7:2, 8:3, 10:5,
10:8, 10:14,
11:1, 11:18,
11:22, 13:1,
14:16, 14:17,
15:2, 15:9,
17:8, 17:12,
21:5, 21:8,
25:12, 25:21,
26:2, 32:9,
32:12, 33:3,
33:8, 33:10,
35:9, 36:16,
36:20, 38:15,
38:19, 38:21,
39:1, 41:14,
44:17, 57:4,
57:7, 61:3,
62:15, 67:20,
69:21, 70:4,
74:8, 77:12,
77:17, 79:8,
90:22, 96:2,
102:13, 102:22,
106:21, 106:22,
112:16, 116:2,
116:3, 116:6,
117:3, 117:5,
117:15, 117:16,
118:2, 120:7,
120:11, 120:19,
121:3, 129:2,
133:18, 136:2,
137:2, 137:5,
146:16, 150:10,
150:16, 152:18,
153:15, 156:12,
156:13
interpreters
7:5, 7:11
interruptions
15:8
intertwining
155:2
intervening
154:13
intro
5:10, 140:1

introduce
54:21, 74:21,
78:19, 105:18,
115:7, 131:2,
139:21, 141:14,
144:1, 145:4
introduction
140:15
inv
1:5
invent
42:11, 43:12
invented
42:14, 42:16,
42:18, 43:15
invention
30:7, 31:1,
31:10, 31:16,
32:2, 32:17,
47:5, 47:12,
47:15, 49:8,
49:17, 67:16,
82:11, 95:17,
107:5, 129:22,
130:19
inventions
30:1, 30:4,
30:18, 30:22,
54:11, 54:12
inventor
30:7, 32:21,
34:6, 46:2,
49:6, 55:8,
55:13, 55:16,
58:14, 75:13,
81:7, 81:8,
87:11, 106:11,
107:8, 108:6,
115:12
inventors
34:4, 63:14,
115:13, 115:15
involved
26:20, 36:8,
40:9, 47:9,
65:21, 75:12,
151:3
involvement
46:20

involves
105:7
involving
8:16
isaac
2:12, 6:10
isolate
59:3
isolated
59:3
issac
3:19
issue
15:7, 79:11,
79:13
iteration
118:1, 118:4,
119:5, 119:6
iterations
94:3
itself
31:1, 83:17,
85:3, 87:7,
92:10, 124:16,
145:21
J
january
76:14
jeopardizing
135:12, 135:16
job
1:20, 20:17,
23:7, 52:22
joint
49:6
judge
28:20, 108:2,
108:3, 108:5,
129:4, 142:18
judged
129:5
judging
123:6
july
76:15
juristic
90:1, 90:4

K
karen
1:22, 7:4,
159:3
keep
137:7, 158:1,
158:6
key
112:12
kind
9:19, 15:6,
16:19, 24:6,
25:17, 39:13,
84:3, 113:1
klaus
14:8, 14:12,
49:9, 50:4,
50:8, 52:14,
65:19,
65:21, 67:15
klerekoper
1:22, 7:4,
159:3
knew
76:21
know
10:21, 13:20,
13:22, 17:9,
19:19, 22:2,
25:15, 26:19,
29:11, 29:14,
30:15, 31:2,
31:3, 32:13,
32:19, 34:9,
34:14, 36:9,
36:12, 36:13,
36:17, 37:4,
37:9, 37:17,
38:6, 38:12,
39:5, 39:8,
39:10, 39:19,

42:15, 42:18,
43:18, 43:22,
44:8, 61:3,
67:4, 67:17,
67:18, 67:22,
68:3, 68:4,
68:6, 72:16,
84:20, 85:9,
87:9, 92:3,
103:13, 103:14,
104:2, 104:3,
104:4, 104:16,
104:21, 105:1,
105:7, 105:8,
105:10, 106:3,
124:11, 128:5,
128:7, 131:15,
132:22, 136:10,
137:16, 138:14,
139:3, 139:14,
139:20, 140:13,
142:19, 149:12,
151:13, 152:2,
156:3
knowledge
13:3, 13:6,
13:7, 35:12,
73:7, 84:20,
103:14, 105:10,
109:17
known
49:1, 49:3,
50:8, 59:15,
82:6, 83:17,
85:3

L

l-e-a-d-s
57:14
label
134:17
labeled
143:7, 144:16
labeling
143:3
lack
116:15, 146:11
language
8:19, 8:21,

71:7, 71:12,
155:11
last
10:15, 26:14,
38:15, 51:2,
53:21, 54:2,
74:19, 75:17,
131:4, 135:22,
137:9, 152:18
lastly
95:2
late
158:2
later
47:6, 47:12,
54:15, 67:16,
86:8
law
9:8, 34:17
layer
27:6, 28:6,
28:13, 102:8,
102:20, 103:3,
103:5, 103:11,
103:15, 103:20,
104:14, 105:9,
105:14, 107:19,
108:1, 108:13,
108:20, 108:21,
109:1, 109:3,
141:10, 143:12
layers
29:3, 29:7,
29:9, 29:13,
29:14, 29:16,
29:19, 43:9,
43:10, 43:11,
103:22, 104:2,
104:5, 104:6,
104:8, 104:10,
104:13, 104:19,
105:4, 109:5
layout
47:18
lead
22:17, 22:19,
22:20, 46:8,
56:20, 57:19,

58:1, 58:15,
60:20, 61:18,
61:20, 63:2,
69:18, 70:13,
71:5, 71:6,
71:22, 72:1,
72:4, 72:9,
72:11, 120:9,
122:1, 144:22,
145:1, 152:17,
152:19, 152:20,
155:7, 155:12
leader
53:18
leads
56:9, 57:14,
57:20, 58:5,
58:8, 91:13
learned
44:5
least
68:12
lecture
69:10
left
63:15, 79:14
leftover
127:9
leg
56:13, 56:15,
56:18, 56:20,
57:22, 62:13,
70:22, 71:3,
71:4, 71:17,
72:2
legal
9:13, 9:15,
34:18
legs
57:1, 58:6,
60:3
let's
137:7
letter
23:15
level
77:22
light
158:1

likely
74:13, 88:2
limitation
60:20
line
106:18, 107:18,
126:10, 126:11,
141:11, 141:13,
153:9, 153:10,
155:6
lines
116:5, 118:18,
123:11, 125:18,
128:10
list
16:21, 83:4
listed
15:16, 16:15,
17:2, 39:15,
46:2, 50:16,
54:18, 55:8,
55:13, 55:16,
57:17, 58:14,
63:14, 65:14,
75:13, 79:15,
83:5, 83:6
little
24:22, 26:5,
56:13, 58:6,
72:19, 85:14,
96:3, 146:17
live
8:12
load
93:14, 93:15,
94:14, 94:19,
95:8, 96:5,
96:6, 96:11,
96:17
long
19:4, 19:7,
21:21, 30:2,
54:6, 54:7,
63:18, 65:9,
158:11
look
13:16, 76:2,
87:18, 88:11,

89:5, 89:13,
94:10, 94:16,
100:17, 104:4,
123:1, 135:20,
136:1, 141:20,
155:6
looked
13:11, 13:13,
15:12, 16:10,
16:19
looking
123:19, 125:5
looks
86:6, 123:20,
136:8, 138:17,
139:4
lose
62:14, 113:16
loss
62:21, 71:2
lost
101:16, 105:5,
136:20
lot
35:20, 37:4,
41:12, 42:7,
52:19, 52:20,
136:10, 137:16
loud
89:19
low
24:16, 25:15,
108:7
low-voltage
22:8, 22:12,
22:15, 22:21
luncheon
78:11

M

made
21:17, 30:7,
87:10, 114:3
main
98:4, 124:2,
137:14, 150:19,
151:7
major
19:1, 56:7

majority
45:5, 45:7
make
10:9, 24:15,
32:14, 35:10,
71:22, 90:3,
90:4, 128:21,
146:6, 158:3
makes
33:13, 60:8,
60:11
making
9:6, 32:20
man
135:19
manner
113:21
many
16:10, 19:20,
34:5, 34:9,
37:3, 37:5,
37:15, 38:6,
41:9, 60:2,
100:11, 104:3

mark
11:12, 12:14,
45:9, 54:22,
80:7, 85:5
marked
11:14, 12:16,
45:11, 55:1,
75:1, 78:21,
80:9, 85:7,
105:20, 115:9,
131:6, 139:22,
141:16, 144:3,
145:6

market
73:8
marketing
54:8, 56:2,
64:4, 72:17,
72:21, 73:2
marks
158:17
massachusetts
1:17, 2:7,
2:13, 3:16,
6:13, 159:22
master's
18:18, 18:22,
21:1
material
81:13, 81:19,
82:3, 82:13,
82:19, 83:11,
122:14, 122:16,
122:20
materials
20:13, 24:21,
108:18
matter
1:4, 6:4,
46:17, 50:2,
50:14, 156:9,
156:19
matters
93:19
maybe
22:3, 37:6,
77:13, 113:1,
138:10
mean
18:6, 30:10,
33:16, 38:5,
39:20, 43:4,
44:12, 49:16,
52:12, 65:17,
70:17, 71:9,
82:7, 87:3,
110:17, 119:18,
122:20, 126:2,
134:6, 155:1,

156:3, 157:18
meaning
71:19, 71:21,
72:3, 130:9,
130:13, 130:14,
155:12
means
43:6, 49:14,
56:20, 70:21,
70:22, 92:6,
95:10, 98:13,
129:13, 133:11,
133:22, 136:17,
137:10, 143:21,
148:5, 154:22,
157:19
meant
22:14, 67:6
meanwhile
72:6
media
6:2
meet
14:6
members
53:14
memory
87:5, 90:20,
91:2
mention
15:2, 54:3,
92:13, 93:12,
95:12, 111:21,
129:7, 157:22
mentioned
13:15, 15:13,
16:10, 17:14,
21:11, 26:13,
28:5, 28:11,
34:21, 37:11,
41:7, 41:10,
42:5, 47:1,
47:10, 52:11,
54:10, 55:6,
63:15, 71:4,
82:22, 87:15,
89:22, 92:8,
92:21, 102:6,

127:5, 155:11
mentions
 92:19
metallization
 103:19, 108:16,
 108:17, 122:10

microelectronics
 19:16
microphone
 25:17
microsystem
 18:17, 18:21,
 19:3, 19:5,
 19:14, 19:17,
 20:6, 20:7,
 20:18
middle
 110:13, 110:16,
 110:18, 140:22
might
 10:11, 26:21,
 73:12, 98:14,
 136:10, 155:1
minus
 28:3, 28:4
minutes
 75:4
mischaracterizes
 52:4, 84:14,
 100:20, 116:15,
 129:15
mixed
 45:2, 45:3
mode
 5:10, 140:1,
 140:16
model
 35:18
mold
 120:15, 121:19,
 121:20
moment
 74:8
money
 76:22

monitor
 6:9, 40:21,
 41:2, 41:22,
 42:3, 70:6,
 70:9, 78:10,
 78:13, 99:4,
 99:7, 101:20,
 102:1, 121:10,
 121:13, 147:9,
 147:12
more
 24:22, 26:5,
 26:11, 34:8,
 37:14, 37:15,
 38:10, 50:8,
 52:18, 54:8,
 60:16, 60:17,
 60:18, 63:11,
 64:22, 68:8,
 69:3, 72:19,
 73:9, 73:20,
 74:3, 74:14,
 75:6, 92:5,
 96:8, 104:12,
 124:18, 124:19,
 151:21, 152:8
morning
 8:6
mos
 51:13
mosfets
 93:2
most
 20:16, 43:11,
 109:17
motor
 110:7
motors
 20:2
mount
 57:5, 57:7,
 57:9
mounted
 59:2
mounting
 58:7, 58:8
move
 23:4, 30:16,

113:8, 140:20
much
 11:2, 25:22,
 37:14
multilayer
 29:11
must
 54:8, 64:5
myself
 9:6, 85:1,
 89:19
 N
name
 8:9, 8:10,
 53:14, 53:15,
 53:22, 54:2,
 79:14, 85:11,
 85:14
named
 34:6
narrowed
 33:19
native
 8:19, 8:21
nature
 25:10
necessarily
 43:10, 110:17
necessary
 82:2, 91:15,
 97:14
need
 10:20, 15:8,
 25:15, 79:9,
 106:22, 108:17,
 124:11, 136:6
needs
 21:5, 35:9,
 41:14, 69:21,
 77:18, 90:22,
 96:2, 106:21,
 120:20, 133:18
neither
 151:21, 159:10
never
 29:6
new
 3:7, 33:15,

33:16, 34:1,
 86:17, 86:18,
 86:20
next
 12:14, 45:10,
 80:2, 85:5,
 89:14, 135:11
nice
 8:6
nitride
 14:3, 17:4,
 21:17, 102:7,
 104:14, 107:7,
 107:19, 107:22,
 108:13, 109:11,
 145:11
nitride's
 13:18
nitride-based
 109:14
nodding
 10:2
nomenclature
 68:22
none
 95:12
nope
 14:12, 24:1,
 54:4, 115:15,
 139:10, 141:19
normal
 77:8
notarial
 159:15
notary
 2:12, 159:2,
 159:21
note
 32:14
noted
 141:12, 155:20
notes
 18:4, 18:8,
 18:11
nothing
 55:18
notice
 2:12, 4:14,

4:15, 11:15,	56:17, 59:12,	127:14, 148:13	97:8, 99:12,
12:17	65:16, 66:18,	officer	99:13, 104:13,
notification	73:4, 74:5,	159:3	104:21, 106:13,
79:11, 79:13	74:15, 82:15,	oh	107:6, 110:5,
nowadays	84:13, 86:21,	21:8, 32:12,	118:11, 119:5,
60:5	89:3, 91:10,	57:7, 62:17,	126:14, 128:14,
number	93:20, 99:20,	62:21, 70:4,	130:8, 131:4,
6:3, 6:7, 34:7,	100:19, 102:4,	72:12, 77:12,	133:19, 142:6,
35:18, 38:10,	103:17, 112:15,	84:7, 117:3,	142:16, 150:22,
39:3, 39:15,	113:10, 114:2,	118:10, 120:13,	151:20, 151:21,
40:3, 45:19,	114:18, 116:10,	127:10	152:2, 152:6,
61:21, 72:12,	116:14, 125:1,	ohmage	153:22, 157:6
74:22, 78:20,	125:8, 126:16,	24:17	ones
80:1, 80:2,	128:16, 129:14,	okay	68:9, 68:10
80:3, 80:5,	132:19, 133:16,	8:15, 9:21,	online
80:8, 80:13,	134:7, 134:19,	10:12, 14:3,	30:21
80:15, 85:6,	135:4, 136:19,	17:18, 21:18,	only
85:13, 85:16,	137:12, 137:19,	22:15, 41:18,	51:22, 60:3,
106:19, 107:3,	139:1, 139:9,	51:1, 71:15,	60:8, 68:10,
110:21, 115:16,	139:17, 140:12,	73:18, 77:18,	68:12, 69:3,
123:4, 155:20,	141:4, 141:21,	85:11, 96:2,	91:21, 94:1,
156:4	142:3, 142:9,	102:13, 103:2,	95:22, 96:19,
numbers	142:17, 143:15,	103:8, 105:6,	98:6, 99:11,
15:15, 15:17,	144:19, 145:18,	106:5, 106:7,	99:15, 104:4,
35:14, 38:16,	146:1, 146:9,	117:5, 120:15,	104:15, 104:16,
39:8, 39:10,	147:3, 154:3,	121:3, 131:5,	117:20, 145:2
39:12, 51:2	154:11, 154:15,	132:16, 136:4,	open
numerous	154:20, 155:14,	137:7, 148:12,	158:1, 158:7
158:10	155:17	150:3, 150:4,	opinion
nw	obligation	152:1, 153:11	73:15, 73:19,
3:7	128:4	oliver	74:7, 74:16,
	obtain	107:5, 109:9,	74:18, 141:5
o	34:13	109:10, 142:13	opposing
	obviously	once	91:8, 93:15,
oath	158:8	31:20, 88:12,	100:13, 126:15,
7:7	offer	151:19	132:10, 133:11,
object	60:4	one	133:15, 133:20
134:19	office	9:22, 10:5,	opposite
objection	5:6, 30:11,	37:12, 48:4,	27:17, 91:13,
20:9, 25:9,	33:13, 49:11,	50:6, 50:16,	94:5, 94:14,
25:14, 25:15,	81:18, 82:9,	56:12, 56:18,	95:7, 114:16,
26:4, 26:10,	82:14, 84:22,	58:12, 60:15,	115:2
31:17, 36:11,	85:8, 86:5,	61:5, 66:1,	oppositely
37:8, 37:13,	86:11, 87:2,	73:10, 74:8,	94:19
37:16, 37:21,	87:14, 87:15,	77:17, 80:16,	optimized
38:2, 38:8,	87:16, 87:19,	84:9, 87:1,	83:20, 84:18,
42:17, 43:16,	89:10, 99:19,	93:17, 96:7,	97:6
43:17, 43:20,	100:1, 107:14,	96:8, 97:7,	optimizing
50:3, 52:3,			35:1

order	out	53:1, 125:15,	119:3, 128:13,
1:11, 29:9,	16:15, 22:6,	131:1, 133:21,	148:21, 149:5,
158:15	89:19, 120:12,	136:13, 144:18	149:13, 149:15,
orders	148:10	packet	149:16, 149:18,
158:12	outcome	99:12, 118:6	150:2, 150:7,
oriented	159:13	pad	153:9, 153:13,
106:4	outside	52:8, 58:19,	153:21, 154:7,
other	120:14, 121:18,	60:22, 62:11,	154:17, 157:13
15:10, 18:8,	121:20	62:13, 97:22,	parallel
18:10, 18:20,	over	116:18, 117:18,	44:12, 44:19,
24:21, 37:1,	8:14, 16:10,	118:9, 118:10,	126:3, 126:5,
37:18, 48:6,	37:9, 88:11,	120:1, 130:17,	126:6, 126:8
50:5, 50:15,	95:9, 96:14	130:21, 135:9	part
53:10, 60:16,	overall	pads	17:5, 19:12,
62:21, 62:22,	144:21	145:1	19:14, 19:17,
73:12, 80:17,	own	page	20:7, 24:5,
84:17, 85:17,	16:16, 46:18,	4:3, 4:11,	27:4, 29:19,
88:1, 93:17,	47:1, 53:11	4:20, 5:13,	31:9, 33:12,
96:8, 97:7,	P	80:19, 80:22,	44:20, 47:8,
103:22, 104:2,		81:10, 83:2,	48:4, 53:11,
104:4, 104:8,		85:22, 86:12,	53:12, 54:19,
104:13, 108:18,		86:15, 88:16,	64:19, 65:5,
112:4, 115:13,	p5	89:14, 89:15,	68:12, 82:10,
115:15, 151:21,	80:6	89:18, 90:14,	86:22, 91:2,
152:7, 158:4,	pack	97:1, 131:16,	95:19, 100:6,
158:10	133:13	131:18, 131:19,	100:21, 103:19,
others	package	131:22, 132:1,	107:6, 135:22,
36:5, 38:4	17:12, 24:20,	134:1, 140:20,	142:13
otherwise	35:1, 35:2,	145:7, 148:18,	partially
72:1, 99:13,	35:15, 39:11,	148:21, 149:10,	9:2, 73:11,
110:18, 113:16,	46:10, 54:9,	149:22, 156:16	73:14, 120:14
159:12	65:11, 65:13,	pages	particular
otremba	84:16, 98:7,	1:21, 88:17,	67:12
1:15, 2:1, 4:5,	98:10, 101:3,	131:12, 132:1	parties
6:4, 8:1, 8:6,	103:19, 110:5,	papa	159:11
8:10, 8:19,	124:17, 125:10,	80:6	parts
11:17, 12:1,	129:4, 130:15,	paper	48:6, 87:5,
12:18, 13:9,	132:21, 133:6,	11:19, 81:11	87:6, 100:18,
18:14, 26:13,	133:10, 133:13,	paragraph	101:1
28:5, 41:4,	135:19, 136:6,	75:15, 89:13,	party
45:14, 78:15,	144:22, 152:5,	89:17, 89:18,	25:13
79:2, 80:11,	152:11	90:14, 91:8,	pass
85:9, 90:15,	packages	91:17, 91:21,	72:18, 103:14,
90:19, 91:4,	23:8, 35:21,	92:4, 93:3,	147:13, 147:15
148:15, 149:15,	112:19	93:5, 93:7,	passages
149:19, 150:2,	packaging	97:2, 97:9,	33:21
150:7, 158:18	21:4, 21:7,	116:8, 116:19,	past
otremba's	21:8, 21:10,	117:20, 118:21,	121:6
8:17			

patentability

81:13, 81:19,
82:4, 82:13,
82:19, 83:11

patenting

30:1

patents

15:10, 16:15,
16:16, 16:18,
21:6, 34:5,
34:10, 34:11,
34:15, 34:18,
34:20, 34:22,
41:8, 41:11,
42:6, 42:10,
48:15, 50:15,
54:16, 54:17,
142:1, 142:15,
156:10

path

61:4, 61:5,
61:6, 61:8,
62:17, 71:2,
77:12, 77:13,
77:14, 77:16,
77:19, 95:10,
95:12, 96:18,
119:12, 119:13,
126:8, 126:14,
127:8, 128:15,
128:19, 128:22,
129:5, 129:6,
129:7, 129:10,
129:11, 129:13,
130:8, 130:11

pay

114:7

pending

82:8, 86:1,
86:5

people

9:8, 71:8

percent

54:20, 68:20

perfect

25:21

performance

59:8, 65:1,
65:2

perpendicular

43:4, 150:19,
151:7

person

152:3, 152:4

personal

4:15, 12:17,
12:22, 13:2,
13:4, 13:5,
13:7, 73:15,
73:19, 74:7,
128:1

personnel

23:18

perspective

136:13, 137:18,
144:18

petra

3:21, 7:2, 7:16

phase

47:7, 56:1

phone

14:10

phonetic

53:19, 53:20

phrase

71:20, 101:7,
153:4, 154:6

phrases

154:18

physically

27:20, 27:22,
28:1

physics

18:18, 18:20,
18:22, 19:2,
19:8, 19:9,
20:19, 21:1,
27:8

picture

133:10, 134:10

pieces

47:16

pin

75:19, 75:21,
76:5

place

6:12, 104:22,
113:22

placed

104:18, 104:20,
114:6, 115:1,
132:8

placement

100:9, 100:18,
101:5, 102:18,
112:13, 117:22,
127:8

placing

101:9

plan

10:21, 127:17

plan's

94:6

planet

3:19, 6:11, 7:5

plans

86:7

plays

77:19, 77:20

please

6:14, 8:8,
10:4, 10:6,
10:20, 11:19,
14:17, 15:5,
15:18, 26:6,
26:15, 31:7,
38:16, 40:19,
41:17, 44:17,
70:1, 76:2,

80:5, 81:1,

82:16, 86:13,

86:14, 89:20,

97:1, 97:16,

106:14, 107:2,

110:1, 116:2,

119:17, 134:1,

147:7

plus

28:3, 28:4

pn

102:10

point

25:2, 92:18,
124:20, 126:21,
127:12

pointed

110:16

points

136:11

polarity

28:3

portion

149:9

position

55:15

positioning

92:1, 93:18,
96:1, 100:11

possible

10:10, 10:12,
28:9, 28:15,
28:19, 58:21,
59:21, 77:21,
88:9, 92:5,
151:18

post

120:9

potential

58:20, 58:22,
59:21, 62:20,
120:1, 135:10

power

5:9, 22:15,
22:21, 23:8,
61:5, 68:4,
71:2, 93:2,
96:10, 96:14,
131:7

practicum

20:1

precisely

26:6, 26:11

preparation

14:15, 14:19,
15:11, 16:11

prepare

13:10, 14:6,

46:11
prepared
 12:11, 156:22
present
 3:18
presented
 87:11, 88:12
pretty
 25:14
prevent
 63:8, 146:7
previous
 146:13
previously
 12:3, 12:20,
 86:17, 102:20,
 103:2, 103:5,
 131:10
primarily
 34:2, 34:21,
 34:22
primary
 68:12
principle
 57:10, 96:4
prior
 32:7, 32:10,
 32:11, 32:12,
 32:18, 46:16,
 49:4, 148:22
prize
 77:2
probabilities
 88:5
probably
 120:19, 120:21
problem
 123:4
problems
 46:5, 50:10
procedure
 30:17, 30:20,
 31:9
proceed
 7:19, 31:15
proceedings
 159:4, 159:6,
 159:7

process
 29:22, 30:4,
 30:5, 32:5,
 32:20, 33:2,
 34:12, 34:14,
 67:5
processes
 104:22
produced
 158:10, 158:11
product
 22:17, 35:13,
 35:15, 35:19,
 38:14, 39:8,
 39:10, 39:12,
 39:15, 39:16,
 40:2, 65:10,
 65:11, 72:22
production
 158:2
products
 1:6, 6:5,
 13:20, 14:2,
 35:4, 35:17,
 36:1, 36:14,
 36:22, 37:20,
 39:5, 39:18,
 40:8, 40:11,
 40:12, 40:13,
 69:12, 72:22,
 73:3, 140:11
project
 22:17, 22:19,
 22:20, 130:14
projects
 24:10
properly
 134:13
proposed
 32:17
prosecution
 14:21
protective
 1:11
provide
 9:14, 10:1,
 27:10, 35:13,
 61:12, 104:9,

153:1
provides
 69:19, 70:15,
 89:8, 131:11
providing
 56:10, 56:16,
 63:9
public
 2:13, 148:6,
 159:2, 159:21
publication
 50:22, 51:1,
 51:4, 51:10,
 51:18, 52:1,
 55:10, 55:20,
 63:13, 63:22,
 64:9, 66:1,
 66:10, 66:17,
 76:13, 83:10,
 84:9, 84:21,
 90:11, 90:19,
 91:5, 92:9,
 97:3, 97:10,
 97:11, 148:16
publications
 16:16, 29:6,
 29:8, 48:20
publish
 48:15, 48:19
published
 48:12, 76:13,
 76:15
pull
 148:10, 151:11,
 156:14
purpose
 124:2
pursuant
 2:12
put
 55:22, 68:2,
 77:1, 113:12,
 114:12, 116:17,
 135:9, 139:19,
 151:10
 Q
question
 11:9, 15:3,

26:5, 26:7,
 26:11, 26:14,
 27:19, 31:8,
 62:8, 74:19,
 79:18, 82:16,
 137:9, 150:11,
 154:16, 157:6
questions
 9:22, 10:3,
 11:7, 75:7,
 90:6, 136:11,
 147:17, 148:9,
 148:20, 149:5,
 152:16, 157:5
quick
 127:12
quickly
 70:3
quite
 22:3, 82:17,
 85:12
quote
 70:13, 70:16,
 155:7
 R
raise
 7:10
ralf
 1:15, 2:1, 4:5,
 6:3, 8:1, 8:10
randomly
 113:19
rarely
 68:8, 68:14
re-examination
 4:8, 157:7
read
 7:7, 9:12,
 9:17, 9:19,
 9:20, 20:13,
 81:1, 86:9,
 86:14, 89:17,
 89:19, 89:20,
 107:11, 140:14,
 149:8, 150:1,
 150:5, 150:6,
 150:21, 153:8

reading 9:11	recess 78:11	refer 17:18	rejection 87:16, 87:18,
ready 137:6, 147:13,	recite 95:6, 129:20	reference 32:8, 32:10,	87:21, 87:22,
147:15	recites 98:16	32:11, 32:14,	88:3, 89:8
realization 106:9	recognize 55:3, 71:17,	50:21, 65:3,	relate 66:11, 67:6
realize 127:15	75:8, 79:2,	83:2, 83:19,	related 13:21, 17:3,
realized 100:2	80:11, 85:11,	88:17, 90:8,	20:20, 21:12,
really 27:9, 29:10,	85:13, 99:21,	90:9, 90:10,	21:13, 39:17,
29:16, 30:2,	105:22, 115:11,	92:4, 98:5,	44:7, 48:20,
36:6, 36:12,	118:15, 123:17,	149:13, 149:14,	50:2, 50:15,
37:10, 39:3,	125:11, 125:15,	152:16, 153:18,	67:2, 67:7,
46:22, 48:14,	141:18, 144:5,	153:22, 154:7,	69:1, 79:20,
68:2, 68:21,	145:12	155:7, 156:18	85:20, 159:10
70:3, 73:10,	recollection 16:13, 16:17	referenced 60:14, 67:13,	relates 83:11
74:16, 82:1,	record 8:8, 8:15,	67:14, 112:21	relating 21:3, 42:20,
83:19, 105:11,	10:2, 10:6,	references 15:12, 15:14,	46:17, 56:4
108:2, 108:5,	26:8, 40:18,	17:1, 47:21	relationship 52:16, 52:21
112:12, 123:6,	40:21, 40:22,	referencing 45:22, 57:22,	release 13:13
128:5, 128:21,	41:2, 41:19,	59:18, 62:1,	releasing 32:6
129:9, 130:10,	41:22, 42:1,	99:15, 126:22,	relevant 85:2, 89:6,
132:22, 133:9,	42:3, 58:3,	134:14	90:13, 97:14,
134:10, 134:12,	64:18, 70:2,	referred 156:5	103:18, 127:11
134:21, 135:19,	70:6, 70:7,	refers 44:14, 91:3	relies 59:9
137:21, 137:22,	70:9, 78:10,	reformulated 89:12	remains 88:9
138:5, 138:9,	78:13, 92:10,	refresh 16:12, 16:17	remarks 88:22, 89:1,
138:10, 138:18,	99:1, 99:2,	regard 96:5	89:7
139:4, 139:12,	99:3, 99:5,	regarded 33:14	remember 15:15, 16:20,
141:22, 142:18,	99:7, 101:18,	regarding 29:6, 30:1,	16:21, 17:1,
142:19, 144:6,	101:20, 101:21,	31:10, 58:10,	20:1, 20:15,
145:2, 146:3,	102:1, 121:9,	90:19, 92:7	29:9, 30:3,
154:16, 156:3	121:11, 121:13,	regular 144:22	31:4, 44:2,
reason 10:17, 133:8	136:21, 147:7,	regularly 50:9	54:1, 54:17,
recall 54:14, 149:2,	147:9, 147:10,	regulations 81:14	63:19, 68:15,
149:4, 151:13,	147:12, 157:11,	rejecting 148:22	69:5, 69:7,
152:15, 156:1,	158:19, 159:6		69:13, 86:22,
156:4	red 141:11		87:4, 87:7,
recapitulation 112:17	redirect 147:15, 157:5		
received 76:19	redistribution 36:19, 36:20		
recently 157:13	reduced 159:8		

Transcript of Ralf Otremba, Corporate Designee & Individually
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184

87:9, 87:20,
87:21, 92:16,
112:10, 125:2,
127:12, 131:9,
140:6, 142:6
remind
53:3, 86:19
remove
63:3
removing
63:8
repeat
11:19, 14:17,
15:4, 26:15,
31:8, 38:15,
67:21, 69:22,
107:2, 116:3,
135:22, 136:3,
137:9, 146:17,
152:18
repeated
91:1, 106:22
repeating
118:3
rephrase
33:4, 39:21,
71:11, 79:18,
82:16, 156:12,
156:13
report
30:7, 31:14,
67:16
reported
1:22
reporter
7:3, 25:11,
65:20, 130:18,
159:2
represent
6:15, 125:16
representative
1:14
represented
42:10
representing
6:10, 6:17,
6:20, 7:4
represents
143:1

request
10:6, 25:13,
25:16
requested
158:22, 159:9
required
60:22
research
46:19, 47:7,
50:1, 56:1,
56:3, 56:4,
58:9, 59:10,
66:21, 67:1,
67:4, 67:6,
67:7, 67:12
resembles
94:8
resistance
24:16
respect
12:11, 39:9,
43:3, 44:11
respective
35:21, 57:15,
84:16, 86:7,
122:5, 142:5
respond
10:4
respondent
3:11
respondents
6:21
response
5:6, 10:1,
43:21, 58:4,
85:8, 86:11,
87:16, 96:21,
98:1, 148:13,
149:9
responses
8:18, 158:4
responsibilities
23:13
responsibility
23:17
responsible
23:16, 23:20,
29:17, 35:6,

64:6, 65:10,
65:13, 109:10
rest
21:18, 89:6
restate
58:3
resuehr
3:20, 7:9, 7:12
results
46:18, 46:19,
46:21, 47:2
reverse
97:21
reverses
28:3
review
14:14, 14:18,
14:21, 15:10,
32:4, 46:14,
75:15, 89:1,
159:9
reviewed
30:9, 89:2,
95:5, 99:18,
157:14
reviewing
89:21
revision
127:17
rewire
36:17
rewiring
108:14, 112:20,
124:18, 130:2
reworked
89:12
right
7:10, 11:4,
16:21, 18:17,
21:20, 43:9,
73:10, 78:2,
85:22, 90:11,
92:3, 100:2,
107:1, 135:11,
147:16, 149:12,
150:6

role
22:18, 23:5,
23:9, 23:21,
73:12, 77:20
rough
149:10
roughly
34:6, 43:15,
44:9
rows
127:1
rpr
1:22
rules
8:14
running
100:7
rustling
11:20

S

sacks
2:5, 3:14
said
59:16, 65:9,
68:14, 98:9,
99:18, 102:21,
103:3, 103:6,
104:8, 104:15,
109:15, 118:3,
131:21, 146:4,
146:20, 150:13,
150:14, 151:13,
159:6
same
1:7, 6:5, 26:7,
52:9, 53:3,
63:20, 80:16,
80:18, 85:16,
85:18, 97:2,
98:20, 99:9,
103:11, 129:5,
135:10, 136:4,
140:17, 146:5

saw

80:17

say

20:16, 21:6,
22:12, 28:8,
28:15, 29:16,
29:21, 30:10,
30:15, 31:3,
36:6, 36:12,
37:4, 37:10,
38:5, 39:6,
39:11, 43:3,
44:11, 46:22,
51:7, 57:18,
65:2, 68:10,
73:14, 74:6,
74:16, 82:1,
87:12, 91:17,
101:8, 105:15,
122:19, 127:19,
129:9, 135:2,
135:6, 135:7,
137:22, 138:1,
138:15, 138:19,
141:13, 143:17,
150:7, 150:11,
151:3, 152:6

saying

25:13, 51:4,
130:10, 134:5,
134:16, 153:13,
153:21

says

69:17, 81:11,
86:1, 90:15,
91:9, 98:11,
124:7, 127:2,
132:14, 139:10,
149:5, 150:11,
157:14

scale

60:5

scanned

131:12

scenario

93:19

scenarios

154:9, 154:12

schematics

94:6

schliess

14:9, 52:14,
52:17, 65:14,
65:18, 65:21

scope

31:17, 36:11,
37:8, 37:13,
37:16, 37:21,
38:2, 38:8,
42:17, 43:16,
43:17, 43:20,
73:5, 74:5,
74:15, 95:17,
103:17, 114:2,
132:19, 133:16,
134:7, 134:19,
135:4, 137:19,
139:1, 140:12,
141:4, 143:15,
144:19, 146:1,
146:9, 147:3,
154:3, 154:11,
154:15, 154:20,
155:17

seal

159:15

search

46:18, 46:21,
47:2, 47:3,
47:10

searches

46:16

second

55:15, 61:5,
75:17, 75:18,
77:17, 80:19,
154:4

secret

148:7, 148:8

section

79:15, 81:14,
86:14, 88:19,

89:7, 92:7,
124:10

see

63:14, 69:17,
75:17, 76:1,
76:4, 76:5,
76:6, 79:14,
80:1, 80:20,
80:21, 81:11,
85:15, 86:1,
86:2, 88:19,
90:15, 90:17,
98:11, 98:16,
106:16, 106:18,
108:20, 108:22,
109:1, 109:2,
109:3, 109:4,
110:3, 110:12,
110:19, 121:5,
132:3, 132:12,
132:13, 134:2,
134:4, 134:10,
139:5, 140:22,
141:2, 142:21,
142:22, 143:1,
143:3, 143:5,
143:9, 143:10,
143:11, 143:13,
144:7, 144:8,
144:9, 144:11,
144:12, 144:13,
145:8, 145:10,
145:14, 145:15,
145:16, 149:14,
156:18, 156:21,
157:14

seeing

8:6, 131:9

seems

39:16, 86:6,
101:16, 105:5,
138:4

seen

11:16, 12:1,
12:3, 12:18,
12:20, 28:16,
28:18, 29:6,
29:8, 45:13,

81:15, 88:14,
131:8, 140:5

sell

72:22, 73:3

selling

74:12

semiconductor

1:5, 21:4,
21:17, 22:22,
24:21, 43:5,
69:19, 70:14,
98:12, 98:14,
98:17, 103:10,
105:17, 110:13,
117:7, 117:9,
122:13, 122:20,
127:4, 144:15,
145:11, 149:19,
150:20, 150:22,
151:4, 151:8,
152:21, 155:8,
155:13

semiconductors

6:4, 20:21,
21:1, 21:2,
21:12, 21:13,
22:5, 22:6, 42:9

sense

17:5, 21:9,
48:10, 50:17,
56:14, 60:8,
75:22, 77:2,
119:22, 135:11

sensible

102:19

sensing

48:21, 49:1,
49:3, 51:5,
51:19, 55:7,
55:21, 56:5,
56:7, 56:10,
56:16, 56:19,
57:12, 64:16,
65:6, 67:10,
70:19, 71:18,

75:22, 77:7,	97:21, 100:16,	skills	153:15, 153:16,
77:9, 77:21,	103:9, 114:13,	9:5, 9:11	156:15
78:4, 78:6,	122:10, 132:10	smart	sound
83:17, 83:20,	sides	5:9, 131:7	137:4
85:2	91:14, 93:16,	smd	source
sentence	94:5, 94:14,	57:5, 58:8	17:5, 48:10,
75:18, 81:11,	94:15, 100:13,	smiley	48:11, 48:21,
81:15, 149:17,	133:11, 133:15,	3:4, 6:18	49:1, 49:3,
150:21	133:21	snp	50:17, 51:5,
sentences	siemens	57:4	51:19, 52:9,
10:10, 69:22	22:4, 22:6,	solution	55:7, 55:21,
service	22:7, 29:22,	74:11	56:4, 56:6,
53:12, 53:13	30:3, 30:12,	solve	56:10, 56:14,
set	30:14	46:5	56:16, 56:19,
88:12, 92:17,	sign	some	57:11, 58:20,
159:14	49:5, 49:19,	8:14, 15:12,	59:20, 61:16,
several	49:21	16:15, 19:21,	61:18, 62:4,
14:9, 19:18,	signal	20:5, 24:11,	62:20, 63:21,
110:5, 151:13	77:20	24:18, 35:13,	64:15, 65:6,
sheets	signature	41:12, 42:7,	66:21, 67:10,
13:11, 13:15,	49:11, 80:20,	57:2, 66:15,	70:19, 71:1,
13:16, 13:17,	158:21	104:6, 136:11,	71:18, 71:22,
13:21, 14:1	signature-plkal	148:20, 149:4,	72:11, 75:19,
short	159:19	152:16	75:22, 77:7,
10:10	signed	somehow	77:8, 77:9,
shorter	81:16	26:12	77:21, 78:4,
112:17	silicium	someone	78:5, 83:17,
shorthand	25:4, 35:6,	31:14	83:20, 85:2,
159:2	35:10, 35:11	something	108:11, 113:4,
should	silicon	25:18, 26:13,	113:6, 113:18,
32:14, 62:9,	35:11, 53:8,	31:20, 36:8,	114:16, 116:18,
148:12, 148:15	73:12, 98:14,	36:18, 39:7,	116:20, 119:22,
show	108:21, 126:19,	39:17, 138:10,	120:1, 121:18,
67:18, 67:22,	126:22, 127:3	150:8, 150:11	132:10, 133:20,
72:14, 108:9,	similar	something's	135:10, 135:11,
108:11, 110:21,	142:7, 142:16	107:1	143:5, 144:9
118:13, 138:3	simulations	sometime	source-sense
showing	64:20, 64:21,	42:22	76:10, 77:20,
145:14	64:22	sorry	84:16
shown	since	20:3, 41:9,	source-sensing
62:12, 109:12,	21:22, 23:9,	56:8, 63:2,	58:10, 58:16,
110:4, 119:19,	23:14, 58:15,	66:22, 67:6,	59:11, 59:19,
145:22	81:16	67:21, 70:4,	60:1, 60:4,
shows	single	76:4, 76:7,	60:6, 61:12,
141:1, 146:12	99:15	88:4, 93:5,	61:17, 61:20,
sic	sir	103:3, 115:21,	62:6, 62:19,
51:13	148:9	118:17, 120:21,	63:1, 63:4,
side	sitting	131:21, 137:2,	63:9, 63:11,
53:8, 60:17,	122:13		

63:16, 64:8,
65:3, 66:2,
66:4, 66:6,
66:8, 66:10,
66:12, 66:13,
66:16, 67:2,
67:8, 69:20,
70:15, 70:20,
71:4, 71:5,
72:4, 72:9,
72:11, 76:9,
77:4, 83:14,
153:1
speak
8:22, 9:2,
13:5, 20:11,
25:16, 25:19,
26:21, 78:15,
128:6, 155:21
speaking
9:4, 9:9, 33:8,
33:10
speaks
145:20
special
61:17, 71:19,
96:9, 138:11
specific
9:8, 9:13,
14:2, 39:7,
54:17, 72:19,
74:4, 90:7
specifically
20:22, 65:1,
69:13, 74:6,
121:16, 134:10,
134:14
specification
111:13, 112:14,
130:6, 130:7
specify
13:2
speculate
104:16
ss
75:21, 76:5
st
76:15

stability
25:1, 25:2
standing
158:14
start
38:17, 50:1
started
19:6, 22:16,
23:2, 23:6, 50:8
starting
89:13, 148:21,
156:8
starts
153:9
state
2:13, 6:15,
8:8, 47:6, 80:5,
82:5, 82:22,
114:15, 114:22,
115:3, 115:5,
116:19, 141:1,
159:21
state-of-the-art
32:13, 32:15,
33:12, 47:14,
48:2, 48:4,
48:7, 49:18,
82:5, 82:21,
84:1
stated
49:5, 117:1
statement
10:15, 128:21,
129:9
states
1:1, 6:6,
70:13, 75:18
stays
115:4
steenburg
3:13, 4:7,
6:19, 20:9,
25:9, 25:19,
26:1, 26:4,
26:10, 31:17,
36:11, 37:8,
37:13, 37:16,
37:21, 38:2,

38:8, 42:17,
43:16, 43:20,
50:3, 52:3,
56:17, 59:12,
65:16, 66:18,
73:4, 74:5,
74:15, 75:3,
82:15, 84:13,
86:21, 89:3,
91:10, 93:20,
99:20, 100:19,
102:4, 103:17,
112:15, 113:10,
114:2, 114:18,
116:10, 116:14,
125:1, 125:8,
126:16, 128:16,
129:14, 131:19,
132:19, 133:16,
134:7, 134:19,
135:4, 136:19,
137:12, 137:19,
139:1, 139:9,
139:17, 140:12,
141:4, 141:21,
142:3, 142:9,
142:17, 143:15,
144:19, 145:18,
145:20, 146:1,
146:9, 147:3,
147:16, 147:20,
150:14, 152:20,
153:16, 157:4,
158:8, 158:14
stenographically
159:7
stepper
20:2
stick
57:2
still
30:12, 40:7,
59:9, 60:4,
77:19, 86:5,
88:9, 136:8
stipulation
7:7
strike
27:4, 39:21,

41:9, 48:19,
56:8, 63:2,
63:7, 66:22,
71:11, 73:1,
79:18, 83:8,
83:9, 100:8,
103:4, 104:18,
108:10, 128:2,
146:6, 153:19
strongly
42:9
structure
60:7, 62:11,
73:17, 76:10,
83:16, 96:1,
101:10, 101:14,
101:15, 102:3,
103:22, 105:16,
110:19, 112:2,
112:3, 112:5,
112:7, 113:14,
113:15, 114:8,
114:20, 118:16,
124:6, 124:11,
124:15, 124:21,
125:13, 132:6,
132:9, 132:15,
132:17, 136:7,
137:22, 144:21,
145:1, 145:2,
149:18, 151:1,
157:15, 157:16
structures
48:16, 84:19,
102:16, 113:2,
123:19, 133:1,
133:2, 134:10,
134:11, 139:10,
146:20
structuring
105:7, 114:8
studied
19:9
studies
18:19, 18:21,
19:3, 19:4,
19:7, 19:13,
19:18

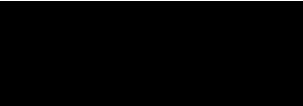
Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

188

subcategory	22:3, 26:7,	tagged	53:11, 53:14,
39:13	33:4, 38:5,	52:20	53:15
subject	38:17, 39:7,	take	technical
1:11, 46:17,	42:21, 48:14,	18:11, 19:11,	17:10, 23:15,
50:2, 50:14,	54:20, 64:19,	19:16, 20:8,	54:7, 56:2,
156:9, 156:19,	68:20, 68:21,	20:20, 21:3,	64:4, 64:6,
157:5	88:14, 105:15,	40:15, 40:17,	67:7, 68:7,
subject-wise	106:20, 116:4,	41:18, 49:18,	71:13
23:12	156:14	78:7, 99:2,	technically
submit	surface	121:1, 121:3,	71:14
31:5, 31:20,	28:6, 28:7,	121:9, 136:22	technologies
49:11, 127:17	28:12, 28:13,	taken	18:16, 19:5
submitted	43:5, 43:7,	149:8, 159:4,	technology
30:8, 30:10,	44:13, 44:19,	159:7	18:17, 19:3,
30:11, 31:11,	57:5, 57:7,	takes	19:14, 19:15,
82:14, 84:21,	57:9, 60:21,	130:22	19:18, 20:6,
99:19, 107:13	61:17, 71:1,	taking	20:7, 20:18,
substrate	100:16, 102:21,	6:11, 10:21,	32:15, 50:18,
109:1	103:3, 103:6,	101:19	64:12, 64:13,
sufficient	103:7, 103:8,	talk	82:6, 82:22
139:19	103:9, 116:22,	31:5, 31:9,	tell
suggest	122:16, 128:14,	41:4, 54:12,	18:14, 27:9,
87:8	134:5, 150:20,	57:13, 69:11,	123:2, 123:6,
suggestion	151:8	88:4, 94:18,	123:13, 124:5,
87:13	surfaces	124:3, 124:15,	124:10, 131:3,
suggestions	27:3, 91:8,	126:1, 153:4	135:19, 138:9,
87:22	95:7, 114:16,	talked	139:4, 139:12,
suggests	115:2, 126:15	14:8, 14:9,	144:6, 151:19
95:3	surmise	18:2, 50:4,	tells
suitable	116:17	52:14, 54:10,	83:22, 84:9,
24:15	switch	72:8, 86:17,	84:12, 133:3,
summarize	114:22	111:12, 136:10	133:4
82:5, 136:11	switchability	talking	ten
supervise	24:13	21:9, 30:12,	54:8
23:19	switching	34:3, 45:17,	term
supervision	64:14, 64:15,	57:18, 85:1,	5:3, 71:9,
159:9	65:1, 65:2	140:18	78:22, 79:6,
supplementations	sworn	taught	133:19
158:3	7:6, 7:11,	149:19	terminal
support	7:12, 7:16,	td1	75:19
24:4, 24:6,	7:20, 8:2	143:9	terminology
25:6, 145:2	system	teach	9:8, 9:13, 9:16
supported	40:7, 40:12,	90:16	terms
24:9	73:17	teaches	34:17, 34:18,
supposed	systems	91:5, 97:3,	36:17, 134:12
39:20	40:5, 140:8,	97:4	testified
sure	140:10	team	7:14, 7:18, 8:2
10:7, 11:21,		36:5, 53:9,	testify
	T		10:17, 10:19,
	ta		
	1:5, 6:7		

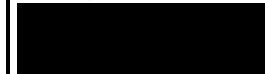
12:11, 156:22	16:14, 20:19,	82:6, 82:7,	123:7, 132:2,
testifying	40:15, 42:21,	82:8, 83:18,	132:11, 133:7,
12:21, 13:3	49:15, 54:7,	99:3, 99:7,	141:9, 143:7,
testimony	54:19, 59:13,	101:20, 102:1,	148:7, 148:8
41:5, 78:16,	59:14, 64:19,	121:9, 121:13,	topic
90:18, 111:5,	73:6, 73:11,	135:10, 137:3,	23:17, 55:18,
113:11, 114:19,	74:9, 78:7,	147:9, 147:12,	65:22, 85:2,
132:20, 133:1,	85:1, 98:9,	157:5	156:8, 156:18
133:17, 134:8,	104:8, 110:15,	times	topics
134:20, 135:5,	125:10, 125:11,	14:9, 151:14	12:5, 12:8,
137:20, 139:2,	125:17, 127:9,		12:12, 50:5,
143:16, 144:20,	141:6, 158:14		50:10, 52:19,
146:2, 146:10,	thinking	title	52:20, 53:2,
146:13, 147:4	27:19, 67:9	52:22, 79:10,	66:1, 155:20,
text	third	81:1, 81:14,	156:5
33:21	69:18, 70:13,	86:9, 140:14	towards
textbook	71:6, 71:17,	today	13:5, 41:13,
131:12	71:22, 152:16,	6:10, 7:4, 8:7,	42:8, 48:1,
th	152:19, 152:20,	8:15, 10:18,	48:3, 110:16,
6:8, 76:14,	155:7, 155:12	10:19, 12:5,	123:22, 124:19
159:15	thought	12:22, 13:9,	trade
thank	133:2	18:4, 18:8,	1:1, 6:6,
10:14, 17:13,	three	21:10, 60:3,	67:18, 67:22
25:21, 33:10,	54:15, 60:3,	111:5, 140:18,	trademark
36:20, 53:12,	64:5, 64:7, 75:6	152:15, 156:22	35:19
116:6, 137:5,	through	today's	trails
150:16, 158:16	1:14, 8:2,	6:8, 9:21,	10:11
thanks	12:8, 23:16,	13:10	traits
157:21	43:8, 43:10,	together	134:21
themselves	43:11, 57:2,	52:19, 88:17,	transcript
6:15, 32:22,	58:7, 96:15,	123:2	4:13, 103:1,
34:19, 89:11,	110:18, 112:1,	took	148:2, 148:5,
95:19, 120:14	120:3, 126:10	19:22	149:10, 159:5
thereafter	through-hole	tool	transistor
159:8	17:12, 50:18,	30:21, 31:2,	17:15, 17:17,
thermo	58:7, 84:4	31:6, 31:11,	17:19, 17:20,
25:1	throughout	31:12, 31:20	25:7, 28:22,
thermodynamic	58:7	top	29:1, 43:1,
25:1	till	63:14, 80:2,	43:2, 43:4,
thesis	19:6	80:16, 85:22,	44:12, 44:22,
21:1, 21:11	time	86:15, 88:19,	45:4, 45:6,
thing	6:9, 26:14,	88:20, 94:8,	51:15, 51:17,
9:22, 94:1,	40:21, 41:2,	100:16, 101:12,	51:19, 52:2,
137:14, 152:19	41:22, 42:3,	103:9, 103:10,	56:10, 69:19,
things	44:4, 47:14,	108:15, 110:22,	70:15, 84:5,
16:20, 18:10,	52:9, 64:5,	119:10, 122:4,	90:16, 90:21,
84:10, 108:6	70:6, 70:9,	122:6, 122:12,	91:3, 91:5,
think	78:10, 78:13,	122:19, 122:20,	91:12, 91:15,
15:6, 15:7,			

92:6, 92:15,
92:20, 93:8,
93:11, 94:12,
94:17, 94:20,
95:6, 95:22,
97:4, 97:5,
97:19, 98:17,
98:18, 100:4,
100:5, 100:17,
109:12, 109:16,
109:18, 109:20,
110:3, 110:6,
110:8, 111:6,
111:8, 111:10,
111:11, 111:15,
111:18, 111:20,
113:22, 114:10,
114:15, 114:17,
115:2, 115:4,
115:6, 116:9,
116:12, 116:20,
117:10, 117:21,
118:7, 118:12,
118:13, 119:1,
119:4, 123:8,
123:13, 123:15,
132:5, 132:7,
134:18, 135:3,
136:14, 141:1,
143:2, 145:11,
146:8, 152:4,
152:6, 152:11,
152:21, 155:8
transistor's
113:16
transistors
22:9, 22:10,
22:13, 22:16,
23:22, 24:2,
41:13, 42:8,
42:12, 42:20,
43:13, 43:22,
44:7, 47:21,
48:2, 48:3,
48:12, 51:5,
51:11, 69:2,
92:1, 92:21,
98:3

transitions
102:10
translate
33:5, 61:4,
112:18, 153:17
translating
8:17
translator
8:17
trend
73:8, 73:20,
73:22, 74:1,
74:2, 74:4
trends
69:4

true
119:1, 159:5
trustworthy
52:21
truthfully
10:18, 10:19
trying
36:15
turn
61:9, 69:14,
70:11, 88:16,
93:3, 96:20,
97:15, 106:14,
106:22, 110:1,
111:2, 115:19,
115:22, 116:5,
118:18, 119:15,
119:17, 148:18,
149:21, 149:22,
152:13, 153:5,
155:4, 156:16
turned
115:5
two
28:5, 28:13,
37:12, 51:2,
52:7, 54:15,
69:22, 94:13,
94:14, 98:9,
100:18, 151:17,

151:20, 152:7,
155:16
two-dimensional
27:13, 29:15,
102:5, 143:12
two-sided
118:7, 118:10
type
58:1, 59:8,
59:15, 59:18,
86:19, 109:12,
110:3, 132:5,
143:14, 145:22
types
42:9, 57:14,
57:21
typewriting
159:8

U
ultimately
65:12, 114:20
um
64:15
um-hmm
156:7
umber
3:3, 6:16
unambiguous
112:22
under
12:22, 13:4,
79:7, 79:15,
85:14, 110:10,
154:5, 159:8
undergrad
18:19, 19:12
underlined
87:1, 87:5
understand
8:22, 9:2,
9:15, 10:15,
11:10, 12:4,
12:7, 12:21,
15:4, 18:6,
31:7, 32:7,
49:13, 49:20,
49:21, 51:2,

51:3, 62:8,
64:14, 70:17,
71:9, 71:10,
71:15, 81:4,
81:6, 81:17,
81:21, 89:7,
95:16, 95:18,
97:9, 104:17,
104:19, 105:3,
125:6, 127:22,
128:3, 131:11,
133:13, 135:1,
144:14, 153:12,
153:20, 154:17,
155:11, 156:11
understanding
9:18, 29:12,
29:19, 82:3,
86:3, 91:11,
128:17, 129:12,
135:18, 136:7,
154:5, 154:21,
155:10, 155:18
understood
10:13, 10:16,
11:4, 11:11,
12:6, 71:14,
72:3, 82:17,
85:12, 125:22,
154:16
undoubtedly
136:16
unexplainable
100:1
unfortunately
104:7
united
1:1, 6:6
university
19:1
unless
11:7, 15:7

until
23:3, 81:22,
127:15
update
127:13

upper	50:3, 56:17,	41:18, 41:21,	we've
43:5, 44:12,	59:12, 65:16,	42:2, 70:5,	45:21, 86:17
116:22, 122:15,	66:18, 82:15,	70:8, 78:9,	weaver
122:18, 128:14,	86:21, 91:10,	78:12, 99:2,	2:12, 3:19,
134:5	93:20, 99:20,	99:6, 101:19,	6:10
usable	102:4, 103:17,	101:22, 121:8,	wednesday
71:22	112:15, 116:10,	121:12, 136:22,	1:18
usage	125:1, 125:8,	137:8, 147:8,	week
48:10, 55:6,	128:16, 136:19,	147:11, 158:12,	19:18
55:21, 59:7,	139:9, 139:17,	158:17	went
59:14, 59:17,	140:12, 142:3,	videotaped	125:3
130:20	142:9, 142:17,	1:13, 2:1, 6:3	weren't
usc	143:15	view	47:9
5:4, 78:22,	valid	135:1	whatever
79:7	128:21	voice-identify	121:4
use	value	6:14	whereof
48:16, 60:5,	88:10	voltage	159:14
60:8, 71:16,	variance	108:8	whether
72:1, 73:9,	35:15, 35:16,	volts	31:15, 32:17,
73:16, 73:20,	35:21, 39:11	14:5	146:14, 149:5
77:8, 108:14,	variants	volume	whole
118:10, 133:6,	45:3, 57:1,	25:14, 41:15	32:4
136:5	57:16	W	widespread
user	verbal	want	72:7
60:17	10:1, 43:21	8:15, 10:12,	wire
using	verbally	15:17, 62:9,	61:2, 61:16,
50:17, 61:18,	10:4	84:15, 113:19,	61:18, 62:1,
74:3, 83:14,	verbatim	121:4, 146:16,	62:22, 63:3,
118:8	149:3	153:4, 157:22,	63:8, 66:19,
uspto	verify	158:1	72:13, 120:16,
127:18	21:6	wants	130:3, 130:16,
usually	versus	32:9	130:20
87:10	52:2, 97:11	washington	wires
utility	vertically	1:2, 3:8, 6:7	120:13, 122:4,
52:10, 60:10,	100:7	way	122:7
67:9, 67:10	via	48:9, 59:22,	wiring
utilization	3:20, 62:21,	62:10, 62:12,	47:19, 60:16,
130:16	62:22, 63:12,	84:9, 112:4,	61:2, 101:2,
utilizing	71:2, 72:12,	117:11, 118:11,	118:16
74:13	93:14, 96:17,	127:6, 129:5,	within
	100:5, 119:9	151:6	27:13, 29:7,
	video	ways	83:16, 93:22,
	6:9, 6:11	151:18	103:18, 103:20,
v	videographer	we'll	107:18, 110:19,
vague	3:19, 6:2,	10:21	120:17, 130:15
20:9, 25:9,	6:10, 7:3, 7:9,	we're	without
26:4, 26:10,	7:19, 40:17,	21:9, 45:17	23:17, 31:13,
	40:20, 41:1,		48:9, 65:6,

71:1, 113:13,
135:12, 135:17,
138:19
witness
3:12, 4:3,
6:21, 6:22, 7:5,
7:8, 7:20, 10:9,
36:19, 44:18,
46:9, 53:21,
57:5, 59:5,
61:6, 62:16,
62:18, 77:14,
79:6, 79:11,
79:22, 80:3,
81:2, 86:11,
86:16, 88:13,
88:22, 89:21,
89:22, 96:11,
96:16, 101:16,
102:12, 102:14,
105:5, 106:5,
115:18, 117:1,
117:13, 118:9,
121:6, 121:19,
123:16, 129:3,
131:13, 135:14,
136:3, 136:20,
140:15, 147:14,
148:3, 148:7,
150:3, 150:5,
150:18, 154:2,
156:7, 158:21,
159:14
wolf
2:5, 3:14, 6:20
[REDACTED]
word
17:9
wordings
90:1, 90:2
words
148:22
work
20:1, 24:5,
25:5, 31:21,
35:4, 35:14,
35:17, 35:22,

36:3, 36:9,
36:13, 36:15,
37:1, 37:19,
38:6, 38:11,
39:18, 40:7,
40:11, 50:1,
54:5, 63:12,
71:10, 76:19
worked
22:4, 22:8,
22:12, 22:13,
23:2, 24:2,
39:9, 40:1,
52:19, 54:14,
58:12, 64:7,
64:15, 65:5
working
23:21, 24:19,
52:16
workings
103:21
workup
87:12
worries
121:1
worry
26:2
worse
41:16
wouldn't
105:13, 113:9,
125:13, 135:6,
138:6, 146:22
write
31:1, 32:3
writing
45:17, 143:4,
143:13, 145:12
wrong
113:2, 131:21
wrote
117:18, 117:19
Y
yeah
41:20, 45:3,
59:5, 61:6,
62:18, 64:10,

70:4, 75:6,
77:14, 79:22,
96:16, 102:12,
102:14, 106:5,
108:2, 108:5,
109:9, 114:11,
115:18, 116:7,
117:1, 117:13,
119:18, 128:9,
136:22, 149:17,
158:16
year
22:2, 23:1,
76:12
years
19:6, 19:10,
24:4, 50:9,
52:18, 54:8,
63:18, 68:17
yep
79:16, 80:4,
136:2, 143:22
yesterday
158:2, 158:10
york
3:7
yourself
47:3, 89:20,
128:1, 150:1,
153:8
Z
zones
102:10
zoom
3:20, 137:2
.
.4000
3:9
.8000
2:8, 3:17
0
00
121:7
0022332
16:3

0033122
15:21
0049582
16:1
01
99:4
0101466
16:2
011
38:13, 38:20,
40:1
0115313
16:6
0116025
16:7
0210061
4:18, 75:2
0212284
4:17, 15:22,
55:2
02210
2:7, 3:16
0223322
16:4
0252577
16:5
05
78:13
065
38:13, 38:17,
38:18, 40:1

1

1-1
38:22
1.56
81:14
1.6
132:3, 132:5,
132:12, 139:16
1.7
134:2, 134:14,
137:17, 139:6,
139:15
10
5:8, 40:21,
41:2, 41:22,
42:3, 115:8,

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

193

115:9, 131:4
10,290,566
5:7, 105:21
100
54:20, 68:20
1012
80:6
102014102910
16:9
105
5:7
11
4:14, 5:9,
70:6,
70:9, 110:6,
131:5, 131:6
115
5:8, 12:9
12
1:18, 4:15,
5:10, 5:12, 6:8,
12:8, 44:10,
78:10, 110:10,
139:22, 140:2,
144:4
128752015
80:6
13
5:11, 78:13,
141:15, 141:16,
159:15
131
5:9
132
109:1
133
108:20
134
109:3
135
107:19
136
106:19, 108:1,
108:13
137
108:12
138
108:12

139
5:10
14
5:12, 99:4,
99:7, 101:20,
102:1, 125:18,
125:20, 144:2,
144:3
141
5:11
1414
1:5, 6:7
144
5:12
145
5:13
1454
79:7
147
4:7
15
5:13, 63:18,
75:4, 93:3,
121:10, 121:13,
125:19, 145:5,
145:6, 149:15,
149:16, 149:18,
150:2, 150:7,
152:13, 157:13,
158:19, 158:20
150
106:20, 107:3,
107:18
154
5:4, 79:1
157
4:8
159
1:21
16
1:19, 6:9,
78:10, 94:16,
97:16, 147:9,
147:12
17
158:19
170
144:7

1742
80:6
1950
42:16
1993
19:9
1998
19:9
2
2
121:7
2,090,212,284
50:20
20
50:9, 52:18,
68:17, 93:5,
94:21, 118:18
200
34:8, 34:20,
41:7, 41:10,
42:5
2000
22:3, 23:3,
23:4, 23:6,
23:10, 23:14,
42:22, 43:19,
44:1
20001
3:8
2001
22:3, 42:22
2002
42:22
2005
44:3
2006
15:21
2009
4:17, 15:22,
55:2
2010
44:10
2011
16:1, 16:2
2012
16:3, 16:4
2013
76:14

2014
4:18, 75:2,
76:15
2015
16:6, 16:7
2016
16:5
202.408
3:9
2025
1:18, 6:8,
159:16
2031
159:18
21
12:8, 101:20
22
102:1
23
12:8, 95:2,
95:3
24
118:19
248
59:16
25
125:18, 125:20
26
12:8
28
76:14
284
50:21, 51:1,
51:4, 51:10,
51:18, 51:22,
54:20, 55:10,
55:19, 58:6,
58:21, 58:22,
63:13, 63:22,
64:9, 66:1,
66:3, 66:10,
66:17, 83:5,
83:7, 83:10,
83:18, 83:19,
83:22, 84:3,
84:9, 84:21,
90:9, 90:11,
90:15, 90:19,

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

194

90:20, 91:4,
92:9, 97:3,
97:10, 97:14,
148:16, 149:15,
149:19, 150:2,
150:7, 157:9

29

12:8

2deg

27:5, 28:6,
28:13, 28:16,
102:8, 102:20,
103:2, 103:5,
105:9, 105:13,
106:18, 107:18,
141:10

3

30

12:9, 40:21,
121:13

31

76:15

337

1:5, 6:7

34

79:7, 117:7,
117:9, 118:22,
119:1, 119:4,
153:9

35

5:4, 78:22

37

81:14

38

147:9

4

40

144:12, 144:14,
153:10

400

14:4

41

123:4, 123:14

4250

1:22

43

62:13, 140:3

44

41:2

45

4:16, 120:18,
121:16, 121:17

46

41:22, 42:3,
120:18, 121:16,
121:17, 147:12

47

116:21

48

61:21, 62:13,
63:2, 63:12,
116:21

481

14:14, 14:18,

14:22, 15:3,

45:22, 46:17,

48:1, 48:13,

48:21, 49:2,

49:6, 50:2,

50:14, 52:1,

52:12, 55:17,

56:15, 56:18,

57:13, 58:8,

58:15, 58:17,

59:9, 61:10,

66:5, 66:7,

66:11, 66:17,

67:3, 67:8,

67:14, 69:14,

76:17, 76:20,

77:5, 77:6,

78:1, 78:3,

79:4, 79:20,

81:8, 82:20,

83:12, 83:14,

84:1, 84:2,

84:5, 84:10,

85:20, 86:4,

97:4, 97:11,

97:14, 97:15,

98:2, 98:4,

111:2, 112:8,

119:15, 135:1,

151:11, 151:18,

152:3, 152:5,

152:10, 152:13,
153:5, 157:2

49

116:5, 116:21,
121:22, 122:1

4a

46:7

5

5

158:20

50

123:11

51

120:3, 120:4

52

70:6

53

123:11

54

120:3, 120:4,
128:10

55

4:17

56

120:5, 120:6

566

142:10

57

62:4, 122:2,
122:7, 122:8,
122:9

570071

1:20

58

70:9, 116:5,
122:2, 122:7,
122:8, 122:9

59

122:2, 122:7,
122:8, 122:9

6

60

128:11

600

2:6, 3:15, 6:12

61

155:6

617.646

2:8, 3:17

64

126:10

66

62:2, 62:3,
63:3, 63:8,
72:12

7

712

75:18

716

75:19

7250641

15:19

738

75:20

740

75:21, 76:5

75

4:18

76

149:10

78

5:3

7838097

15:20

8

80

5:5

841

52:8, 52:11

85

5:6

87

75:15

88

19:6

9

9

1:19, 6:9

9,368,434

5:8, 115:10,
115:16

9,899,481

4:16, 45:12,

[REDACTED]

Transcript of Ralf Otremba, Corporate Designee & Individually
Conducted on February 12, 2025

195

45:19

901

3:7

93

19:6

98

23:2

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