Page 1 1 2 UNITED STATES PATENT AND TRADEMARK OFFICE 3 BEFORE THE PATENT TRIAL AND APPEAL BOARD 4 5 Case IPR2015-01277 6 U.S. Patent No. 8,309,943 7 - x ASML NETHERLANDS B.V., EXCELITAS 8 9 TECHNOLOGIES CORP., AND QIOPTIQ 10 PHOTONICS GMBH & CO. KG, 11 Petitioners, 12 v. 13 ENERGETIQ TECHNOLOGY, INC., 14 Patent Owner. 15 - x 16 17 18 VIDEOTAPED DEPOSITION OF J. GARY EDEN, Ph.D. 19 WilmerHale, LLP 20 60 State Street 21 Boston, Massachusetts 22 23 Reported by: 24 MARYJO O'CONNOR, RMR, CSR 25 JOB NO. 102208

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	Page 2		Page 3
1		1	
2		2	APPEARANCES:
3		3	
4		4	PROSKAUER ROSE
5	Wednesday, January 27, 2015	5	Attorney for Plaintiff:
6	9:09 a.m.	6	One International Place
7		7	Boston, Massachusetts 02110
8	VIDEOTAPED DEPOSITION of J. GARY	8	BY: JINNIE REED, ESQ.
9	EDEN, Ph.D., at the offices of WilmerHale, LLP	9	STEVEN BAUER, ESQ.
10	60 State Street, Boston, Massachusetts, before		
12	MaryJo O'Connor, a Registered Merit Reporter,		
13	in and for the Commonwealth of Massachusette	13	
14	In and for the Commonwealth of Massachuseus.	14	
15		15	WILMERHALE Attornay for the Defendents:
16		16	60 State Street
17		17	Boston Massachusetts 02109
18		18	BY RICHARD GOLDENBERG ESO
19		19	BY: KEVIN PRUSSIA, ESO.
20		20	
21		21	
22		22	
23		23	
24		24	
25		25	
	Page 4		Page 5
1			J.G. Eden
2	APPEARANCES:		PROCEEDINGS
3			VIDEO TECHNICIAN: This is the start
4 5	WILMERHALE Attorney for the Defendents	5	of DvD labeled one of the videotaped deposition
6	1875 Denneylyania Ayonya NW	6	Notherlands R V at al versus Energetia
7	Washington D.C. 20006	7	Technology in the United States Patent and
8	BY MICHAEL SMITH ESO	8	Trademark Office before the Patent and Trial
9	D1. MICHIEL SMITH, LSQ.	9	Appeal Board, Action No. IPR2015-01277, U.S.
10		10	Patent No. 8,309,943.
11		11	This deposition is being held at the
12		12	offices of Wilmer Hale, 60 State Street, Boston,
13		13	Massachusetts, on January 27, 2016, at 9:09 a.m
14	ALSO PRESENT: Phil Bucksbaum	14	My name is Peter Crowley. I'm the
15	Peter Crowley, Videographer	15	legal video specialist from TSG Reporting, Inc.,
16		16	headquartered at 747 Third Avenue, New York,
17		17	New York. The court reporter is MaryJo O'Connor
18		1.0	
10		18	in association with TSG Reporting.
19 20		18 19	in association with TSG Reporting. Will counsel please introduce
19 20 21		18 19 20 21	in association with TSG Reporting. Will counsel please introduce yourself.
19 20 21 22		18 19 20 21 22	in association with TSG Reporting. Will counsel please introduce yourself. MR. GOLDENBERG: My name is Richard
19 20 21 22 23		18 19 20 21 22 23	in association with TSG Reporting. Will counsel please introduce yourself. MR. GOLDENBERG: My name is Richard Goldenberg representing the petitioner ASML and the witness Dr. Eden
19 20 21 22 23 24		18 19 20 21 22 23 24	in association with TSG Reporting. Will counsel please introduce yourself. MR. GOLDENBERG: My name is Richard Goldenberg representing the petitioner ASML and the witness Dr. Eden. With me here today are Keyin Prussia
19 20 21 22 23 24 25		18 19 20 21 22 23 24 25	in association with TSG Reporting. Will counsel please introduce yourself. MR. GOLDENBERG: My name is Richard Goldenberg representing the petitioner ASML and the witness Dr. Eden. With me here today are Kevin Prussia and Michael Smith, both also of Wilmer Hale

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1	J.G. Eden	1	J.G. Eden
2	portion of the light at a given wavelength is	2	issues that you're pursuing now are addressed in
3	transmitted by a given thickness of the material	3	my declaration. So it would be very helpful if I
4	In other words, in the normal conventional sense	4	were able to review my declaration
5	In other words, in the normal conventional sense. O Dr. Edge in the context of the '000	5	O Dr Eden are you referring to the
6	Q. Dr. Eden, in the context of the 000	6	Q. Dr. Eden, are you referring to the
7	patent, what is your understanding of the word		000 declaration of the because I believe you
· ·	sustain ?		have that one in front of you.
0	A. Can you tell me where you're looking,	8	A. Oh, I do. That's true. Very good.
9	Ms. Reed? Are you still in the '000 patent, or	9	I do. I forgot that I had it. Thank you,
10	are you looking at a particular occurrence of the	10	Ms. Reed.
11	term?	11	Q. You're welcome.
12	Q. Dr. Eden, I'm still looking at	12	A. So would you be so kind as to repeat
13	Claim 1.	13	your question?
14	A. Okay, thank you.	14	Q. Sure. Is there a duration of time
15	Q. You're welcome.	15	that the plasma would need to be maintained to
16	A. So the word "sustain" to me I	16	meet the claim element "sustained" in your
<mark>17</mark>	interpret as extending the life; maintaining the	17	opinion?
<mark>18</mark>	plasma. So perhaps a synonym for "sustain" would	18	A. Ms. Reed, the claim as it's written
<mark>19</mark>	be to maintain the existence of.	19	is very vague. So that issue is left unresolved.
20	O. Is there a duration of time that the	20	O. Well, what's your understanding of
21	plasma would need to be maintained to meet the	21	"maintain"?
22	claim element "sustained" in your opinion?	22	A Well the broader let me mention
23	A Well Ms Reed let me suggest this	23	that the broader context of the language that
24	I don't have my declaration before me. You've	24	you're mentioning is it says "to maintain a
25	read I presume my declaration And all of the	25	nlasma "
	read, i presume my declaration. This an of the		plusinu.
			5 (0
	Page 68		Page 69
1	J.G. Eden	1	J.G. Eden
2	So it's very difficult to answer your	2	O. How long does "continue to exist"
3	question because the plasma can range over an		
Δ	question because the plasma can range over an	3	mean in the context of the '000 patent?
Ŧ	extraordinary degree in electron density, for	4	mean in the context of the '000 patent? A. I don't know because it's not clear.
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	Page 78		Page 79
1	J.G. Eden	1	J.G. Eden
2	innovative?	2	what ASML intended or how they view the
3	MR. GOLDENBERG: Objection.	3	development. It is, in the short passage that
4	A. Well, you're making a qualitative	4	you've given me, a document I've never seen
5	statement in connecting a number of things,	5	before, it appears to be a positive development.
6	Ms. Reed. The passage that you just read from	6	Q. Dr. Eden, in Exhibit 1, which is your
7	this document indicates that the improvement is	7	declaration regarding the '000 patent, you gave a
8	the result of a combination of factors. And it's	8	proposed construction for light, correct?
9	impossible from this document to say just what	9	A. I believe that is correct. Are you
10	the source contributed to the improvement of	10	referring to a specific page, Ms. Reed?
11	performance. And you're implying, but you're not	11	Q. Yes. Dr. Eden, if I could direct
12	saying, that this improvement was due to one of	12	your attention to Paragraph 36. Doctor, are you
13	your client's lamps.	13	there? At Paragraph 36?
14	Q. Do you know if in the industry there	14	A. I am indeed.
15	was a need for a brighter light?	15	Q. And you gave some ranges for the
16	A. I don't know that there was in the	16	meaning of light, correct?
17	industry, but I would assume that there is; that	17	A. I suggested some intervals, if you
18	improvements in all aspects of the optical system	18	will, that are in wavelength that are
19	are always welcome.	19	associated with different spectral regions.
20	Q. And would you agree that ASML	20	Q. Now, is this your own understanding
21	identified the increase in the total amount of	21	of the different spectral regions?
22	light as one of the new aspects of their	22	A. It is my understanding, but I, for
23	metrology tool?	23	the purposes of this declaration, adopted the
24	MR. GOLDENBERG: Objection.	24	definition given by Bill Silfvast.
25	A. Well, it's very difficult to tell	25	Q. Dr. Eden, if I could hand you what's
	Page 80		Page 81
I		1	

1 1 J.G. Eden J.G. Eden 2 2 going to be marked as Exhibit 5. In your opinion would near-infrared 3 3 (Eden Exhibit 5, Document entitled) be above 1,000? 4 4 "Optical Engineering" December 2003, Volume 42 A. Yes. I think it's been a long time 5 5 Number 12 ISSN 0091-3286, marked for ago, but my recollection is that the definition 6 6 that's offered there is slightly longer than the identification) 7 7 Q. Dr. Eden, do you recognize this limit that I'm proposing in the '000 declaration. 8 8 document? Q. So, Dr. Eden, in your opinion 9 9 A. I certainly do. near-infrared could be above 1,000; is that 10 10 Q. Could you tell me what it is? correct? 11 11 A. Well, it's the -- a copy of the cover A. The more common understanding of the 12 12 limits of the near-infrared, or any other of the December 2003 issue of Optical 13 13 Engineering. It's the first page, front and spectral region, I think are represented in my 14 back. And then you have supplied a copy of an 14 statement in the '000 declaration. 15 15 Q. But we can agree that you have article that I and my colleagues wrote that 16 16 authored a paper where near-infrared was above appeared in that same issue, December of 2003. 17 17 1,000, correct? Q. If I could direct your attention to 18 18 that, it says 3612 at the bottom, the first page A. That's correct. It's a little bit 19 19 with your name as the author and your colleague's beyond the limit that I'm proposing in the '000. 20 20 But I have to say that in my courses and work for name as the author in the abstract. 21 21 at least the last 20 years, I've told my students In there in the abstract you write, 22 22 that the infrared, by general agreement in the "A near-infrared 1.315"; is that correct? 23 23 community, ends at about 1,000 nanometers. A. That's what it says. That's correct. 24 24 Q. So in your opinion would Q. Thank you, Dr. Eden. 25 25 MS. REED: Let me mark what's going near-infrared include -- strike that.

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Ţ	J.G. Eden		J.G. Eden
2	ultraviolet, you proposed a range of 200	2	400 nanometers, which is the normal range for
3	nanometers to 400 nanometers; is that correct?	3	ultraviolet light, but that at lower wavelengths
4	MR. GOLDENBERG: Objection, form,	4	is the vacuum ultraviolet, and below that is the
5	foundation.	5	extreme ultraviolet.
6	A. That is correct. That is the	6	Q. Thank you, Dr. Eden. I think now is
7	commonly-accepted boundaries of the ultraviolet.	7	a good time to break.
8	Q. If I could direct your attention to	8	VIDEO TECHNICIAN: The time is now
9	Exhibit 2, the '000 patent, Column 20, Lines 32	9	12:09 p.m This concludes DVD number two of
10	to 35 this reads as "Ultraviolet light is	10	today's deposition. We are off the record.
11	electromagnet energy with a wavelength shorter	11	(Proceedings recessed at 12:09 p.m.
12	than that of visible light, for instance between	12	for the luncheon recess.)
13	about 50 and 400 nanometers."	13	
14	Did I read that correctly?	14	
15	A. You did.	15	
16	O. So in your opinion would a person of	16	
17	ordinary skill in the art reading this passage of	17	
18	the '000 patent think that ultraviolet light was	18	
19	lower than your 200 to 400 range?	19	
20	A Someone who is skilled in the art	20	
21	knows where the boundaries of the various	21	
22	spectral regions are Ms Reed. And they would	22	
23	probably assume as I did that the author was	23	
24	referring to the ultraviolet writ large, that the	24	
25	ultraviolet consists of the region between 200 to	25	
25	ultraviolet consists of the region between 200 to	25	
	Page 88		Page 89
1	Page 88	1	Page 89
1 2	Page 88 J.G. Eden AFTERNOON SESSION	1	Page 89 J.G. Eden MR GOLDENBERG: Objection
1 2 3	Page 88 J.G. Eden AFTERNOON SESSION VIDEO TECHNICIAN: The time is now	1 2 3	Page 89 J.G. Eden MR. GOLDENBERG: Objection.
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