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# Transcript of Jianzhong Jiao, Ph.D.

**Date:** December 11, 2023

**Case:** Volkswagen Group of America, Inc. -v- Spero (PTAB)

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Transcript of Jianzhong Jiao, Ph.D.  
Conducted on December 11, 2023

1 (1 to 4)

1	2
1 UNITED STATES PATENT AND TRADEMARK OFFICE	1 A P P E A R A N C E S
2 -----	2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD	3 ON BEHALF OF THE PETITIONER:
4 -----	4 JASON A. FITZSIMMONS, ESQUIRE
5 VOLKSWAGEN GROUP OF AMERICA, INC.,	5 IAN SOULE, ESQUIRE
6 Petitioner,	6 STERNE, KESSLER, GOLDSTEIN & FOX,
7 v.	7 P.L.L.C.
8 YECHZKAL EVAN SPERO,	8 1101 K Street, NW
9 Patent Owner.	9 Washington, DC 20005
10 -----	10 202.371.2600
11 IPR2022-01586	11
12 U.S. Patent No. 11,208,029	12 ON BEHALF OF THE PATENT OWNER:
13 -----	13 ANDREW B. TURNER, ESQUIRE
14	14 BROOKS KUSHMAN
15 DEPOSITION OF JIANZHONG JIAO, PH.D.	15 1000 Town Center
16 Washington, DC	16 22nd Floor
17 Monday, December 11, 2023	17 Southfield, MI 48075
18 9:01 a.m. EST	18 248.358.4400
19	19
20 Job No.: 517946	20 ALSO PRESENT:
21 Pages: 1 - 121	21 Dave Sullivan, Planet Depos Technician
22 Reported by: Judith E. Bellinger, RPR, CRR	22
2	4
1 Deposition of JIANZHONG JIAO, PH.D., held at	1 C O N T E N T S
2 the offices of:	2 EXAMINATION OF JIANZHONG JIAO, PH.D. PAGE
3	3 By Mr. Turner 5
4	4 Previously Marked:
5 STERNE, KESSLER, GOLDSTEIN & FOX	5 VWGoA Exhibit:
6 P.L.L.C.	6 Exhibit 1001 United States Patent Number 15
7 1101 K Street, NW	7 11,208,209
8 Washington, DC 20005	8 Exhibit 1005 United States Patent Number 23
9 202.371.2600	9 6,144,158
10	10 Exhibit 1036 Declaration of Jianzhong Jiao, 41
11	11 Ph.D., In Support of Petitioner's.
12	12 Reply
13	13 Exhibit 1036 Declaration of Jianzhong Jiao, 110
14	14 Ph.D., In Support of Petitioner's.
15	15 For Inter Partes Review of U.S.
16 Pursuant to notice, before Judith E.	16 Patent Number 11,208,029
17 Bellinger, Registered Professional Reporter,	17
18 Certified Realtime Reporter, and Notary Public in	18
19 and for the District of Columbia.	19
20	20
21	21
22	22

<p>5</p> <p>1 PROCEEDINGS</p> <p>2 JIANZHONG JIAO, PH.D.,</p> <p>3 being first duly sworn, was examined</p> <p>4 and testified as follows:</p> <p>5 EXAMINATION BY COUNSEL FOR THE PATENT</p> <p>6 OWNER</p> <p>7 BY MR. TURNER:</p> <p>8 Q All right. Good morning, Dr. Jiao.</p> <p>9 A <b>Good morning, Andy.</b></p> <p>10 Q Let's see. Do you understand you're</p> <p>11 here for a deposition in IPR 2022-01586?</p> <p>12 A <b>Yes.</b></p> <p>13 Q All right. And that's for the U.S.</p> <p>14 Patent Number 11,208,029?</p> <p>15 A <b>Yes.</b></p> <p>16 Q Okay. Let's see. How did you prepare</p> <p>17 for your deposition today?</p> <p>18 A <b>I had a meeting with counsel yesterday</b></p> <p>19 <b>and we went through the preparations for the</b></p> <p>20 <b>deposition. That was yesterday.</b></p> <p>21 Q Okay. And was that in person or was</p> <p>22 that a remote meeting?</p>	<p>7</p> <p>1 A <b>No.</b></p> <p>2 Q Who retained you for working on this</p> <p>3 IPR proceeding?</p> <p>4 A <b>I was retained through an agency,</b></p> <p>5 <b>referred by an agency, if I recall, was, like,</b></p> <p>6 <b>Round Table Group, who contacted Sterne Kessler,</b></p> <p>7 <b>and then they interviewed me and they agreed to</b></p> <p>8 <b>retain me through the agency.</b></p> <p>9 Q Okay. And what entity are you</p> <p>10 representing for this matter?</p> <p>11 A <b>I don't think I understand that</b></p> <p>12 <b>question.</b></p> <p>13 Q So your opinions in this proceeding,</p> <p>14 are they on behalf of a certain entity?</p> <p>15 A <b>I was retained by Sterne Kessler, who</b></p> <p>16 <b>represents the petitioner for this '029 patent,</b></p> <p>17 <b>and I was retained as an expert, by myself.</b></p> <p>18 <b>Represent myself.</b></p> <p>19 Q And who's the -- I'm sorry. So who's</p> <p>20 the petitioner in this matter?</p> <p>21 A <b>The petitioner is Volkswagen of</b></p> <p>22 <b>America.</b></p>
<p>6</p> <p>1 A <b>It was in person.</b></p> <p>2 Q Any other meetings to prepare for the</p> <p>3 deposition.</p> <p>4 A <b>We had some email communication, just</b></p> <p>5 <b>scheduling the personal meeting prior to</b></p> <p>6 <b>yesterday.</b></p> <p>7 Q Okay. And who did you meet with to</p> <p>8 prepare for your deposition?</p> <p>9 A <b>I met Ian Soule.</b></p> <p>10 Q Did you meet with anyone besides Ian or</p> <p>11 the attorneys at Sterne Kessler?</p> <p>12 A <b>No.</b></p> <p>13 Q And what documents did you review?</p> <p>14 A <b>I reviewed, we reviewed it together, my</b></p> <p>15 <b>second declaration. We also reviewed, briefly, a</b></p> <p>16 <b>few references, including '029 patent claim</b></p> <p>17 <b>language and one or two other reference documents.</b></p> <p>18 Q Okay. Are those references cited in</p> <p>19 your declaration?</p> <p>20 A <b>Yes.</b></p> <p>21 Q Did you review any documents that are</p> <p>22 not cited in your declaration?</p>	<p>8</p> <p>1 Q And did you run a conflict check before</p> <p>2 agreeing to do work on this project?</p> <p>3 A <b>I did.</b></p> <p>4 Q And that was for Volkswagen of America?</p> <p>5 A <b>What was your question? I'm sorry.</b></p> <p>6 Q What company did you run your conflict</p> <p>7 check on, was that Volkswagen of America?</p> <p>8 A <b>Whatever the request from retaining</b></p> <p>9 <b>counsel, regarding their represented clients and</b></p> <p>10 <b>my work history, I went through. I didn't have</b></p> <p>11 <b>any conflict.</b></p> <p>12 Q Did you run a conflict check for other</p> <p>13 entities of Volkswagen?</p> <p>14 MR. FITZSIMMONS: Objection. Scope.</p> <p>15 Relevance.</p> <p>16 A <b>No.</b></p> <p>17 Q Did you run a conflict check for</p> <p>18 Porche?</p> <p>19 MR. FITZSIMMONS: Objection. Scope.</p> <p>20 Relevance.</p> <p>21 A <b>No.</b></p> <p>22 Q Did you run a conflict check for</p>

<p style="text-align: right;">9</p> <p>1 unified patents?</p> <p>2 MR. FITZSIMMONS: Objection. Scope.</p> <p>3 Relevance.</p> <p>4 A No. I'm sorry, when you mention "run</p> <p>5 the conflict," through whom? Myself. If the</p> <p>6 question was asking, do I have any conflict with</p> <p>7 all those entities you mentioned, I do not. I</p> <p>8 didn't run any conflict check because I don't have</p> <p>9 any conflict.</p> <p>10 Q Is that your standard practice when you</p> <p>11 take on new work, to run a conflict check?</p> <p>12 A Per requested by retaining teams, yes.</p> <p>13 Q Did you run a conflict check for</p> <p>14 Mercedes?</p> <p>15 MR. FITZSIMMONS: Objection. Scope.</p> <p>16 Relevance.</p> <p>17 A I consulted with my attorneys regarding</p> <p>18 if they contacted me, what should be my response.</p> <p>19 And I was given the instruction.</p> <p>20 MR. FITZSIMMONS: I would just caution</p> <p>21 the witness not to reveal any communications that</p> <p>22 might be privileged.</p>	<p style="text-align: right;">11</p> <p>1 A Beam pattern is a terminology to</p> <p>2 describe luminous intensity, angular distribution.</p> <p>3 Q Is your understanding of the term "beam</p> <p>4 pattern" different for a more general context,</p> <p>5 including other applications besides automotive</p> <p>6 lighting headlamp beam pattern?</p> <p>7 MR. FITZSIMMONS: Objection. Scope and</p> <p>8 relevance.</p> <p>9 A In the illumination industry, besides</p> <p>10 automotive lighting, typically headlight, other</p> <p>11 illumination industry, such as general lighting,</p> <p>12 sometimes also use the terminology of beam pattern</p> <p>13 with the same description.</p> <p>14 Q You said in general lighting, sometimes</p> <p>15 uses the same description. What are some other</p> <p>16 description of beam pattern in the general</p> <p>17 context?</p> <p>18 A In general lighting, besides the beam</p> <p>19 pattern, namely, luminous intensity angular</p> <p>20 distribution, sometimes they also use a</p> <p>21 terminology of zonal lumen.</p> <p>22 Q I'm sorry, did you say zonal lumen?</p>
<p style="text-align: right;">10</p> <p>1 MR. TURNER: So are you instructing him</p> <p>2 not to answer?</p> <p>3 MR. FITZSIMMONS: I'm cautioning the</p> <p>4 witness not to reveal any communications that</p> <p>5 might be privileged.</p> <p>6 MR. TURNER: Okay.</p> <p>7 Q So, Dr. Jiao, did you run a conflict</p> <p>8 check for Mercedes?</p> <p>9 A Yes.</p> <p>10 MR. FITZSIMMONS: Objection. Scope and</p> <p>11 relevance.</p> <p>12 A Yes, I did.</p> <p>13 Q And did you run a conflict check for</p> <p>14 General Motors?</p> <p>15 MR. FITZSIMMONS: Objection. Scope and</p> <p>16 relevance.</p> <p>17 A No.</p> <p>18 Q Dr. Jiao, what is your understanding of</p> <p>19 the term beam pattern?</p> <p>20 A I assume you're referring to automotive</p> <p>21 lighting headlight beam pattern?</p> <p>22 Q Yes.</p>	<p style="text-align: right;">12</p> <p>1 Can you spell that for me, please.</p> <p>2 A Zonal, Z-O-N-A-L.</p> <p>3 Q Can you describe zonal lumen for me?</p> <p>4 A Zonal lumen is a quantity that is</p> <p>5 measured based on illuminance intensity, angular</p> <p>6 distribution, by defining a boundary, an angular</p> <p>7 boundary, for instance, within 90 degree of</p> <p>8 whatever angle defined, what is total luminous</p> <p>9 flux that, given angular range or boundary, total</p> <p>10 luminous flux is defined as a zonal lumen.</p> <p>11 Q All right, Dr. Jiao, what is your</p> <p>12 understanding of the term color, as used in the</p> <p>13 lighting context?</p> <p>14 MR. FITZSIMMONS: Objection. Form.</p> <p>15 Vague.</p> <p>16 A In the lighting context, the color is,</p> <p>17 while defined in a physiological term, using a</p> <p>18 specific internationally defined color definition</p> <p>19 in terms of color coordinates, as one measurable.</p> <p>20 We also use correlated color temperature, CCT. We</p> <p>21 also use color rendering index.</p> <p>22 These are the measureables that define</p>

<p>13</p> <p>1 a color for the lighting industry.</p> <p>2 Parallel to that, we also have</p> <p>3 perceived human factor related, a perceived color</p> <p>4 perception.</p> <p>5 Q Is your understanding of the term color</p> <p>6 any different when applied to the automotive</p> <p>7 lighting context?</p> <p>8 A In the whole lighting field, color is</p> <p>9 well defined, regardless of application. They're</p> <p>10 measured in the same way, using same metrics in</p> <p>11 international -- international community is</p> <p>12 defined by CIE. It's a French word, I can't</p> <p>13 pronounce it. Some kind of commission</p> <p>14 international organization, CIE. Color is</p> <p>15 certified by CIE-defined coordinates, values, and</p> <p>16 the equipment -- equivalent.</p> <p>17 Q What is your understanding of the term</p> <p>18 intensity, as used in the general lighting</p> <p>19 context?</p> <p>20 MR. FITZSIMMONS: Objection. Scope.</p> <p>21 Relevance.</p> <p>22 A Intensity is defined as illuminance</p>	<p>15</p> <p>1 intensity are the same thing?</p> <p>2 MR. FITZSIMMONS: Objection.</p> <p>3 Mischaracterizes the witness' testimony.</p> <p>4 A What I said is spatial distribution is</p> <p>5 light intensity, angular distribution.</p> <p>6 Q What's the difference between spatial</p> <p>7 distribution and intensity?</p> <p>8 MR. FITZSIMMONS: Objection. Form.</p> <p>9 A Again, intensity is defined, and the</p> <p>10 luminous flux per solid angle, that's one measured</p> <p>11 quantity with the unit of candela.</p> <p>12 Distribution, alternative use, spatial</p> <p>13 distribution or angular distribution, is where the</p> <p>14 light intensity being distributed in the angular</p> <p>15 domain measured in different angle with a</p> <p>16 different light intensity value, namely, candela.</p> <p>17 Q All right. Dr. Jiao, do you have a</p> <p>18 copy of Exhibit 1001, which is the '029 patent?</p> <p>19 (VWGoA Exhibit 1001 previously marked</p> <p>20 for identification and retained by counsel.)</p> <p>21 A Yes, I do.</p> <p>22 Q And this is U.S. 11,208,029?</p>
<p>14</p> <p>1 flux per solid angle with a specified unit of a</p> <p>2 candela. Unit is candela.</p> <p>3 Q Is your understanding of the term</p> <p>4 intensity any different when applied to the</p> <p>5 automotive context?</p> <p>6 A This is basic or fundamental metrics</p> <p>7 for measuring light. The light intensity, again,</p> <p>8 is well defined in CIE, and international units,</p> <p>9 measurement units.</p> <p>10 Q You're saying the definition for</p> <p>11 intensity is the same in a general lighting</p> <p>12 context as it's used in the automotive lighting</p> <p>13 context?</p> <p>14 A Yes.</p> <p>15 Q All right. What is your understanding</p> <p>16 of the term "spatial distribution," as used in the</p> <p>17 general lighting context?</p> <p>18 MR. FITZSIMMONS: Objection. Scope.</p> <p>19 Relevance. Objection. Form, as well.</p> <p>20 A Spatial distribution is light</p> <p>21 intensity, angular distribution.</p> <p>22 Q Are you saying spatial distribution and</p>	<p>16</p> <p>1 A Yes.</p> <p>2 Q And you're okay if we refer to this as</p> <p>3 the '029 patent?</p> <p>4 A Yes.</p> <p>5 Q Did you read the entire '029 patent?</p> <p>6 MR. FITZSIMMONS: Objection. Form.</p> <p>7 A I think so. I did.</p> <p>8 Q How many times do you think you've read</p> <p>9 the '029 patent?</p> <p>10 A I read the claims many times. The</p> <p>11 specifications, selective sections, many times.</p> <p>12 Q Can you turn to claim 1, which is</p> <p>13 column 95 on the -- starting at line 56.</p> <p>14 A Yes, I'm here.</p> <p>15 Q Would you agree that claim 1 is</p> <p>16 directed to a system for a motor vehicle?</p> <p>17 MR. FITZSIMMONS: Objection. Form.</p> <p>18 A The word "a system" is used in claim 1.</p> <p>19 Q Okay. Can you read line 56 for me.</p> <p>20 A "A system for motor vehicle</p> <p>21 comprising."</p> <p>22 Q Would you agree that column 1 is</p>

<p>17</p> <p>1 directed to a system for a motor vehicle?</p> <p>2 <b>A That is what the claim 1 says.</b></p> <p>3 Q Well, would you read the limitation</p> <p>4 starting in line 57, with "a plurality of</p> <p>5 headlamps."</p> <p>6 <b>A "A plurality of headlamps each</b></p> <p>7 <b>comprising of plurality of LED light sources, one</b></p> <p>8 <b>or more processors, and a memory storing</b></p> <p>9 <b>instructions that when executed by one or more of</b></p> <p>10 <b>one or more processors, enable the one or more</b></p> <p>11 <b>processors to do."</b></p> <p>12 Q That's good.</p> <p>13 What is your understanding of the term</p> <p>14 "light sources"?</p> <p>15 MR. FITZSIMMONS: Objection. Form.</p> <p>16 Q As used in claim 1 of the '029 patent.</p> <p>17 <b>A It's a subsystem that produces lights</b></p> <p>18 <b>within the system.</b></p> <p>19 Q All right. Can you read the next</p> <p>20 limitation, from lines -- starting with "received</p> <p>21 data," through line 65, please.</p> <p>22 <b>A You mean "received first data"?</b></p>	<p>19</p> <p>1 Q And what is map information?</p> <p>2 MR. FITZSIMMONS: Objection to form.</p> <p>3 <b>A Map usually referring to</b></p> <p>4 <b>two-dimensional geographic information.</b></p> <p>5 Q What are some examples of</p> <p>6 two-dimensional geographic information?</p> <p>7 <b>A Road or other than road, map shows</b></p> <p>8 <b>lake, map shows water, or water between land, and</b></p> <p>9 <b>the water.</b></p> <p>10 Q So the next limitation includes the</p> <p>11 phrase "determine a light change and the change</p> <p>12 adapting a light pattern."</p> <p>13 What is your understanding of the term</p> <p>14 "light pattern," as used in the '029?</p> <p>15 <b>A Light pattern is the light intensity,</b></p> <p>16 <b>luminous light intensity, or luminous intensity,</b></p> <p>17 <b>angular distribution.</b></p> <p>18 Q Does light pattern include color?</p> <p>19 MR. FITZSIMMONS: Objection. Form.</p> <p>20 <b>A Typically, in the lighting industry, we</b></p> <p>21 <b>separate color with light pattern. Light pattern</b></p> <p>22 <b>is a description, in general. Light luminous</b></p>
<p>18</p> <p>1 Q Yes.</p> <p>2 <b>A "Received first data including, at</b></p> <p>3 <b>least, map data indicating a road curvature</b></p> <p>4 <b>upcoming along a road on which the motor vehicle</b></p> <p>5 <b>is traveling. Determine a light change. The</b></p> <p>6 <b>change adapting a light pattern of the headlights</b></p> <p>7 <b>in at least one of color, intensity, or spatial</b></p> <p>8 <b>distribution to increase light in the direction of</b></p> <p>9 <b>the road curvature ahead of a motor vehicle and</b></p> <p>10 <b>the shaping light based" at part -- in part -- "at</b></p> <p>11 <b>least in part, on the road curvature and control,</b></p> <p>12 <b>at least, a first plurality of the LED light</b></p> <p>13 <b>sources to provide light based, at least in part,</b></p> <p>14 <b>on the determined light change and prior to the</b></p> <p>15 <b>motor vehicle reaching the road curvature."</b></p> <p>16 Q Thank you.</p> <p>17 So at the bottom of Claim 90 -- column</p> <p>18 95, claim 1 includes the term "map data."</p> <p>19 What is your understanding of the term</p> <p>20 map data, as used in the '029 patent?</p> <p>21 <b>A Map data is the data contained, map</b></p> <p>22 <b>information.</b></p>	<p>20</p> <p>1 <b>intensity, angular distribution, and does not</b></p> <p>2 <b>include color.</b></p> <p>3 Q All right. That same limitation that</p> <p>4 uses the -- says "determine the light change, the</p> <p>5 change adapting light pattern to the headlights,</p> <p>6 and at least one of color."</p> <p>7 So what is your understanding of the</p> <p>8 term "color," as used in the '029 patent claim 1?</p> <p>9 <b>A The light-intensity distribution,</b></p> <p>10 <b>namely, the pattern, also, can't add color content</b></p> <p>11 <b>into such distribution. Meaning, you can have</b></p> <p>12 <b>different color in different angular distribution.</b></p> <p>13 <b>But, usually, you want specified color.</b></p> <p>14 Q Okay. You said you can add color</p> <p>15 content or you cannot add color content into such</p> <p>16 distribution?</p> <p>17 <b>A Yes, they're independent variable. But</b></p> <p>18 <b>you can add these independent variables into light</b></p> <p>19 <b>pattern, namely, angular distribution, by further</b></p> <p>20 <b>specifying the color content in these angular</b></p> <p>21 <b>distributions, namely, pattern.</b></p> <p>22 Q So the same limitation that goes on to</p>

<p>21</p> <p>1 say "the change adapting a light pattern of the 2 headlights in at least one of color, intensity or 3 spatial distribution." 4 So what is your understanding of the 5 term "intensity," as used in claim 1 of the '029 6 patent? 7 <b>A Intensity's always clearly defined as 8 luminous intensity. It means luminous flux per 9 solid angle.</b> 10 Q So, intensity, as used in claim 1 of 11 the '029 patent, means luminous flux per solid 12 angle; is that your understanding? 13 MR. FITZSIMMONS: Objection. 14 Mischaracterizes the witness' testimony. 15 <b>A The term "intensity," in the lighting 16 field, is defined as luminous flux per solid 17 angle, unless alternate pattern introduce its own 18 definition and a person of ordinary skill in the 19 art will understand intensity is a universal 20 description of luminous flux per solid angle.</b> 21 Since I don't see specific definition, 22 my understanding is, yes, the word "intensity" or</p>	<p>23</p> <p>1 <b>A The difference is you can have 2 intensity, which is defined to luminous flux per 3 solid angle, and you can also have a different 4 distribution.</b> 5 Q Dr. Jiao, do you have a copy of 6 Exhibit 1005, which is the Beam patent? 7 (VWGoA Exhibit 1005 previously marked 8 for identification and retained by counsel.) 9 <b>A Yes.</b> 10 Q And you're okay if we refer to this as 11 the "Beam patent"? 12 <b>A Yes.</b> 13 Q Can you read the abstract on the first 14 page of the patent? 15 <b>A "This invention relates to the 16 production of a beam of light comprised of many 17 microbeams controlled by incoming irradiation 18 employing a sensor to determine the location of 19 light source forward of apparatus and using that 20 information to control the intensity and/or 21 angular position of one or more narrow-angle 22 microbeams, which are part of large number of</b></p>
<p>22</p> <p>1 term intensity, here, is same as defined in the 2 lighting industry -- terminology defined in the 3 lighting industry. 4 Q So, Dr. Jiao, are you proposing a 5 construction for this term of claim 1, the term 6 "intensity" in claim 1? 7 MR. FITZSIMMONS: Objection. Form. 8 <b>A I do not. It's a plain, simple 9 language. Intensity is well understood by the 10 person of ordinary skill in the art, in the field, 11 is a description of luminous flux per unit angle 12 with defined quantity and measurable and unit.</b> 13 Q All right. Dr. Jiao, what is your 14 understanding of the term "spatial distribution," 15 as used in claim 1 of the '029 patent? 16 <b>A I think I answered that question. 17 Spatial distribution is angular distribution of 18 light intensity.</b> 19 Q So what's the difference between 20 intensity and spatial distribution, as used in 21 claim 1 of the '029 patent? 22 MR. FITZSIMMONS: Objection. Form.</p>	<p>24</p> <p>1 beams comprising the overall output beam." 2 Q Now, the phrase here "one or more 3 narrow-angle microbeams," is a microbeam an LED? 4 MR. FITZSIMMONS: Objection. Form. 5 <b>A Microbeams, per specifications, and the 6 claims of this beam pattern, is a beam unit that 7 consists of light source and light spatial 8 modulator -- spatial light modulator.</b> 9 Q Are you saying that a microbeam 10 includes a light source and a spatial light 11 modulator? 12 <b>A I said microbeam consists of an 13 emitting device, light-emitting device, and 14 spatial light modulator.</b> 15 Q What is the output of a light-emitting 16 device? 17 <b>A The output of the lighting -- 18 light-emitting device is the visible light.</b> 19 Q So how does a light-emitting device 20 work with a spatial light modulator? 21 MR. FITZSIMMONS: Objection. Form. 22 Vague.</p>

<p>25</p> <p>1     <b>A</b>   Per beam's specification and claims, 2   the light-emitting device produces light, going 3   through spatial light modulator, modulated the 4   light to become a narrow-angle microbeams. 5     Q    So you're saying the output from the 6   spatial light modulator is narrow-angle 7   microbeams? 8     MR. FITZSIMMONS: Objection. Form. 9   Mischaracterizes the witness' testimony. 10   <b>A</b>   What I said is through spatial light 11   modulator, the narrow-angle micro -- the light 12   output is narrow-angled microbeams light output. 13   In other words, microbeams perform -- or produce 14   narrow-angle beams -- lights. 15   Q    So is it your opinion that a microbeam 16   includes a light emitter and a spatial light 17   modulator and that a spatial light modulator also 18   produces microbeams? 19     MR. FITZSIMMONS: Objection. Form. 20   Compound question. 21   <b>A</b>   Okay. I think your word "produce" is 22   not clear.</p>	<p>27</p> <p>1     MR. FITZSIMMONS: Objection. Form. 2     <b>A</b>   We used the term beam distributor, that 3   usually comprise of multiple components. I don't 4   know if you call that system or subsystem. Very 5   similar to microbeam. Minimally compress source 6   and some modulator device together is, when we 7   call beam distribution -- beam contributor. 8   Microbeam is type of beam contributor. 9     Q    Dr. Jiao, do you teach classes for the 10   Society of Automotive Engineering? 11   <b>A</b>   I do. 12     MR. FITZSIMMONS: Objection. Scope. 13   Q    What type of classes do you teach for 14   the Society of Automotive Engineering? 15     MR. FITZSIMMONS: Objection. Scope. 16   Relevance. 17   <b>A</b>   I think I answered that at my first 18   deposition, right? Do we have a record of that? 19   I can repeat what I responded to that question in 20   my first deposition. 21     Do you want me to repeat? 22   Q    I'm sorry. I can't hear you. Maybe I</p>
<p>26</p> <p>1     Microbeam, defined by Beam patent is a 2   subsystem that produce narrow-angle beams. The 3   subsystem consist of light-emitting device and 4   light spatial modulator. Together, they form a 5   microbeam that produce narrow-angle light beams. 6   Q    So you're saying the Beam reference 7   uses the term microbeam to describe a system, a 8   lighting system? 9     Is that your opinion? 10    MR. FITZSIMMONS: Objection. Form. 11   <b>A</b>   What I said is Beam described a 12   microbeam-comprised light-emitting device and 13   spatial light modulator, together, that microbeam 14   produces narrow-angle light beams. 15   Q    Dr. Jiao, in the automotive industry, 16   do you use the term microbeam to refer to a system 17   that includes light-emitting devices and spatial 18   light modulators? 19     MR. FITZSIMMONS: Objection. Form. 20   <b>A</b>   We use the word "beam contributor." 21   Q    You use the term beam contributor to 22   refer to a lighting system?</p>	<p>28</p> <p>1   had some background noise. Could you repeat that, 2   please? 3     <b>A</b>   What I said is, I answered that 4   question you asked, during my first deposition by 5   you. I can repeat the courses that I teach or I'm 6   still teaching for SAE. 7     Do you want me to do that? I can do 8   so. 9     Q    Yes, please. 10   <b>A</b>   I teach three courses -- automotive 11   lighting courses for and beyond SAE. First one is 12   titled Automotive Lighting I, Design and 13   Technology. 14     Second one is Automotive Lighting II, 15   Testing and Regulation. 16     Third one is Automotive Lighting III, 17   LEDs and Lighting Applications. 18   Q    Okay. In your SAE classes, do you use 19   the term "microbeam" to refer to lighting systems? 20     MR. FITZSIMMONS: Objection. Scope. 21   Relevance. 22   <b>A</b>   I don't recall using the word</p>



<p>29</p> <p>1 <b>microbeams.</b></p> <p>2 Q Dr. Jiao, in your SAE classes, what</p> <p>3 terminology do you use to describe lighting</p> <p>4 systems?</p> <p>5 MR. FITZSIMMONS: Objection. Form.</p> <p>6 Scope. Relevance.</p> <p>7 <b>A I use terminologies of components,</b></p> <p>8 <b>subsystems, and system.</b></p> <p>9 Q Can you provide some examples of</p> <p>10 terminologies you use in your SAE classes to</p> <p>11 describe lighting systems.</p> <p>12 MR. FITZSIMMONS: Objection. Form.</p> <p>13 Vague. Scope and relevance.</p> <p>14 <b>A Well, in all the automotive lighting,</b></p> <p>15 <b>systems is commonly consist of light-emitting</b></p> <p>16 <b>devices, optical devices, electronics devices, and</b></p> <p>17 <b>mechanical devices. Together, it forms automotive</b></p> <p>18 <b>lighting system.</b></p> <p>19 <b>Some components can combine and form a</b></p> <p>20 <b>subsystem.</b></p> <p>21 Q So in your SAE classes, you refer to</p> <p>22 lighting systems as lighting systems; is that</p>	<p>31</p> <p>1 <b>A I believe the patent described several</b></p> <p>2 <b>examples on 202.</b></p> <p>3 <b>This embodiment, the notions 202 are</b></p> <p>4 <b>calling to the specification is a lamp.</b></p> <p>5 Q Okay. Does Beam describe what specific</p> <p>6 type of lamp or light source is used in 202?</p> <p>7 <b>A The specification -- I can go through</b></p> <p>8 <b>it. I want to find the precise words, how he</b></p> <p>9 <b>described the lamp -- how the patent described the</b></p> <p>10 <b>lamp.</b></p> <p>11 If I -- this is his description: The</p> <p>12 source selected from the group consisting of</p> <p>13 light-emitting tiles, lasers, incandescent lamps,</p> <p>14 arc lamps, electroluminescent lamps. These are</p> <p>15 type of examples listed.</p> <p>16 Q All right. Are you reading from the</p> <p>17 Beam patent?</p> <p>18 <b>A Yes, I am reading from the Beam patent,</b></p> <p>19 <b>claim 4.</b></p> <p>20 Q Okay. So in the Figure 2 embodiment,</p> <p>21 you're saying that Beam describes that as being</p> <p>22 all of these different types of light sources from</p>
<p>30</p> <p>1 correct?</p> <p>2 MR. FITZSIMMONS: Objection. Form.</p> <p>3 Vague. Objection. Scope. Relevance.</p> <p>4 Dr. Jiao is here to testify about the</p> <p>5 supplemental declaration related to the '029</p> <p>6 patent.</p> <p>7 Q Dr. Jiao, what do you rely on in</p> <p>8 forming your opinions that are included in your</p> <p>9 declaration?</p> <p>10 MR. FITZSIMMONS: Objection. Form.</p> <p>11 Vague.</p> <p>12 <b>A I relied on my education, my knowledge,</b></p> <p>13 <b>my experience, specifically in automotive lighting</b></p> <p>14 <b>industry.</b></p> <p>15 Q Okay. Thank you.</p> <p>16 Dr. Jiao, can you turn to Figure 2 of</p> <p>17 the Beam patent.</p> <p>18 <b>A Yes.</b></p> <p>19 Q What type of light source is included</p> <p>20 in the embodiment illustrated in Figure 2 of the</p> <p>21 Beam patent?</p> <p>22 MR. FITZSIMMONS: Objection. Form.</p>	<p>32</p> <p>1 claim 4?</p> <p>2 <b>A The description shows the lamp.</b></p> <p>3 Q So is it your opinion that that lamp</p> <p>4 could include any of these types of light sources</p> <p>5 that are described in Figure -- or claim 4?</p> <p>6 <b>A The illustration in this patent,</b></p> <p>7 <b>between Figure 4 and Figure 2, are the</b></p> <p>8 <b>demonstration how the microbeams are formed or</b></p> <p>9 <b>comprises of. Where he lists number of</b></p> <p>10 <b>light-emitting devices, or sources, including LEDs</b></p> <p>11 <b>and incandescent lights, and spatial light</b></p> <p>12 <b>modulator to form the microbeam.</b></p> <p>13 So, I couldn't find a specific</p> <p>14 paragraph, but my understanding is Figure 2 is</p> <p>15 kind of embodiment that include a lamp, a lamp, it</p> <p>16 could be anything listed in his description or in</p> <p>17 his claims. Figure 4 is alternative, is how do</p> <p>18 you combine the lamp or source with -- by spatial</p> <p>19 modulator to become individually controlled unit.</p> <p>20 So, illustration is just</p> <p>21 representation. His description, then, in claims,</p> <p>22 namely, he has microbeams. Microbeams consist of</p>

<p>33</p> <p>1 a light-emitting device and spatial light 2 modulators.</p> <p>3 Q Okay. So Figure 2, the embodiment that 4 he illustrates in Figure 2, that lamp, do you know 5 what type of light source that is, as described in 6 B?</p> <p>7 A I'm trying to go through this 8 specification. And what I read here "raised from 9 a lamp," 202, that's only place I can find. And 10 further, I can find what the lamp is in claim 4.</p> <p>11 Q Okay. So how about Figure 2? Does 12 Figure 2 include a spatial light modulator?</p> <p>13 A It does.</p> <p>14 Q Which reference numeral do they use to 15 refer to the spatial light modulator in Figure 2?</p> <p>16 A 203. I'm sorry. Hang on a second. In 17 the surface of spatial modulation. 203.</p> <p>18 Q And does Beam describe a different type 19 of spatial light modulator, as used in the 20 Figure 2 embodiment?</p> <p>21 A He has description in his claim and 22 spatial light modulator collected from a group</p>	<p>35</p> <p>1 A It could.</p> <p>2 Q It could?</p> <p>3 A Yes.</p> <p>4 Q Does it illustrate one in the Figure 4 5 embodiment?</p> <p>6 A Well, the specification described as 7 replace the lamp and modulator with one panel. 8 That panel could be a combination of light emitter 9 and a modulator.</p> <p>10 Q Can you read the first sentence of the 11 paragraph, beginning with Figure 4, which is 12 column 5, line 3?</p> <p>13 A "Figure 4 depicts a system similar to 14 that Figure 2 except the lamp 202 and spatial 15 light modulator 203 are replaced by an array of 16 light source 401 which are individually 17 controlled."</p> <p>18 Q Okay. So what does Beam mean by 19 replacing the lamp and spatial light modulator 20 with an array of light sources?</p> <p>21 MR. FITZSIMMONS: Objection. Form.</p> <p>22 A I read it as combined.</p>
<p>34</p> <p>1 consisting with digital mirror devices, liquid 2 crystal devices, and grating light devices and for 3 selective controlling force -- I'm sorry, last one 4 is grating light valves. These all examples of 5 spatial light modulators.</p> <p>6 Q Were you just reading from the Beam 7 patent there?</p> <p>8 A Yes, I did, claim 4.</p> <p>9 Q So that was from claim 4 again?</p> <p>10 A Yes.</p> <p>11 Q Okay. Now, if we look at the Figure 4 12 embodiment, what type of light source is 13 illustrated in the Figure 4 embodiment of Beam?</p> <p>14 A It could be LEDs.</p> <p>15 Q Okay. So that one could be LEDs?</p> <p>16 A Or lasers.</p> <p>17 Q Could that --</p> <p>18 A Yeah, any --</p> <p>19 Q Lasers?</p> <p>20 A Smaller light emitters.</p> <p>21 Q Now, does the Figure 4 embodiment 22 include a spatial light modulator?</p>	<p>36</p> <p>1 Q Your reading of that is -- your 2 interpretation is that Figure 4 depicts a system 3 similar to Figure 2, except for the lamp and 4 spatial light modulator are combined with an array 5 of light sources?</p> <p>6 A Which is consistent in his claim 4, 7 yes.</p> <p>8 Q So you're interpreting the word 9 "replaced" as combined; is that correct?</p> <p>10 A I interpret the entire specification 11 associated with the claims, without spatial 12 modulator, you cannot create narrow-beam micro -- 13 narrow-angle microbeams. It's stated very clearly 14 in the claim 4.</p> <p>15 Q Dr. Jiao, what is a laser light source?</p> <p>16 A Laser is reference to a type of light 17 emission, is based on amplification and is 18 excitement for specific media that create a 19 coherent light. Light-amplification device.</p> <p>20 Q Where does -- sorry, where does Beam 21 describe the use of laser light sources in the 22 '158 patent?</p>

Conducted on December 11, 2023

<p>37</p> <p>1 A <b>Claim 4, column 8, row number 8.</b></p> <p>2 Q Does Beam describe these laser light</p> <p>3 sources anywhere else in the '158 patent?</p> <p>4 A <b>I have to look.</b></p> <p>5 Q Please do.</p> <p>6 A <b>Column 5, row 1, 2, 3, 4 – 9 – or 8.</b></p> <p>7 Q Okay. Could you read the sentence that</p> <p>8 you're referring to, please?</p> <p>9 A <b>"This array could be implemented in a</b></p> <p>10 <b>number of ways; it could be addressable matrix of</b></p> <p>11 <b>lasers; it could be an array or incandescent</b></p> <p>12 <b>filaments; or it could be some other similar</b></p> <p>13 <b>arrangements of emitters."</b></p> <p>14 Q Okay. Dr. Jiao, does the Beam patent</p> <p>15 describe the use of arc lamps as a light source?</p> <p>16 A <b>Yes.</b></p> <p>17 Q And where does Beam describe arc lamps?</p> <p>18 A <b>Column 8, row number 8.</b></p> <p>19 Q So this is claim 4 again?</p> <p>20 A <b>Correct.</b></p> <p>21 Q Does Beam describe the use of arc lamps</p> <p>22 anywhere else in the Beam patent?</p>	<p>39</p> <p>1 <b>can't find the word, but, certainly, functionality</b></p> <p>2 <b>was described in the spatial light modulator.</b></p> <p>3 Q Okay. And that functionality, where</p> <p>4 were you referencing in the patent?</p> <p>5 A <b>Column 4 in row 37.</b></p> <p>6 Q Column 4, line 37?</p> <p>7 A <b>Yeah, line 37.</b></p> <p>8 Q Okay. Could you read the sentence</p> <p>9 you're referring to?</p> <p>10 A <b>"A spatial light modulator 203, mounted</b></p> <p>11 <b>on a support 204, when they are either reflected</b></p> <p>12 <b>through or blanked (attenuated by being either</b></p> <p>13 <b>absorbed or deflected to absorbing surface)." If</b></p> <p>14 <b>reflected, they can pass through beam splitter and</b></p> <p>15 <b>put out optical system 106.</b></p> <p>16 Q But Beam doesn't use the specific term</p> <p>17 "digital mirror device" in this section, does he?</p> <p>18 A <b>I haven't seen that.</b></p> <p>19 Q Does Beam disclose a liquid crystal</p> <p>20 device as a type of spatial light modulator?</p> <p>21 A <b>Yes. Excuse me. Yes, in claim 4.</b></p> <p>22 Q Does Beam describe a liquid crystal</p>
<p>38</p> <p>1 A <b>I couldn't find, this moment.</b></p> <p>2 Q Okay. Does Beam describe the use of</p> <p>3 electroluminescent lamps as light sources in the</p> <p>4 Beam patent?</p> <p>5 A <b>Yes, in claim 4.</b></p> <p>6 Q Does Beam describes the use of</p> <p>7 electroluminescent lamps anywhere else in the Beam</p> <p>8 patent?</p> <p>9 A <b>I couldn't find, this moment.</b></p> <p>10 Q Okay. Does Beam describe a digital</p> <p>11 mirror device as a type of spatial light</p> <p>12 modulator, in the Beam patent?</p> <p>13 A <b>Yes. In claim 4.</b></p> <p>14 Q Does Beam describe the use of digital</p> <p>15 mirrored digital devices anywhere else in the Beam</p> <p>16 patent?</p> <p>17 A <b>Let me take a look.</b></p> <p>18 <b>There's other places – the patent</b></p> <p>19 <b>described the modulator, where they either</b></p> <p>20 <b>reflected or blanked. So the modulator has</b></p> <p>21 <b>reflective function that could be referring to</b></p> <p>22 <b>digital mirror. I don't know – at this moment, I</b></p>	<p>40</p> <p>1 device anywhere else in the Beam patent?</p> <p>2 A <b>Well, similarly, in column 4, there was</b></p> <p>3 <b>absorption cofunction. Of course, I wouldn't know</b></p> <p>4 <b>what liquid crystal device works, how the liquid</b></p> <p>5 <b>crystal device worked.</b></p> <p>6 Q Okay. So you're referring to that same</p> <p>7 sentence you just read for column 4, lines, is it</p> <p>8 37 -- 37 through 39, sound about right?</p> <p>9 A <b>That was description for spatial light</b></p> <p>10 <b>modulator in the specification.</b></p> <p>11 Q But Beam doesn't use the terminology</p> <p>12 here, this liquid crystal device; is that right?</p> <p>13 A <b>I couldn't see it at this moment.</b></p> <p>14 Q All right. Dr. Jiao, did Beam use the</p> <p>15 terminology grating light valve for a spatial</p> <p>16 light modulator in the '029 patent?</p> <p>17 A <b>Yes.</b></p> <p>18 Q I'm sorry, in the Beam patent, in the</p> <p>19 Beam patent.</p> <p>20 A <b>Yes. In claim 4.</b></p> <p>21 Q Does Beam describe the grating light</p> <p>22 valve anywhere else in the Beam patent?</p>

<p style="text-align: right;">41</p> <p>1     <b>A I couldn't see it now, at this moment.</b></p> <p>2         MR. TURNER: Do you guys want to take a</p> <p>3 five-minute break?</p> <p>4         MR. FITZSIMMONS: Sounds good.</p> <p>5         MR. TURNER: All right. Be back in</p> <p>6 five.</p> <p>7         (Recess taken from 10:25 a.m. to</p> <p>8 10:37 a.m.)</p> <p>9 BY MR. TURNER:</p> <p>10        Q Dr. Jiao, do you have Exhibit 1036?</p> <p>11         (VWGoA Exhibit 1036 previously marked</p> <p>12 for identification and retained by counsel.)</p> <p>13        Q It should be your declaration.</p> <p>14        <b>A Sorry. Yes.</b></p> <p>15        Q Okay. Do you recognize this document?</p> <p>16        <b>A Yes.</b></p> <p>17        Q Can you turn to the last page of it,</p> <p>18 please.</p> <p>19         Is that your signature on the last</p> <p>20 page?</p> <p>21        <b>A It is.</b></p> <p>22        Q Excellent.</p>	<p style="text-align: right;">43</p> <p>1     <b>A Yes.</b></p> <p>2        Q Are you okay if we refer to this as the</p> <p>3 Karlsson reference, or Karlsson?</p> <p>4        <b>A Yes.</b></p> <p>5        Q All right. So in your Figure 1A that</p> <p>6 was shown on the top of page 29 of your</p> <p>7 declaration, you refer to a high beam.</p> <p>8         Where does Karlsson describe a high</p> <p>9 beam in the Karlsson reference?</p> <p>10       <b>A Did I refer in my declaration? Because</b></p> <p>11 <b>this is a pretty lengthy document.</b></p> <p>12        Q Sure.</p> <p>13        <b>A Did I refer to, in my declaration,</b></p> <p>14 <b>Karlsson's reference in my declaration? If so, I</b></p> <p>15 <b>may have a citation which paragraph.</b></p> <p>16         <b>I'm asking you, can you point to me, in</b></p> <p>17 <b>my declaration, where I reference to Karlsson's</b></p> <p>18 <b>reference? Usually I would have a citation.</b></p> <p>19        Q I'm sorry. Did you ask me if I could</p> <p>20 point you to where you describe it?</p> <p>21        <b>A Correct. In my declaration.</b></p> <p>22        Q I'm not sure.</p>
<p style="text-align: right;">42</p> <p>1         All right. Can you turn to paragraph</p> <p>2 53 of Exhibit -- of this exhibit, 1026.</p> <p>3        <b>A 63, right?</b></p> <p>4        Q 5-3.</p> <p>5         And if you could turn to page 28. What</p> <p>6 is illustrated in this figure at the top of</p> <p>7 page 28?</p> <p>8        <b>A This is a figure from -- reference</b></p> <p>9 <b>Karlsson's patent, who disclosed spotlight beams</b></p> <p>10 <b>for his lighting system.</b></p> <p>11        Q Okay. Then, if you could turn to the</p> <p>12 next page, which is in paragraph 54, you have</p> <p>13 another figure at the top of page 29.</p> <p>14         Do you see that?</p> <p>15        <b>A Yes.</b></p> <p>16        Q Can you describe what's illustrated in</p> <p>17 this figure that's labeled Figure 1?</p> <p>18        <b>A This is my interpretation of the</b></p> <p>19 <b>disclosure by the referenced patent, Karlsson's</b></p> <p>20 <b>desired beam pattern.</b></p> <p>21        Q And do you have Exhibit 1010 to the</p> <p>22 Karlsson PCT publication?</p>	<p style="text-align: right;">44</p> <p>1         Maybe if we go back to the top of</p> <p>2 page 28 of your declaration, there's the Figure 14</p> <p>3 of Karlsson.</p> <p>4         Are any of these -- is there a high</p> <p>5 beam, or a high-beam lamp illustrated in the</p> <p>6 Figure 14 embodiment?</p> <p>7        <b>A My declaration states, using Karlsson</b></p> <p>8 <b>description, the light beam 50 is represented as a</b></p> <p>9 <b>window which can shift in the plane of the</b></p> <p>10 <b>drawings from left and to right -- to the right,</b></p> <p>11 <b>and from the top to the bottom, if desired, and</b></p> <p>12 <b>vice versa, and which way -- which varies as</b></p> <p>13 <b>regards its shape and dimensions in dependence on</b></p> <p>14 <b>the desired Beam pattern and direction of beam</b></p> <p>15 <b>pattern.</b></p> <p>16         <b>And that illustration shows Karlsson</b></p> <p>17 <b>disclosed very specific beam pattern for headlight</b></p> <p>18 <b>applications.</b></p> <p>19        Q I'm sorry. Are you saying that the</p> <p>20 light beam 50, the box 50, that's the high beam,</p> <p>21 is within the box? Is that your opinion?</p> <p>22         MR. FITZSIMMONS: Objection. Form.</p>

<p>45</p> <p>1     <b>A   What I said --</b> 2         MR. FITZSIMMONS: Mischaracterizes 3     testimony. 4     <b>A   What I said, that figure is</b> 5     <b>illustration for variations of the beam pattern,</b> 6     <b>used the word desired beam pattern disclosed by</b> 7     <b>Karlsson.</b> 8     Q   All right. Is that beam pattern 9     limited to high beams? 10    <b>A   The beam pattern varies, as a desired,</b> 11    <b>including high beam, and low beam, minimally, and</b> 12    <b>because the directional needs, they also could</b> 13    <b>include bending light.</b> 14        I could go through the entire reference 15    to find the words, what specific beam pattern 16    Karlsson is using. 17    Q   All right. Well, how about if you turn 18    to, let's see, page 56 of your declaration -- I'm 19    sorry, not page 56. Paragraph 56, at the top of 20    page 30. 21    <b>A   Yes.</b> 22    Q   All right. So this starts on the prior</p>	<p>47</p> <p>1     <b>A   In Europe, typically, and Japan.</b> 2     <b>Typically, they describe the high-beam function,</b> 3     <b>use terminology main beam. Sometimes they call</b> 4     <b>that driving beam. In U.S., we use high beam or</b> 5     <b>upper beam, they all describe the same function.</b> 6     Q   Okay. So now, if we go back to, let's 7     see, your Figure 1, which is on page 29, you 8     illustrate the high beam; is that correct? 9     <b>A   Yes.</b> 10    Q   And it's your opinion, that's the high 11    beam that's generated by Karlsson's lighting 12    system; is that correct? 13        MR. FITZSIMMONS: Objection. Form. 14    <b>A   It is example of Beam's desired beam</b> 15    <b>pattern. Various beam pattern contributed from</b> 16    <b>spotlight beams. Spotlight beams form these beam</b> 17    <b>patterns.</b> 18    Q   So if you could turn back to page 28, 19    where you have the annotated version of Figure 14 20    of Karlsson, which spotlight beams, as illustrated 21    in Figure 14, could be used to produce the high 22    beam that you have shown in your high beam portion</p>
<p>46</p> <p>1    page, when he's referring to spotlight beams. So 2    are the spotlight beams the high beams? 3    <b>A   Spotlight beams is individual beam</b> 4    <b>contributors. I use that term as a group of spot</b> 5    <b>beams together illustrated in that figure, like</b> 6    <b>window 50, will form a beam pattern that included</b> 7    <b>a desired beam pattern that included high beam,</b> 8    <b>low beam, and others, desired beam pattern.</b> 9    Q   All right. So in this paragraph, it 10   looks like you are quoting Karlsson at page 19, 11   lines 22 through 28. 12   <b>A   Do you want me to go to the reference</b> 13   <b>Karlsson?</b> 14    Q   Yeah. I mean, I guess my question is, 15   what is Karlsson -- how does he describe these 16   high beams? 17    <b>A   He uses the word main beam.</b> 18    Q   Main beam. 19    <b>A   Which is an alternative description of</b> 20    <b>high beam in European community.</b> 21    Q   All right. So is this a European 22   reference, the Karlsson reference?</p>	<p>48</p> <p>1   of Figure 1 that's illustrated on Figure -- on 2   page 29? 3        MR. FITZSIMMONS: Objection to form. 4    <b>A   The concept disclosed by Karlsson is</b> 5    <b>there is a window or selection of individually or</b> 6    <b>a group-controlled spotlight beams to form a</b> 7    <b>specific desired beam pattern.</b> 8        For instance, if it's a high beam, 9    there's a group of individual light-controlled 10   spotlight beams will be selected, could be 11   anywhere in this window. And the window is an 12   example where the locations, the shape, a size, 13   everything can be changed. It depends upon the 14   functionality needed for the desired beam pattern. 15   Karlsson didn't specifically pinpoint which 16   specifically beam -- micro -- I'm sorry, spotlight 17   beams, namely, contributor, to form the beam 18   pattern. It doesn't have to. 19    Q   All right. Can you read the last 20   sentence of page -- on page 28, beginning with 21   "below." 22   <b>A   Page 28 to my declaration?</b></p>

<p style="text-align: right;">49</p> <p>1 Q Of your -- yes, yes. Sorry. Of your 2 declaration. Page 28, paragraph 54.</p> <p>3 A Starting from word "below," you said? 4 I can't find the word below.</p> <p>5 "Below, I illustrated several beam 6 patterns that Karlsson would create via its 7 emitted light beam, based, in part, on the" 8 selection -- "the section quoted above from 9 Karlsson's beam (supporting that Karlsson 10 disclosed)" adapted beam -- "(adaptable beam)."</p> <p>11 Q Okay. So your illustrations on page 29 12 are based on Karlsson's disclosure with reference 13 to Figure 14, that's illustrated on page 28; is 14 that correct?</p> <p>15 MR. FITZSIMMONS: Objection. Form.</p> <p>16 A My description is based on -- my 17 illustration is based on Karlsson's disclosed 18 specification, how the spotlight beams work.</p> <p>19 Figure 14 shows example of a so-called 20 window, where he described that location, shape, 21 size, everything can be changed is the concept he 22 disclosed or the patent disclosed that you can</p>	<p style="text-align: right;">51</p> <p>1 MR. FITZSIMMONS: Objection. Form. 2 Objection. Asked and answered again.</p> <p>3 A I create a figure based on the 4 disclosure from Karlsson's specification that 5 describes how the spotlight beams works. And 6 Figure 14 is an illustration, not to tell the 7 readers which specific one to do which is an 8 example of these variable windows means the 9 selection of group of beam contributors, microspot 10 beam -- spotlight beams, that form various of 11 desired beam pattern.</p> <p>12 Could be multiple combination of 13 choices.</p> <p>14 Q Can you describe one of these 15 combinations of choices?</p> <p>16 MR. FITZSIMMONS: Objection to form. 17 Vague. Asked and answered.</p> <p>18 A One example is selected as groups. As 19 long as this group of spotlight beams have. 20 Because, individually, they can control, and then 21 you pretty much have address for each individual 22 controllable spotlight beams, in terms of</p>
<p style="text-align: right;">50</p> <p>1 select a group of them, the spotlight beams, to 2 form a desired beam pattern. Where I illustrated 3 as an example of these beams -- I'm sorry, 4 Karlsson's disclosed desired beam pattern.</p> <p>5 Q So which spotlight beams of Karlsson's 6 Figure 14 embodiment would be used to produce the 7 high beam illustrated in your Figure 1A 8 embodiment?</p> <p>9 MR. FITZSIMMONS: Objection. Form. 10 Objection. Asked and answered.</p> <p>11 A Karlsson does not specify which one 12 because there's so many, these spotlight beams. 13 And a POSA would know, and all of them are 14 individually controlled, as long as you group them 15 in terms of intensity, distribution -- angular 16 distribution to form high beam. This is concept 17 in Figure 14 says you select a group without 18 pinpoint which one, which is not necessary.</p> <p>19 Q Okay. But you created these figures 20 based on this disclosure. Do you know which 21 spotlight beams would be used to create the high 22 beam illustrated in your Figure 1?</p>	<p style="text-align: right;">52</p> <p>1 characteristics, and you can group several of them 2 to form a beam pattern. The example is one of the 3 potential windows in the 50, regardless of shape, 4 size, location, whatever that be, he has not a 5 notation regarding the address of each spotlight 6 beam, and you just like the one that formed the 7 beam pattern.</p> <p>8 Q So, Dr. Jiao, with reference to 9 Figure 14 of the Karlsson reference, as 10 illustrated on page 28 of your declaration, would 11 a person of ordinary skill in the art have 12 understood that they could create a high beam, as 13 illustrated in your Figure 1A, using all of the 14 main beam light, which are labeled as I and 15 colored in yellow, in your Figure 14, as annotated 16 on page 28?</p> <p>17 MR. FITZSIMMONS: Objection. Form. 18 Vague.</p> <p>19 A Figure 14, again, illustrated the 20 example how to form desired beam pattern.</p> <p>21 One of the examples in Figure 14 is to 22 have these spotlight beams separately addressed as</p>

<p style="text-align: right;">53</p> <p>1 <b>D, I, whatever notation he's using. If it's I,</b> 2 <b>hence, that particular spotlight beams, is beam</b> 3 <b>contributor for high beam, and you can use these I</b> 4 <b>units to form a high beam.</b> 5 <b>But, in the lighting industry, and we</b> 6 <b>have one regulatory allowed approach, that high</b> 7 <b>beam can be standing-alone high beam. High beam</b> 8 <b>can also add to low beam. So forming a high beam</b> 9 <b>is, A, you can use all these Is, but there's,</b> 10 <b>potentially, you can also still use the D, plus I,</b> 11 <b>as both allowed.</b> 12 Q All right. I'm having a little bit of 13 trouble hearing you, but I have the realtime to 14 fill it in. 15 So, Dr. Jiao, are you saying that 16 Karlsson teaches producing a high beam using any 17 combination of the spotlight sources labeled as I, 18 D, or D/I, in Figure 14? 19 MR. FITZSIMMONS: Objection. 20 Mischaracterizes testimony. 21 A What I said is Karlsson disclosed a 22 method to select individually controlled -- a</p>	<p style="text-align: right;">55</p> <p>1 Q Okay. Let me rephrase this. 2 Dr. Jiao, where are the low beams 3 illustrated in Figure 14? 4 MR. FITZSIMMONS: Objection. Form. 5 A The letter D, according to the 6 specification, is the notation for dipped beam. 7 Again, terminology is equivalent to low 8 beam. 9 Q Is the term "dipped" commonly used for 10 low beam in Europe? 11 A It is a standard term. Dipped means 12 equal, low beam. 13 Q Dr. Jiao, which of the dipped spotlight 14 sources illustrated in Figure 14 would be used to 15 create the low beam illustrated Figure 1B you 16 created on page 29 of your declaration? 17 MR. FITZSIMMONS: Objection to form. 18 Incomplete hypothetical. 19 A Again, Figure 14 is illustration that 20 it has, mainly, individually controlled spotlight 21 dipped beams, and the patent -- the reference 22 that's disclosed of using two different notations,</p>
<p style="text-align: right;">54</p> <p>1 group of individually controlled spotlight beams 2 to form a desired beam pattern. To form a high 3 beam, as an example, Figure 14 shows you can use 4 I, and the I can be any number of I, as long as 5 they meet the function. Or, you can also add D 6 into I because, legally, you can have 7 standing-alone high beam. You can also operate 8 high beam on top of low beam. A POSA would know, 9 by looking at this, it's selecting group of 10 individually controlled spotlight beams to form a 11 desired beam pattern. 12 Q Dr. Jiao, we're going to be describing 13 low beam in -- sorry. Dr. Jiao, where does 14 Karlsson describe its low-beam functionality in 15 the Karlsson reference? 16 A The terminology is the dipped beam, as 17 low beam. 18 Q So the spotlight beams that are 19 identified with a D in your annotated figure 14, 20 are those the low beam -- low-beam sources? 21 MR. FITZSIMMONS: Objection. Form. 22 Objection. Mischaracterizes testimony.</p>	<p style="text-align: right;">56</p> <p>1 namely, D and I, to describe, on the figure, and 2 to at -- at least, minimally, two types of 3 spotlight beams. D, in the specification, is 4 named a dipped beam, like I said, that means low 5 beam. In Europe, they use dipped beam or passing 6 beam. 7 One more time. We have three sets of 8 terminologies, U.S., high beam, low beam, U.S. 9 regulation, use upper beam, lower beam. 10 In Europe, have two sets of same 11 functionalities, main beam, passing beam, or -- 12 I'm sorry, oh, driving beam or passing beam. Main 13 beam, or dipped beam. These all talk about same 14 effect. Simply, we just use word high beam and 15 low beam because that's commonly used in U.S., in 16 lighting industry. 17 Come back to your question, anything 18 they put a D, it could be part of contributors for 19 the low beam to form my illustration, the second 20 one. 21 Q All right. So you're saying that 22 Karlsson teaches using any combination of the</p>

<p>57</p> <p>1 spotlight sources identified with a D in 2 Figure 14, to create a low beam, such as that 3 illustrated in your Figure 1B; is that correct? 4 MR. FITZSIMMONS: Objection. Form. 5 Mischaracterizes the testimony. 6 <b>A As an example, yes.</b> 7 Q All right. Dr. Jiao, in your Figure 8 1C, you illustrate a vehicle with a note, fog 9 lamp. 10 Where does Karlsson describe its fog 11 lamp in the Karlsson patent? 12 <b>A I have to look. In my memory,</b> 13 <b>somewhere, it describes weather condition for the</b> 14 <b>desire -- I can look, but this is a pretty lengthy</b> 15 <b>document, so...</b> 16 <b>The common understanding is when you</b> 17 <b>have adverse weather, meaning snow, fog, rain, and</b> 18 <b>there is a function that we commonly use as fog</b> 19 <b>light.</b> 20 <b>So I can look and I don't remember</b> 21 <b>which paragraph it's mentioning regarding the beam</b> 22 <b>pattern -- regarding the desired beam pattern</b></p>	<p>59</p> <p>1 your declaration on page 29? 2 MR. FITZSIMMONS: Objection. Form. 3 Incomplete hypothetical. 4 <b>A For individually controllable spotlight</b> 5 <b>beams, meaning, they have both a direction and</b> 6 <b>angular control, generally speaking, all these D</b> 7 <b>elements of spotlight beams that potentially aimed</b> 8 <b>lower, it would be ideal to be used as a fog lamp.</b> 9 Q So you're saying any of the D elements, 10 which are kind of on the bottom portion of that 11 Figure 14, those could be used for the fog lamp, 12 for the fog beam; is that correct? 13 MR. FITZSIMMONS: Objection. Form. 14 Mischaracterizes testimony. 15 <b>A What I said is there's many spotlight</b> 16 <b>beams. As an illustration on Figure 14, the</b> 17 <b>notion shows there are certain spotlights is I,</b> 18 <b>means main beam. Certain spotlight beams are D/I,</b> 19 <b>it can do either, and certain spotlight beams they</b> 20 <b>noted as D, means they primarily just served the</b> 21 <b>dipped function. And these are the spotlight</b> 22 <b>beams, potentially, can be used to form the fog</b></p>
<p>58</p> <p>1 examples. 2 <b>Do you want me to look?</b> 3 Q Yes, please. 4 <b>A It'll take a little bit because it's a</b> 5 <b>pretty long document.</b> 6 <b>Okay. One place is page 4, optimally</b> 7 <b>adapted to the road ambient to light. That's one</b> 8 <b>example. I can keep reading to find examples.</b> 9 <b>Oh, here you go.</b> 10 Q Dr. Jiao, you found an example on page 11 4; is that correct? 12 <b>A One of them is ambient light, but that</b> 13 <b>didn't give us the word fog. My memory -- the</b> 14 <b>disclosure didn't describe a different weather</b> 15 <b>scenario as desired beam pattern. I just need to</b> 16 <b>look, if you want me to.</b> 17 Q All right. Well, why don't we go back 18 to your declaration. 19 Back to your declaration at page 28, if 20 we look at this Karlsson Figure 14, which 21 spotlight sources of Karlsson would be used to 22 create the fog beam illustrated in Figure 1C of</p>	<p>60</p> <p>1 <b>lamp if these spotlight beams are aimed in the</b> 2 <b>lower angle.</b> 3 Q So your opinion is that the Karlsson 4 lighting system, as illustrated in Figure 14, 5 could provide high beam, low beam, and fog beams, 6 all with the single assembly or system here; is 7 that correct? 8 <b>A As well as direct light into a</b> 9 <b>direction shown in my number 4 illustration.</b> 10 <b>That's all inclusive as desired beam pattern and</b> 11 <b>direction.</b> 12 Q I'm sorry, it's very difficult to hear 13 you on my end. 14 Could you repeat that, please? 15 MR. FITZSIMMONS: Can the court 16 reporter read that back? Andy, he answered the 17 question, and you have the realtime. 18 MR. TURNER: Okay. I got it here. 19 PLANET DEPOS TECHNICIAN: Sorry to 20 interrupt. Would it help if we have the witness 21 move closer to the microphone. 22 MR. SOULE: They're ceiling mics, so</p>



<p>61</p> <p>1 they should be directional mics, it's, like, 300</p> <p>2 directional mics.</p> <p>3 Andy, has it changed at all since we</p> <p>4 started?</p> <p>5 MR. TURNER: No, it's been bad</p> <p>6 throughout. That's all right. I have the</p> <p>7 realtime, so it's...</p> <p>8 Q Okay. So let me rephrase that.</p> <p>9 So, Dr. Jiao, does Karlsson teach</p> <p>10 integrating a fog lamp with a high-beam lamp and</p> <p>11 low-beam lamp all in a single assembly, as</p> <p>12 illustrated in Figure 14?</p> <p>13 MR. FITZSIMMONS: Objection. Form.</p> <p>14 <b>A Figure 14 is illustration to</b></p> <p>15 <b>demonstrate Karlsson's desired beam pattern.</b></p> <p>16 <b>Throughout this specification, I needed to locate,</b></p> <p>17 <b>and there were various of desired beam pattern,</b></p> <p>18 <b>namely, high beam, low beam, and adverse weather</b></p> <p>19 <b>conditions, and the bending light. These are</b></p> <p>20 <b>examples of desired beam pattern that is disclosed</b></p> <p>21 <b>by Karlsson using illustration Figure 14.</b></p> <p>22 Q So Figure 14 illustrates the beams or</p>	<p>63</p> <p>1 <b>existing vehicle headlights.</b></p> <p>2 <b>With the single-shaded spotlight</b></p> <p>3 <b>sources indicated I provides main beam light</b></p> <p>4 <b>function of existing vehicle headlights. The</b></p> <p>5 <b>double-shaded spotlight source indicated D and I</b></p> <p>6 <b>are both operative at dipped and main lights.</b></p> <p>7 Q Okay. Thank you.</p> <p>8 So based on that, referring back to</p> <p>9 Figure 14, is Karlsson illustrating spotlight</p> <p>10 sources or the beams themselves?</p> <p>11 MR. FITZSIMMONS: Objection. Form.</p> <p>12 <b>A I think terminology or specification or</b></p> <p>13 <b>this reference is called a spotlight beam.</b></p> <p>14 Q Okay. So it's your opinion that those</p> <p>15 are beams, not sources, in Figure 14?</p> <p>16 MR. FITZSIMMONS: Objection.</p> <p>17 Mischaracterizes the witness' testimony.</p> <p>18 Objection. Form.</p> <p>19 <b>A In my opinion, spotlight beam is the</b></p> <p>20 <b>source to contribute the final beam pattern.</b></p> <p>21 Q All right. So it's your opinion that</p> <p>22 terminology spotlight beam, as used in Karlsson,</p>
<p>62</p> <p>1 the light sources that produce the beams?</p> <p>2 MR. FITZSIMMONS: Objection. Form.</p> <p>3 Vague.</p> <p>4 <b>A Beam is contributed by, according to</b></p> <p>5 <b>Karlsson, by many D spotlight beam contributors.</b></p> <p>6 <b>Figure 14 is illustration of these</b></p> <p>7 <b>spotlight beams. Selectively, group of them will</b></p> <p>8 <b>form a desired beam pattern. Beam pattern is</b></p> <p>9 <b>always on the road.</b></p> <p>10 Q Dr. Jiao, can you turn to page 19 of</p> <p>11 Karlsson at line -- paragraph starting at line 22,</p> <p>12 with "in addition."</p> <p>13 <b>A Yes.</b></p> <p>14 Q Can you read that paragraph for the --</p> <p>15 starting with "in addition," please.</p> <p>16 <b>A In addition to the regiment of</b></p> <p>17 <b>Figure 14 -- is this the one?</b></p> <p>18 Q Yeah.</p> <p>19 <b>A A number of sources are grouped in</b></p> <p>20 <b>specific -- in a specified level. In this</b></p> <p>21 <b>embodiment, non-shaded spotlight source indicate a</b></p> <p>22 <b>D provide dipped light function in accordance with</b></p>	<p>64</p> <p>1 is referring to the light source and the light it</p> <p>2 produces?</p> <p>3 MR. FITZSIMMONS: Objection.</p> <p>4 Mischaracterizes testimony.</p> <p>5 <b>A In my opinion, the spotlight beams, as</b></p> <p>6 <b>a source of -- as source of contributor to the</b></p> <p>7 <b>beams is comprised of light-emitting device and</b></p> <p>8 <b>spatial light modulators, together, form</b></p> <p>9 <b>spotlights.</b></p> <p>10 Q So is it your opinion that the term</p> <p>11 "spotlight beam," as used in Karlsson, refers to a</p> <p>12 system that includes the light-emitting device and</p> <p>13 a spatial light modulator?</p> <p>14 <b>A Yes.</b></p> <p>15 Q Dr. Jiao, in your automotive</p> <p>16 experience, did you use the term "spotlight beam"</p> <p>17 to refer to a system that includes a</p> <p>18 light-emitting device and a spatial light</p> <p>19 modulator?</p> <p>20 MR. FITZSIMMONS: Objection. Form.</p> <p>21 <b>A We -- I typically use -- or we, as</b></p> <p>22 <b>regulatory reference, use beam contributor.</b></p>

<p>65</p> <p>1 Q Now, when you refer to your use, are</p> <p>2 you referring to your use as both an engineer in</p> <p>3 the automotive industry and as a teacher for SAE?</p> <p>4 MR. FITZSIMMONS: Objection. Form.</p> <p>5 Compound question.</p> <p>6 <b>A Beam contributor is legally defined</b></p> <p>7 <b>terminology in U.S. regulation. And as industry,</b></p> <p>8 <b>we also adopt beam distributor as engineering</b></p> <p>9 <b>concept that, with individual assembly, could be</b></p> <p>10 <b>subsystem, could be even the whole system, to make</b></p> <p>11 <b>a contribution of a final light pattern.</b></p> <p>12 Q Dr. Jiao, in your experience, are fog</p> <p>13 lamps typically integrated with high-beam lamps or</p> <p>14 low-beam lamps?</p> <p>15 MR. FITZSIMMONS: Objection. Form.</p> <p>16 Compound.</p> <p>17 <b>A My experience in United States, fog</b></p> <p>18 <b>lamp is not legally required as such. It's an</b></p> <p>19 <b>optional device. Most my practical experience, we</b></p> <p>20 <b>design fog lamps separately.</b></p> <p>21 <b>But I do have knowledge, when you have</b></p> <p>22 <b>a design adaptive lighting system, that it</b></p>	<p>67</p> <p>1 Q Are the requirements for a fog lamp in</p> <p>2 Europe, as far as performance requirements, are</p> <p>3 they different than the performance requirements</p> <p>4 in the United States?</p> <p>5 MR. FITZSIMMONS: Objection. Scope.</p> <p>6 Relevance.</p> <p>7 <b>A Not as --</b></p> <p>8 MR. FITZSIMMONS: Sorry. Objection.</p> <p>9 Form also.</p> <p>10 <b>A In the United States, our industry</b></p> <p>11 <b>standards established harmonized beam pattern</b></p> <p>12 <b>requirements, namely, in the United States, our</b></p> <p>13 <b>fog lamp standards are consisted of two</b></p> <p>14 <b>performance tables. One is dedicated for U.S. fog</b></p> <p>15 <b>lamp standards, two is a harmonized with European</b></p> <p>16 <b>fog lamp standards.</b></p> <p>17 <b>So to answer your question, yes, we</b></p> <p>18 <b>have a standard that is the same as Europe, but in</b></p> <p>19 <b>addition, we also have a U.S. fog lamp standard</b></p> <p>20 <b>that does not comply with European regulation.</b></p> <p>21 Q All right. Dr. Jiao, if we could turn</p> <p>22 back to your declaration on page 29.</p>
<p>66</p> <p>1 <b>consists of multiple functions. Yes, the fog lamp</b></p> <p>2 <b>has been integrated into adaptive lighting system.</b></p> <p>3 Q So, back in the early 2000 time frame,</p> <p>4 were fog lamps integrated with other lighting</p> <p>5 systems?</p> <p>6 MR. FITZSIMMONS: Objection. Form.</p> <p>7 Vague.</p> <p>8 <b>A Ever since late '90s, the lighting</b></p> <p>9 <b>community has done sufficient amount of work to</b></p> <p>10 <b>integrate multiple desired functions into one</b></p> <p>11 <b>system. That's where adaptive lighting system</b></p> <p>12 <b>program started, established. And, yes, in</b></p> <p>13 <b>adaptive lighting system, there's multiple</b></p> <p>14 <b>integrated lighting functions that include adverse</b></p> <p>15 <b>weather required lighting functions.</b></p> <p>16 Q Dr. Jiao, you mentioned that your</p> <p>17 experience in the United States fog lamp is not</p> <p>18 legally required.</p> <p>19 Is a fog lamp legally required in other</p> <p>20 regions, such as Europe?</p> <p>21 MR. FITZSIMMONS: Objection. Scope.</p> <p>22 <b>A It is.</b></p>	<p>68</p> <p>1 <b>A Yes.</b></p> <p>2 Q So, Figure 1D, you have a little</p> <p>3 vehicle that says "bending light."</p> <p>4 Does Karlsson describe bending light in</p> <p>5 the Karlsson reference?</p> <p>6 MR. FITZSIMMONS: Objection. Form.</p> <p>7 Vague.</p> <p>8 <b>A Karlsson's description is stated,</b></p> <p>9 <b>dependence on the desired beam pattern and the</b></p> <p>10 <b>direction of the beam.</b></p> <p>11 <b>In my opinion, yes, this reference</b></p> <p>12 <b>disclosed desired beam pattern and beam direction.</b></p> <p>13 <b>And while you have curved roads, the direction --</b></p> <p>14 <b>the desired direction is put more light into the</b></p> <p>15 <b>curve. In Europe, they use the term "bending</b></p> <p>16 <b>light." In U.S., we adopt that term.</b></p> <p>17 Q So is it your opinion that Karlsson's</p> <p>18 reference to desired beam pattern describes all</p> <p>19 possible beam patterns?</p> <p>20 MR. FITZSIMMONS: Objection. Form.</p> <p>21 Vague. Incomplete hypothetical.</p> <p>22 <b>A Well, Karlsson's disclosure is to have</b></p>

<p style="text-align: right;">69</p> <p><b>1 such beam pattern, use his words, that is desired</b> <b>2 and in the directions of lights needed.</b> 3 Q So would Karlsson's desired beam 4 pattern include automatic leveling light beams? 5 MR. FITZSIMMONS: Objection. Form. 6 Incomplete hypothetical. 7 <b>A I have to look. By the way, leveling</b> <b>8 is not changing beam pattern.</b> 9 Q Okay. Then we don't need to look for 10 it. 11 Does Karlsson's description of a 12 desired beam pattern include any type of signal 13 lights, turn signals, for example? 14 MR. FITZSIMMONS: Objection. Form. 15 Incomplete hypothetical. 16 <b>A I'd have to look. Top of my head, the</b> <b>17 disclosure is a lighting system that is equipped</b> <b>18 in front of the vehicle. There is -- I have to</b> <b>19 look. The desired beam pattern in front of the</b> <b>20 vehicle may include signal lighting. And I just</b> <b>21 used both -- I need to go through the whole thing,</b> <b>22 if it's inclusive.</b></p>	<p style="text-align: right;">71</p> <p><b>1 beam pattern can be bend away -- when you're</b> <b>2 taking a bending road.</b> 3 Q So that passage, Karlsson's 4 describing -- sorry, did you say bending away the 5 light pattern? 6 MR. FITZSIMMONS: Objection. 7 Mischaracterizes testimony. 8 <b>A What I read, the specification</b> <b>9 described the vehicle taking a bend. The light</b> <b>10 direction is changed toward a curve, according to</b> <b>11 this passage.</b> 12 Q So that passage -- so when Karlsson 13 says that the direction sensor 54 is, in 14 particular, intended for determining when the cars 15 is taking a bend -- I'm sorry, I lost it. 16 I'm sorry. So when Karlsson describes 17 adapting the light beam to prevent the traffic on 18 the other side of the road from being blinded 19 while taking a bend, is he describing turning off 20 the light or turning on the light? 21 MR. FITZSIMMONS: Objection. Form. 22 <b>A My reading for specification is that</b></p>
<p style="text-align: right;">70</p> <p><b>1 If I read the description, it should be</b> <b>2 anything you desire.</b> 3 Q That's okay. You don't need to read 4 through the whole thing. 5 Can you turn to Karlsson page 20, 6 starting at line 29. 7 <b>A Yes.</b> 8 Q Can you read that sentence for me, 9 please. 10 <b>A "The direction sensor 54 is, in</b> <b>11 particular, intended for determining when the car</b> <b>12 56 is taking a bend so that the light beam can be</b> <b>13 adapted to prevent traffic on the other side of</b> <b>14 the road from being blinded" as such -- "as much</b> <b>15 as possible."</b> 16 Q Now, does that description in Karlsson 17 teach the bending light that you illustrate in 18 Figure 1D? 19 MR. FITZSIMMONS: Objection. Form. 20 Incomplete hypothetical. 21 <b>A This specification shows that</b> <b>22 Karlsson's teaching the lamp -- the light, the</b></p>	<p style="text-align: right;">72</p> <p><b>1 when vehicle is taking a bend, coming to a curve</b> <b>2 in the road, the desired beam pattern should</b> <b>3 swivel the light toward a curve. And his direct</b> <b>4 indication is you can avoid blinding oncoming</b> <b>5 traffic when you're taking that curved road,</b> <b>6 meaning, the light is directed toward curve. That</b> <b>7 bending is -- that's typically bending light</b> <b>8 function.</b> 9 Q How does Karlsson describe swiveling a 10 light toward a curve? 11 MR. FITZSIMMONS: Objection. Form. 12 <b>A The statement so that the light beam 7</b> <b>13 can be adapted to prevent traffic on the other</b> <b>14 side of the road, is indication that the light</b> <b>15 should change the direction to avoid if there's</b> <b>16 oncoming traffic on the bending road.</b> 17 Q So how does Karlsson describe changing 18 the direction to avoid the oncoming traffic -- 19 changing the direction of the light? 20 MR. FITZSIMMONS: Objection. Vague. 21 <b>A Karlsson used Figure 15 -- 14, to</b> <b>22 illustrate it depends upon the desired pattern</b></p>

<p>73</p> <p>1 <b>direction of the beam.</b></p> <p>2 Q So the reference to Figure 14, which</p> <p>3 spotlight sources of Karlsson are used to create</p> <p>4 the bending light beam?</p> <p>5 MR. FITZSIMMONS: Objection. Form.</p> <p>6 Incomplete hypothetical.</p> <p>7 <b>A If I read the specification and the</b></p> <p>8 <b>disclosure, any beam, spotlight beam, or beam</b></p> <p>9 <b>contributors, that noted as D, used for dipped</b></p> <p>10 <b>beam, can be redirected for bend light.</b></p> <p>11 Q So you're saying that Karlsson</p> <p>12 describes using any of the spotlight sources</p> <p>13 illustrated in Figure 14 to create a bending light</p> <p>14 beam?</p> <p>15 MR. FITZSIMMONS: Objection.</p> <p>16 Mischaracterizes testimony.</p> <p>17 <b>A What I said is Karlsson described the</b></p> <p>18 <b>spotlight beams, many of them, they're all</b></p> <p>19 <b>individually controlled, before they're -- the</b></p> <p>20 <b>illustration further described there is way to</b></p> <p>21 <b>configure these spotlight beams by having D/I or D</b></p> <p>22 <b>or I.</b></p>	<p>75</p> <p>1 <b>situation, the bending light to the curve is</b></p> <p>2 <b>typically the low beam contributor -- low-beam</b></p> <p>3 <b>contributors.</b></p> <p>4 Q Dr. Jiao, does Karlsson describe using</p> <p>5 a single driver to control all of these spotlights</p> <p>6 (indiscernible) illustrated in Figure 14, or</p> <p>7 multiple drivers?</p> <p>8 MR. FITZSIMMONS: Objection, form.</p> <p>9 <b>A Did I clarify that in my declaration,</b></p> <p>10 <b>first, for a second? Because I don't -- the</b></p> <p>11 <b>terminology "driver," did I use that in my</b></p> <p>12 <b>declaration?</b></p> <p>13 Q I'm not sure. What does a driver mean</p> <p>14 to you?</p> <p>15 <b>A Well, there is --</b></p> <p>16 MR. FITZSIMMONS: Objection to form.</p> <p>17 <b>A There is industry standard terminology.</b></p> <p>18 <b>Again, it can be different from U.S.</b></p> <p>19 <b>and Europe, driver, in automotive industry, is the</b></p> <p>20 <b>control unit for LED.</b></p> <p>21 Q So do you think, with the</p> <p>22 configuration, as illustrated in Figure 14, that</p>
<p>74</p> <p>1 <b>So, with the selection of the group</b></p> <p>2 <b>that form a specific beam pattern, a POSA would</b></p> <p>3 <b>know, if you want to do bending light, perhaps you</b></p> <p>4 <b>should use a group of D rather than I.</b></p> <p>5 Q So why would you use the D, which are</p> <p>6 the dipped spotlight sources illustrated in</p> <p>7 Figure 14, as opposed to the I spotlight sources,</p> <p>8 which are the main beam light function?</p> <p>9 MR. FITZSIMMONS: Objection. Form.</p> <p>10 Incomplete hypothetical.</p> <p>11 <b>A A POSA --</b></p> <p>12 Q Sorry. Sorry, to create the bending</p> <p>13 light function. I didn't finish that.</p> <p>14 <b>A A POSA would know I is main beam, or</b></p> <p>15 <b>driving beam; D is the dipped beam, or passing</b></p> <p>16 <b>beam.</b></p> <p>17 <b>In the scenario, you have a curved</b></p> <p>18 <b>road. In most of the cases, that's not where high</b></p> <p>19 <b>beam is being used, meaning, it could be speed is</b></p> <p>20 <b>limited, or if you have oncoming traffic, you use</b></p> <p>21 <b>dipped beam.</b></p> <p>22 <b>So a POSA would know, in a common</b></p>	<p>76</p> <p>1 the common driver or controller would be</p> <p>2 used -- or control unit would be used or multiple</p> <p>3 control units?</p> <p>4 MR. FITZSIMMONS: Objection. Form.</p> <p>5 Compound question. Incomplete hypothetical.</p> <p>6 Objection. Scope, as well.</p> <p>7 <b>A Karlsson described his control</b></p> <p>8 <b>mechanism, I think it's 14. So I can go back to</b></p> <p>9 <b>look what -- in his schematic figure, he</b></p> <p>10 <b>illustrated which was his control unit.</b></p> <p>11 <b>I can take a look at how the</b></p> <p>12 <b>specification is stated for, overall, his control</b></p> <p>13 <b>mechanism -- the (indiscernible) of means. He</b></p> <p>14 <b>used the term "control means," 14. The patent</b></p> <p>15 <b>used the words control means.</b></p> <p>16 Q Okay. So Karlsson describes this as</p> <p>17 control means?</p> <p>18 <b>A Yes. Noted as 14 of all the figures,</b></p> <p>19 <b>yes. It's described as control means.</b></p> <p>20 Q So, in your opinion, is Karlsson</p> <p>21 referring to a single control unit or a single</p> <p>22 driver, or multiple control units?</p>

<p>77</p> <p>1 MR. FITZSIMMONS: Objection.</p> <p>2 Q Sorry, control means, as in Karlsson's</p> <p>3 terminology.</p> <p>4 MR. FITZSIMMONS: Objection. Form.</p> <p>5 Objection. Scope.</p> <p>6 <b>A I don't understand the terminology</b></p> <p>7 <b>"single." Single means hardware single or means a</b></p> <p>8 <b>single channel, means -- it's not clear to me why</b></p> <p>9 <b>you use the word "single."</b></p> <p>10 <b>Disclosure is the control means and it</b></p> <p>11 <b>means a subsystem.</b></p> <p>12 Q So I'm referring to the hardware.</p> <p>13 <b>A But the POSA would know --</b></p> <p>14 MR. FITZSIMMONS: Objection.</p> <p>15 <b>A -- when you have a multiple</b></p> <p>16 <b>individually controlled spotlight beams that is</b></p> <p>17 <b>emitted from LEDs. In driving LEDs, you needed</b></p> <p>18 <b>multiple channels, otherwise, you can't</b></p> <p>19 <b>individually control them. Whether the hardware</b></p> <p>20 <b>is integrated into one box, it is not relevant.</b></p> <p>21 <b>They have a subsystem that they have to have a</b></p> <p>22 <b>multiple channel to control every individual</b></p>	<p>79</p> <p>1 say you would not include or you would not</p> <p>2 illuminate all the low beams with the high beams?</p> <p>3 MR. FITZSIMMONS: Objection. Form.</p> <p>4 Vague.</p> <p>5 <b>A Did I understand your question</b></p> <p>6 <b>correctly, if you don't mind repeating your</b></p> <p>7 <b>question?</b></p> <p>8 Q Okay. My prior question was, does</p> <p>9 Karlsson describe controlling the spotlight</p> <p>10 sources, as illustrated in Figure 14, to all be</p> <p>11 illuminated at the same time, meaning both the</p> <p>12 high-beam and the low-beam sources.</p> <p>13 <b>A My answer --</b></p> <p>14 MR. FITZSIMMONS: Objection. I just</p> <p>15 want to make sure I make the same objection to</p> <p>16 that question. And, also, asked and answered as</p> <p>17 well.</p> <p>18 MR. TURNER: I'm asking him to clarify</p> <p>19 the answer.</p> <p>20 MR. FITZSIMMONS: Right. He provided</p> <p>21 an answer so that's why I'm objecting. I want to</p> <p>22 make sure I have my same objections on the record.</p>
<p>78</p> <p>1 <b>spotlight beams independently.</b></p> <p>2 Q Does Karlsson describe controlling the</p> <p>3 spotlight sources, as illustrated in Figure 14, to</p> <p>4 all be illuminated at the same time?</p> <p>5 MR. FITZSIMMONS: Objection. Form.</p> <p>6 Scope.</p> <p>7 <b>A Karlsson described all these individual</b></p> <p>8 <b>spotlights beam, beam contributors, as operated</b></p> <p>9 <b>dependent upon the desired beam pattern direction.</b></p> <p>10 <b>And didn't say all on. I don't recall ever saying</b></p> <p>11 <b>it has to be all on. Technically, if it was all</b></p> <p>12 <b>on, how could you achieve a desired beam pattern,</b></p> <p>13 <b>especially if you have low beams to begin with?</b></p> <p>14 MR. FITZSIMMONS: Andy, we've been</p> <p>15 going about an hour and a half. Maybe might be a</p> <p>16 good time for a break for lunch.</p> <p>17 MR. TURNER: Five more minutes. I</p> <p>18 think I'm wrapping up here soon.</p> <p>19 MR. FITZSIMMONS: Okay.</p> <p>20 Fine with you?</p> <p>21 THE WITNESS: Sure.</p> <p>22 Q Dr. Jiao, your last response, did you</p>	<p>80</p> <p>1 So just give me one second.</p> <p>2 Objection. Form. Objection. Scope.</p> <p>3 Objection. Asked and answered.</p> <p>4 <b>A Karlsson -- Figure 14, in conjunction</b></p> <p>5 <b>with the specification, one more time, Karlsson</b></p> <p>6 <b>describes the beam pattern that -- the operation</b></p> <p>7 <b>spotlight beams is based on, you used the word,</b></p> <p>8 <b>depending on the desired beam pattern and</b></p> <p>9 <b>direction of the beam.</b></p> <p>10 <b>For that reason, it can't be on all the</b></p> <p>11 <b>time.</b></p> <p>12 <b>I use the example, if the desired beam</b></p> <p>13 <b>pattern is low beam, some of these spotlights,</b></p> <p>14 <b>beam, or beam contributors, denoted as high beam,</b></p> <p>15 <b>these are not on when you're operating low beam.</b></p> <p>16 Q All right. So you said when you're</p> <p>17 operating low beam, some of the high-beam sources</p> <p>18 are not on; is that correct?</p> <p>19 <b>A What I said is, when you operate at</b></p> <p>20 <b>low-beam mode, if the spotlight beam contributors</b></p> <p>21 <b>are denoted as high beam, I, they should not be on</b></p> <p>22 <b>when you're operating on low beam.</b></p>

<p>81</p> <p>1 Q But when you're operating in -- sorry. 2 When the Karlsson reference is operating in 3 low-beam mode, could all of the dipped light 4 sources, which are denoted with D, be turned on? 5 MR. FITZSIMMONS: Objection. Form. 6 Incomplete hypothetical. 7 <b>A Yes, it could.</b> 8 Q All right. So when the Karlsson 9 reference is operating at high-beam mode, could 10 all of the spotlight sources denoted with the 11 letter I be turned on? 12 MR. FITZSIMMONS: Objection. Form. 13 Incomplete hypothetical. 14 <b>A It could, except Karlsson also</b> 15 <b>disclosed glare control function, so some of them</b> 16 <b>may be dimmed or turned off to avoid glare.</b> 17 MR. TURNER: Okay. That's good. 18 Why don't we take a break. 19 (Recess taken from 12:13 p.m. to 20 12:54 p.m.) 21 BY MR. TURNER: 22 Q All right. Hello, Dr. Jiao.</p>	<p>83</p> <p>1 <b>A Appears --</b> 2 Q I can change -- 3 <b>A Appears to be that way. There's</b> 4 <b>resolution, everything else.</b> 5 Q All right. So it has a dimming button 6 on here. So if you can see, so right now, I have 7 it adjusted all the way up in one setting. 8 And now I have it turned off. 9 Do you see the difference there? 10 MR. FITZSIMMONS: Objection. Scope and 11 relevance. I'm also going to make an 12 authentication objection to whatever the device is 13 that you have there. 14 MR. TURNER: Okay. So, what I have 15 here is a bedside lamp, model M4, it's an amazing 16 color-changing light. 17 MR. FITZSIMMONS: Maintaining my 18 objection. And the foundation objection, too. 19 Q All right. So Dr. Jiao, do you notice 20 any difference in the light from -- we'll call 21 this step 1. Do you notice a change in the light 22 as I go from step 1 to step 2?</p>
<p>82</p> <p>1 <b>A Hi.</b> 2 Q So, Dr. Jiao, I wanted to see if we 3 could perform a little experiment during the 4 deposition. 5 So if you can see this, you see what I 6 have in my hands on the screen? 7 MR. FITZSIMMONS: Objection. Scope and 8 relevance. 9 Q I'm holding in my hands a small lamp. 10 Can you see this lamp? 11 <b>A Yes.</b> 12 Q You see I can -- change in color of the 13 lamp? 14 MR. FITZSIMMONS: Objection. Scope and 15 relevance. 16 <b>A Yes.</b> 17 Q Okay. I don't know if you can see 18 that, but right now, it's -- I turned it currently 19 off, and now it's on. 20 Do you see that? 21 MR. FITZSIMMONS: Objection. Scope and 22 relevance.</p>	<p>84</p> <p>1 MR. FITZSIMMONS: Objection. Scope. 2 Objection. Relevance. 3 Andy, this has nothing to do with his 4 declaration at all. We're here to talk about his 5 declaration and the '029 patent proceeding, not a 6 lamp that you have, presumably, the lamp that you 7 have there in your hand. 8 <b>A I seen some changes, but it's also</b> 9 <b>other changes, for instance, reflection.</b> 10 Q Okay. So if I go -- so, again, if we 11 call this -- we'll call this step 1. If I change 12 it to step 2, did you notice a difference? 13 MR. FITZSIMMONS: Objection. Scope. 14 Objection. Relevance. Objection. Incomplete 15 hypothetical. 16 <b>A I noticed a difference.</b> 17 MR. FITZSIMMONS: Objection. Form, 18 too, to that question. 19 Q So, Dr. Jiao, again, step 1 to step 2, 20 did you notice an increase in intensity of the 21 lamp? 22 MR. FITZSIMMONS: Objection. Form.</p>

<p style="text-align: right;">85</p> <p>1 Vague. Objection. Scope. Objection. Relevance. 2 Objection. Incomplete hypothetical. 3 <b>A I noticed an appearance difference.</b> 4 <b>Appearance difference and the perceptions of</b> 5 <b>brightness change. And the contrast between</b> 6 <b>whatever the holding of your hands, the name of</b> 7 <b>the lamp and, also, background information.</b> 8 <b>That's our perception.</b> 9 Q Okay. So is your perception an 10 increase in intensity from step 1 to step 2? 11 <b>A I never used the word --</b> 12 MR. FITZSIMMONS: Objection. Form. 13 Objection. Scope. Objection. Relevance. 14 Objection. Incomplete hypothetical. 15 <b>A I didn't use the word "intensity."</b> 16 Q All right. Let's try -- so for step 2, 17 if we change from step 2 to step 3, did I just 18 increase the intensity of the light? 19 MR. FITZSIMMONS: Objection. Form. 20 Objection. Scope. Objection. Incomplete 21 hypothetical. And just for the record, I'm 22 maintaining my authentication objection throughout</p>	<p style="text-align: right;">87</p> <p>1 <b>changed.</b> 2 <b>You may say, by changing a dimming</b> 3 <b>mode, your light output has changed.</b> 4 Q Okay. So when I change this lamp from 5 dimming mode 1 to dimming mode 2, how has the 6 light output changed? 7 MR. FITZSIMMONS: Objection. Form. 8 Objection. Scope. Objection relevance. 9 Objection. Incomplete hypothetical. 10 We don't even know what dimming mode 1 11 and 2 are. So there's no way he can really answer 12 these questions, Andy. We're on a video here. I 13 can't tell whether there is lighting effects from 14 where you are, ambient light. So none of this is 15 relevant. 16 <b>A The only answer I can have is, really,</b> 17 <b>the perception change.</b> 18 <b>I thought I answered the question. I</b> 19 <b>do see, you know, the perception change, whether</b> 20 <b>it is contrast, whether it's brightness, whether</b> 21 <b>it's -- whatever the combination of all, I see</b> 22 <b>there is perception. There is some changes there.</b></p>
<p style="text-align: right;">86</p> <p>1 this. 2 <b>A What I observed through this experiment</b> 3 <b>is the object in your hand, namely, the lamp, the</b> 4 <b>light output has been changed and lead to</b> 5 <b>perception of different brightness.</b> 6 Q Okay. So perception of different 7 brightness. How's that relate to a change in 8 intensity? 9 MR. FITZSIMMONS: Objection. Form. 10 Objection. Scope. Objection. Relevance. 11 Objection. Incomplete hypothetical. 12 Andy, this is -- line of questioning 13 has nothing to do with his '029 patent 14 declaration. 15 <b>A The fundamental difference is intensity</b> 16 <b>is a measured physical/physiological quantity with</b> 17 <b>a numerical value. Perception is human eyes'</b> 18 <b>justification based on multiple reasons --</b> 19 <b>multiple facts, including the contrast,</b> 20 <b>including -- and recognition. Your eyes</b> 21 <b>recognition. And it's not something -- and you</b> 22 <b>can translate, saying your lamp intensity has</b></p>	<p style="text-align: right;">88</p> <p>1 <b>But I didn't use the word "intensity."</b> 2 Q Okay. So you can't tell if there's a 3 change in intensity when I adjust the different 4 settings on this lamp? 5 MR. FITZSIMMONS: Objection. Now 6 you're mischaracterizing the witness' testimony. 7 Also, Objection. Form. Objection. Scope. 8 Objection. Relevance. Objection. Incomplete 9 hypothetical. 10 <b>A What I said was, through the switch you</b> 11 <b>did, I recognized there's some changes. The</b> 12 <b>changes including the device you're holding, the</b> 13 <b>light level or the background-to-light level, as</b> 14 <b>well as reflection on your face. All these things</b> 15 <b>changed. As integrated, the perception, I see the</b> 16 <b>changes.</b> 17 Q All right. So, Dr. Jiao, let's go 18 through a hypothetical. 19 So if I were to give you an LED lamp, 20 could you increase the intensity of the LEDs by 21 increasing power to the LEDs? 22 MR. FITZSIMMONS: Objection. Form.</p>

<p style="text-align: right;">89</p> <p>1 Objection. Scope. Objection. Relevance. 2 Objection incomplete hypothetical. 3 <b>A In general, LED, the light-emitting</b> 4 <b>diode, it is a current-driven device. When you</b> 5 <b>put more electrical energy into that device, there</b> 6 <b>is more light output.</b> 7 Q Energy into the LED and more light 8 output, would that involve increase in intensity 9 of the LEDs? 10 MR. FITZSIMMONS: Andy, I think the 11 beginning of your question may have gotten cut off 12 there. 13 Q All right. So, in this light -- in 14 this lamp, when you put more electrical energy 15 into the lamp and you get more light output, would 16 that involve an increased intensity of the LEDs? 17 MR. FITZSIMMONS: Objection. Form. 18 Objection. Scope. Objection. Relevance. 19 Objection. Incomplete hypothetical. 20 <b>A Well, I would have still used the</b> 21 <b>phrase the light-level change.</b> 22 <b>The intensity is related to angular</b></p>	<p style="text-align: right;">91</p> <p>1 Q I'll rephrase that. 2 Could the Karlsson reference produce 3 multiple of the beam patterns illustrated in your 4 Figure 1 at the same time? 5 MR. FITZSIMMONS: Still Objection. 6 Form. Incomplete hypothetical. 7 <b>A The POSA will understand the beam</b> 8 <b>pattern is a description for type of light</b> 9 <b>distribution for type of light function. In most</b> 10 <b>of the cases, you do one function at the moment,</b> 11 <b>low beam, high beam, fog lamp, or bending light.</b> 12 <b>If I understand your question is, can</b> 13 <b>you simultaneously do both beams? By looking at</b> 14 <b>illustration of Karlsson's figures or</b> 15 <b>specifications, in conjunction with my knowledge</b> 16 <b>of the regulation, we do allow the high beam being</b> 17 <b>added to the low beam in the United States. I'm</b> 18 <b>not familiar with European regulation.</b> 19 <b>For that reason, when low beam is</b> 20 <b>operating, legally, we're allowed to put a high</b> 21 <b>beam on top of a low beam, in the United States.</b> 22 <b>For that reason, if I look at the Karlsson</b></p>
<p style="text-align: right;">90</p> <p>1 <b>domain. You really have to measure it to look</b> 2 <b>that particular angle, the luminous flux change.</b> 3 <b>When you change light output, you could also</b> 4 <b>change where you put a light. It doesn't</b> 5 <b>necessarily mean that you change the intensity.</b> 6 Q So can you change the intensity without 7 changing the angular domain? 8 MR. FITZSIMMONS: Objection. Form. 9 Objection. Scope. Objection. Relevance. 10 Objection. Incomplete hypothetical. 11 <b>A I don't think I understand that</b> 12 <b>question.</b> 13 Q All right. Can we turn back to your 14 declaration, Exhibit 1036. And can you turn to 15 page 29. 16 <b>A Okay.</b> 17 Q All right. So before the break, we 18 were discussing some of the different beam 19 patterns that you had illustrated in Figure 1. 20 Could Karlsson produce multiple beam 21 patterns at the same time? 22 MR. FITZSIMMONS: Objection. Form.</p>	<p style="text-align: right;">92</p> <p>1 <b>Figure 14 that's also achieved, if that's desired.</b> 2 Q Karlsson teaches using high beam and 3 low beam at the same time; is that correct? 4 MR. FITZSIMMONS: Objection. 5 Mischaracterizes testimony. 6 <b>A That's not what I said. Karlsson</b> 7 <b>teaches to form desired beam pattern as a desired</b> 8 <b>direction as needed.</b> 9 Q Could the desired beam pattern include 10 all of the spotlight sources, as illustrated in 11 Figure 14? 12 MR. FITZSIMMONS: Objection. Form. 13 Objection. Incomplete hypothetical. Objection. 14 Asked and answered. 15 <b>A That's not what I've seen what Karlsson</b> 16 <b>teaches.</b> 17 Q So would it be possible, with the 18 Karlsson reference, to use all the spotlight 19 sources of the same time -- 20 MR. FITZSIMMONS: Objection to form. 21 Q -- to generate a beam pattern? 22 MR. FITZSIMMONS: Objection. Form.</p>



<p>93</p> <p>1 Objection. Incomplete hypothetical.</p> <p>2 <b>A I would not think so. One major</b></p> <p>3 <b>conflict is that if some of the contributors</b></p> <p>4 <b>spotlight beams is meant to be for fog lamp, or</b></p> <p>5 <b>aimed low, wider spread, you would never turn</b></p> <p>6 <b>these on when high beam is on because, legally,</b></p> <p>7 <b>you cannot do these two lamps together.</b></p> <p>8 Q Are any of these spotlight sources</p> <p>9 specifically used for fog lamps?</p> <p>10 MR. FITZSIMMONS: Objection. Form.</p> <p>11 Incomplete hypothetical.</p> <p>12 <b>A The spotlight sources or spotlight</b></p> <p>13 <b>beams, in illustration, shows that they can form</b></p> <p>14 <b>the desired beam pattern. In POSA's mind, these</b></p> <p>15 <b>individual – beam contributors specifically have</b></p> <p>16 <b>a specific intensity distribution or maybe aim</b></p> <p>17 <b>angle. If some of them are used to achieve</b></p> <p>18 <b>fog-lamp function or bending-light function, it</b></p> <p>19 <b>would not be turned on when you do high beam.</b></p> <p>20 Q Does the Karlsson reference describe</p> <p>21 any spotlight sources, as illustrated in</p> <p>22 Figure 14, as being limited to fog-light</p>	<p>95</p> <p>1 Q All right. Can you turn to page 14 of</p> <p>2 the Karlsson reference.</p> <p>3 <b>A Okay.</b></p> <p>4 Q All right. And can you read -- can you</p> <p>5 read the first four lines in the top of the page?</p> <p>6 <b>A "The spotlight beams 34 can be</b></p> <p>7 <b>obtained, for example, by using a light source 2,</b></p> <p>8 <b>which is composed of grades of separate lights</b></p> <p>9 <b>source, such as LEDs, which can preferably be</b></p> <p>10 <b>controlled either individually or in groups."</b></p> <p>11 Q So what does Karlsson mean by</p> <p>12 controlling in groups of LEDs?</p> <p>13 MR. FITZSIMMONS: Objection. Form.</p> <p>14 <b>A LEDs are discrete light emitters, which</b></p> <p>15 <b>means that you can control individual or more than</b></p> <p>16 <b>one, as a group.</b></p> <p>17 Q Is it possible that one of these groups</p> <p>18 could include all of the LEDs for all of the</p> <p>19 spotlight sources illustrated in Figure 14?</p> <p>20 MR. FITZSIMMONS: Objection. Form.</p> <p>21 Compound. Objection. Incomplete hypothetical.</p> <p>22 Objection. Asked and answered.</p>
<p>94</p> <p>1 functionality or bending-light functionality?</p> <p>2 MR. FITZSIMMONS: Objection. Form.</p> <p>3 Compound.</p> <p>4 <b>A The example of those D type of</b></p> <p>5 <b>spotlight beams, per my understanding, they are</b></p> <p>6 <b>not for high beams.</b></p> <p>7 Q And how does Karlsson describe the D</p> <p>8 spotlight sources?</p> <p>9 <b>A Simple --</b></p> <p>10 MR. FITZSIMMONS: Objection. Form.</p> <p>11 Vague.</p> <p>12 <b>A Simply put, it's dipped. I can go back</b></p> <p>13 <b>to the language of the specification, how they</b></p> <p>14 <b>described the dipped.</b></p> <p>15 <b>Do you want me to look?</b></p> <p>16 Q Yes, please.</p> <p>17 <b>A For instance, page 19, in paragraph</b></p> <p>18 <b>starting from 23, they talk about are grouped in</b></p> <p>19 <b>specified levels. Spotlights indicated by D</b></p> <p>20 <b>provide a dipped-light function in accordance with</b></p> <p>21 <b>existing vehicle headlights. That specification</b></p> <p>22 <b>states there's low-beam function there.</b></p>	<p>96</p> <p>1 <b>A Yeah, you can turn off all of them.</b></p> <p>2 Q Could you turn on all of them?</p> <p>3 MR. FITZSIMMONS: Objection. Form.</p> <p>4 Objection. Incomplete hypothetical. Objection.</p> <p>5 Asked and answered.</p> <p>6 <b>A I don't see any reason to.</b></p> <p>7 Q You don't see any reason to. But is it</p> <p>8 possible, based on the teaching of Karlsson --</p> <p>9 MR. FITZSIMMONS: Object to form.</p> <p>10 Q -- to include all the LEDs?</p> <p>11 MR. FITZSIMMONS: Object to form.</p> <p>12 Objection. Incomplete hypothetical.</p> <p>13 <b>A I don't see that particular mode,</b></p> <p>14 <b>operation mode, is in the teaching. For the</b></p> <p>15 <b>reason, Karlsson teaches desired beam pattern and</b></p> <p>16 <b>the direction of the beam with illustration that</b></p> <p>17 <b>these spotlight beams, or each individual beam</b></p> <p>18 <b>distributor -- beam contributors are labeled with</b></p> <p>19 <b>a different level. He also used the word group in</b></p> <p>20 <b>different levels, such as I, D, I/D.</b></p> <p>21 <b>The teaching is to form desired beam</b></p> <p>22 <b>pattern. And the teaching doesn't say, in any</b></p>

<p style="text-align: right;">97</p> <p>1 case, you need to turn all of them on, simply</p> <p>2 because these desired beam patterns may have a</p> <p>3 conflicting need for information. I think I</p> <p>4 mentioned this before, between fog light and high</p> <p>5 beam, you don't do them together.</p> <p>6 Q Is there any conflict between operating</p> <p>7 the high beam and the low beam together?</p> <p>8 MR. FITZSIMMONS: Objection. Form.</p> <p>9 A I'm not familiar with European</p> <p>10 regulation. In the U.S. regulation, we allow to</p> <p>11 add a high beam onto the low beam. Again, I'm not</p> <p>12 sure what European regulation allows to do that.</p> <p>13 My general sense, it just -- I don't think they</p> <p>14 allow it. But I can't be sure.</p> <p>15 Q All right. So can you turn back to</p> <p>16 Karlsson, we're on page 14, could you read lines 5</p> <p>17 and 6, there's a sentence beginning at line 5?</p> <p>18 A "The spotlight beams 34 may also be</p> <p>19 made up of suitable modular means. For example,</p> <p>20 light modulator means, which are build up of grids</p> <p>21 of light modulators which can be switched</p> <p>22 individually which light modulator can be</p>	<p style="text-align: right;">99</p> <p>1 embodiment described in Karlsson requires a</p> <p>2 spatial light modulator?</p> <p>3 MR. FITZSIMMONS: Object to form.</p> <p>4 Object to scope.</p> <p>5 A It is my opinion, spotlight beams, as</p> <p>6 it attaches, is individually controllable in</p> <p>7 both -- actually, in intensity and angle, perhaps</p> <p>8 in color. For that reason, the modulator is the</p> <p>9 one that does the function.</p> <p>10 Q Does Karlsson describe any embodiments</p> <p>11 that do not include a spatial light modulator, in</p> <p>12 your opinion?</p> <p>13 MR. FITZSIMMONS: Objection. Form.</p> <p>14 Objection. Scope.</p> <p>15 A Karlsson described the spotlight beam</p> <p>16 to be formed to achieve a desired beam pattern. A</p> <p>17 POSA would know the modulator is functioned to do</p> <p>18 the changes of intensity and angle.</p> <p>19 Q So when you say "the modulator is</p> <p>20 functioned to do the changes of intensity and</p> <p>21 angle," does that mean, in your opinion, that the</p> <p>22 modulator is required in all Karlsson embodiments?</p>
<p style="text-align: right;">98</p> <p>1 controlled and transmit light, to block the light,</p> <p>2 and in order to reflect the light depending on the</p> <p>3 type that is needed. In the simplest embodiment,</p> <p>4 it is possible to use spotlight modulators which</p> <p>5 can be controlled in two universal positions, for</p> <p>6 example, fully light transmitting or fully light</p> <p>7 blocking.</p> <p>8 "In most sophisticated embodiment, it</p> <p>9 may be considered to use light modulator which can</p> <p>10 be controlled to transmit light to specify the</p> <p>11 degree so that a desired light intensity can be</p> <p>12 adjusted for each individual spotlight beam 34 or</p> <p>13 for a group of spotlight beams."</p> <p>14 Q Okay. So in this paragraph, when they</p> <p>15 refer to "light modulators may be used," is</p> <p>16 Karlsson describing these light modulators as an</p> <p>17 optional feature or as a required feature?</p> <p>18 MR. FITZSIMMONS: Objection. Form.</p> <p>19 A It's the feature with the needs of</p> <p>20 intent, the light intensity, or the angle. When</p> <p>21 these are needed, you need a modulator.</p> <p>22 Q Is it your opinion that every</p>	<p style="text-align: right;">100</p> <p>1 MR. FITZSIMMONS: Objection. Form.</p> <p>2 Objection. Asked and answered.</p> <p>3 A It is my opinion that the spotlight</p> <p>4 beam, in order to achieve desired beam pattern,</p> <p>5 modulate the -- special light modulator is used.</p> <p>6 Q Does Karlsson describe any embodiments</p> <p>7 that are not designed to achieve a desired beam</p> <p>8 pattern?</p> <p>9 MR. FITZSIMMONS: Objection. Form.</p> <p>10 A Karlsson's disclosure is adaptive</p> <p>11 highlighting system. It teaches as to changes,</p> <p>12 beam pattern.</p> <p>13 Q Does Karlsson define what it means by a</p> <p>14 desired beam pattern?</p> <p>15 MR. FITZSIMMONS: Objection. Form.</p> <p>16 A Well, Karlsson uses few examples, such</p> <p>17 as high beam, low beam, bending lights, and glare</p> <p>18 control. These are all desired functionality of</p> <p>19 beam pattern.</p> <p>20 Q Those are examples. But what is your</p> <p>21 understanding of the term "desired beam pattern,"</p> <p>22 as used in the Karlsson?</p>

<p>101</p> <p>1 MR. FITZSIMMONS: Objection. Form.</p> <p>2 A My understanding is Karlsson disclose</p> <p>3 multiple mode, operation modes for a headlamp</p> <p>4 system that is adaptive. The desire includes when</p> <p>5 operating high beam, you can have a glare control;</p> <p>6 while operating low beam, you can have a bending</p> <p>7 light with a direction change; or you can operate</p> <p>8 other modes of lighting. These are described in</p> <p>9 this reference.</p> <p>10 Q Can you read lines, let's see, Karlsson</p> <p>11 page 14, lines 14 through 16, can you read those</p> <p>12 again for us, please.</p> <p>13 A "In most sophisticated embodiment,"</p> <p>14 start from there?</p> <p>15 Q Yes.</p> <p>16 A "It may be considered to use light</p> <p>17 modulator, which can be controlled to transmit</p> <p>18 light to a specific degree so that a desired light</p> <p>19 intensity can be adjusted for each individual</p> <p>20 spotlight beams 34 or for group of spotlight</p> <p>21 beams."</p> <p>22 Q Now, does that say that Karlsson uses a</p>	<p>103</p> <p>1 Objection. Calls for speculation.</p> <p>2 A It's a specified level of transmission.</p> <p>3 Q All right. Could we go back to the</p> <p>4 Beam reference, which is Exhibit 1005, please.</p> <p>5 A Yes.</p> <p>6 Q All right. And then, can you turn to</p> <p>7 column 8, claim 4.</p> <p>8 A Yes.</p> <p>9 Q All right. And can you read about</p> <p>10 halfway through, where it starts with "a spatial</p> <p>11 light modulator selected from," can you read from</p> <p>12 there to the end of the claim, please.</p> <p>13 A "Spatial light modulator selected from</p> <p>14 group of consisting of digital mirror devices,</p> <p>15 liquid crystal devices, and grating light valves</p> <p>16 for selectively controlling the intensity of</p> <p>17 individual microbeam sources in set array."</p> <p>18 Q Does this claim say that the spatial</p> <p>19 light modulator is used for selectively</p> <p>20 controlling intensity?</p> <p>21 MR. FITZSIMMONS: Objection. Form.</p> <p>22 A Intensity of individual microbeam</p>
<p>102</p> <p>1 modulator to adjust intensity of a beam?</p> <p>2 MR. FITZSIMMONS: Objection. Form.</p> <p>3 A In the word he's using, "in most</p> <p>4 sophisticated embodiment," yes. You can change</p> <p>5 intensity level as well.</p> <p>6 Q Now, does that say that -- does</p> <p>7 Karlsson use the modulator for aiming the beam in</p> <p>8 any direction?</p> <p>9 MR. FITZSIMMONS: Objection. Form.</p> <p>10 A It is in paragraph -- I read it before,</p> <p>11 block, or reflect the lights.</p> <p>12 Q So in the sentence you just read, where</p> <p>13 it says the light modulators may be controlled,</p> <p>14 which can be controlled to transmit light to a</p> <p>15 specified degree, what does Karlsson mean by</p> <p>16 "specified degree," in that sentence?</p> <p>17 MR. FITZSIMMONS: Objection. Form.</p> <p>18 A Between zero to 1.</p> <p>19 Q Is it possible that Karlsson is</p> <p>20 referring to a specified amount there, where he is</p> <p>21 saying specified degree?</p> <p>22 MR. FITZSIMMONS: Objection. Form.</p>	<p>104</p> <p>1 sources.</p> <p>2 Q Do you agree that this limitation</p> <p>3 describes a spatial light modulator for</p> <p>4 selectively controlling the intensity?</p> <p>5 MR. FITZSIMMONS: Objection.</p> <p>6 Mischaracterizes testimony. Objection. Form.</p> <p>7 Objection. Asked and answered.</p> <p>8 A The reference teaches selectively</p> <p>9 controlled -- controlling the intensity of</p> <p>10 individual microbeam sources.</p> <p>11 Q How does the Beam reference describe</p> <p>12 selectively controlling intensity of individual</p> <p>13 microbeam sources using an SLM?</p> <p>14 MR. FITZSIMMONS: Objection. Form.</p> <p>15 Vague.</p> <p>16 A Spatial light modulator is a known</p> <p>17 device to POSA to modulate the light input to the</p> <p>18 output. I think it's in my declaration, the</p> <p>19 second declaration, I can go back to the paragraph</p> <p>20 and read that function. That's a known device --</p> <p>21 known -- yeah, known device.</p> <p>22 Q Could selectively controlling intensity</p>

<p>105</p> <p>1 using an SLM be achieved by blocking light using</p> <p>2 the SLM?</p> <p>3 MR. FITZSIMMONS: Objection. Form.</p> <p>4 Objection. Incomplete hypothetical.</p> <p>5 <b>A The modulator is part of microbeam.</b></p> <p>6 <b>Emitter and modulator form the microbeam, there's</b></p> <p>7 <b>many of them. And the Beam disclosure, 30,000</b></p> <p>8 <b>steps, they're individually controllable in terms</b></p> <p>9 <b>of intensity of microbeam. Yes, zero is included.</b></p> <p>10 <b>Zero transmission is included.</b></p> <p>11 MR. TURNER: Sorry. Can we take a</p> <p>12 five-minute break.</p> <p>13 MR. FITZSIMMONS: Okay.</p> <p>14 (Recess taken from 1:53 p.m. to</p> <p>15 2:17 p.m.)</p> <p>16 BY MR. TURNER:</p> <p>17 Q All right. Dr. Jiao, in your opinion,</p> <p>18 is there a difference between controlling</p> <p>19 intensity and measuring intensity?</p> <p>20 MR. FITZSIMMONS: Objection. Form and</p> <p>21 scope.</p> <p>22 <b>A Can you repeat your question again?</b></p>	<p>107</p> <p>1 Scope. Objection. Incomplete hypothetical.</p> <p>2 <b>A LED is a current-driven light source.</b></p> <p>3 <b>Changing the light output level from a</b></p> <p>4 <b>light-emitting diode, usually, is controlled, its</b></p> <p>5 <b>input-operating current.</b></p> <p>6 Q So if you want to increase intensity,</p> <p>7 would you increase or decrease input-operating</p> <p>8 current to an LED?</p> <p>9 MR. FITZSIMMONS: Objection. Form.</p> <p>10 Scope. Objection. Incomplete hypothetical.</p> <p>11 <b>A LED is, again, current-dependent light</b></p> <p>12 <b>sources -- light source. The light output level</b></p> <p>13 <b>is not completely interrelated to the input or</b></p> <p>14 <b>current. But in the big range of the operation,</b></p> <p>15 <b>it is close to linear, more input current related</b></p> <p>16 <b>to more light output from that LED.</b></p> <p>17 Q So how do you measure the intensity of</p> <p>18 light that is output from a light source?</p> <p>19 MR. FITZSIMMONS: Objection. Form.</p> <p>20 Scope. Objection. Incomplete hypothetical.</p> <p>21 <b>A Again, intensity is defined in luminous</b></p> <p>22 <b>flux per solid angle. The measurement intensity,</b></p>
<p>106</p> <p>1 Q Sure. Is there a difference between</p> <p>2 controlling intensity of a light source and</p> <p>3 measuring the intensity from a light source?</p> <p>4 MR. FITZSIMMONS: Objection. Form and</p> <p>5 scope.</p> <p>6 <b>A You're using a different verb. Control</b></p> <p>7 <b>is to control. Measure is to measure. And these</b></p> <p>8 <b>two different verbs, yes, there is a difference.</b></p> <p>9 Q So how do you control the intensity of</p> <p>10 light produced by a light source?</p> <p>11 MR. FITZSIMMONS: Objection. Form.</p> <p>12 Objection. Scope.</p> <p>13 <b>A Depends on the type of light sources.</b></p> <p>14 <b>Most of the cases, for instance, LED, the</b></p> <p>15 <b>controlling, typically, is electrical or</b></p> <p>16 <b>electronic control. Measuring is using a specific</b></p> <p>17 <b>measurement equipment and the methodology to</b></p> <p>18 <b>obtain the results of light output from the</b></p> <p>19 <b>source.</b></p> <p>20 Q So how do you control an LED to</p> <p>21 increase light intensity?</p> <p>22 MR. FITZSIMMONS: Objection. Form.</p>	<p>108</p> <p>1 <b>typically, you can use either photocell,</b></p> <p>2 <b>photodetector, or spectrometer, set in a given</b></p> <p>3 <b>distance, measure that particular position or</b></p> <p>4 <b>angle light output that hit on that particular</b></p> <p>5 <b>detector. Either it's photocell or spectrometer,</b></p> <p>6 <b>and measure the results, as read as candela,</b></p> <p>7 <b>luminous flux per that particular solid angle in</b></p> <p>8 <b>that direction, with unit of candela.</b></p> <p>9 Q So how do you design a lighting system</p> <p>10 that provides a specific type of -- a specific</p> <p>11 light intensity?</p> <p>12 MR. FITZSIMMONS: Objection. Form.</p> <p>13 Scope. Objection. Incomplete hypothetical.</p> <p>14 <b>A First, you need to know what type of</b></p> <p>15 <b>light intensity angular distribution you want to</b></p> <p>16 <b>achieve. For instance, in automotive lighting</b></p> <p>17 <b>world, if you want to achieve a low beam, or a</b></p> <p>18 <b>high beam, or any other beam, there is defined</b></p> <p>19 <b>light intensity, angular distribution. That is</b></p> <p>20 <b>specified, in angular domain, with the points,</b></p> <p>21 <b>sometimes the lines, zones, each with the</b></p> <p>22 <b>intensity ratings, candela, numerically. By</b></p>

<p style="text-align: right;">109</p> <p>1 <b>knowing such beam pattern, you select the light</b> 2 <b>source, optical system, or modulator, and you</b> 3 <b>combine this light-emitting device with the</b> 4 <b>light-modulating or manipulating device, you put</b> 5 <b>the lights into these -- this design dipping</b> 6 <b>pattern, which is specified in any -- for any</b> 7 <b>specific beam, light beam, there is specified per</b> 8 <b>standards, regulation, or OEM specification.</b> 9 <b>There's detail specification where you put the</b> 10 <b>lights.</b></p> <p>11 Q Now, after you design this light 12 source, how do you confirm that the light source 13 meets the desired beam pattern?</p> <p>14 MR. FITZSIMMONS: Objection. Form and 15 scope. Objection. Incomplete hypothetical.</p> <p>16 A <b>It's not light source only. You'll</b> 17 <b>always have an emitting device combined with</b> 18 <b>optical elements, including modulator, spatial</b> 19 <b>modulator. To put the lights where you want it to</b> 20 <b>be, and I described this in my second declaration,</b> 21 <b>if you look at page 10, that's very well-known</b> 22 <b>beam pattern in United States that is consistently</b></p>	<p style="text-align: right;">111</p> <p>1 Whatever. If you guys have electronic version of 2 the first one, that would be helpful.</p> <p>3 But we can start with the second 4 declaration.</p> <p>5 So, I guess, so, Dr. Jiao, if you could 6 refer to your second declaration, which I think 7 you do have, which is Exhibit 1036.</p> <p>8 What is your understanding of a person 9 of ordinary skill in the art?</p> <p>10 A <b>I think it is -- I can read my</b> 11 <b>declaration, paragraph 6. You want me to read it?</b></p> <p>12 Q Yes, please.</p> <p>13 A <b>"A POSA, at the time of alleged" -- I</b> 14 <b>never pronounce it good. You understand, right?</b> 15 <b>"Invention would have had a bachelor's</b> 16 <b>degree in mechanical engineering, electrical</b> 17 <b>engineering, optical engineering, applied physics,</b> 18 <b>or an equivalent field, as well as at least two</b> 19 <b>years of industry experience in the area of</b> 20 <b>automotive lighting and lighting control."</b></p> <p>21 Q Okay. And so, here, you reference 22 paragraphs 41 through 43 of your first</p>
<p style="text-align: right;">110</p> <p>1 <b>specified by SAE and the federal regulation. Low</b> 2 <b>beam on the right, high beam on the left.</b></p> <p>3 So, in the industry, automotive 4 lighting industry, any POSA would know whatever 5 you do selecting light source, optical elements, 6 you want to put lights into these testing points 7 or lines or zones, in order to meet the 8 specification.</p> <p>9 Q All right. Dr. Jiao, do you have a 10 copy of your first declaration?</p> <p>11 A <b>I do not. But we can get one, I think.</b></p> <p>12 Q Okay. I think it's Exhibit 1002 or 3. 13 (VWGoA Exhibit 1036 previously marked 14 for identification and retained by counsel.)</p> <p>15 MR. FITZSIMMONS: Andy, we don't have a 16 hard copy on us right now. It wasn't on the list, 17 I think, you sent us over last night. We can 18 either do an electronic one or we can take a short 19 break.</p> <p>20 MR. TURNER: I think we can probably do 21 the electronic version. But I guess -- or I can 22 share an electronic version on my screen.</p>	<p style="text-align: right;">112</p> <p>1 declaration.</p> <p>2 So, if we could, turn to paragraph 41 3 of your first declaration.</p> <p>4 Do you see that? Do you have a copy of 5 that one?</p> <p>6 MR. SOULE: We're having it printed.</p> <p>7 MR. TURNER: Okay. That'll make it 8 easier.</p> <p>9 I can share my screen, if you guys 10 want.</p> <p>11 MR. FITZSIMMONS: Can you let us take a 12 five-minute break, and then we'll come back with a 13 hard copy.</p> <p>14 MR. TURNER: That's okay. All right. 15 Thank you.</p> <p>16 MR. FITZSIMMONS: All right. 17 (Recess taken from 2:33 p.m. to 18 2:41 p.m.)</p> <p>19 MR. FITZSIMMONS: Let's go back on the 20 record.</p> <p>21 BY MR. TURNER:</p> <p>22 Q Dr. Jiao, can you turn to -- I guess,</p>

<p>113</p> <p>1 so, first, you have Exhibit 1003, or IPR 2 2022-01586; is that correct? 3 <b>A Is that my first declaration?</b> 4 Q Okay. All right. 5 And can you turn to the last page of 6 this document, please. 7 <b>A Yes.</b> 8 Q Is that your signature? 9 <b>A It is.</b> 10 Q Excellent. Okay. 11 Can you turn back to paragraph 41 of 12 your first declaration. 13 <b>A Yes.</b> 14 Q All right. And so, this is the level 15 of ordinary skill in the art that was in your 16 first declaration. 17 Were there any changes in your proposed 18 level of ordinary skill in the art between your 19 first declaration and your second declaration? 20 <b>A There's no change, except what I put in</b> 21 <b>my second declaration, the last sentence. The</b> 22 <b>last sentence, I don't put in my second</b></p>	<p>115</p> <p><b>1 paragraph 41.</b> 2 Q So by "experience," you're referring to 3 the industry experience that's in paragraph 41? 4 <b>A In the area of automotive lighting and</b> 5 <b>lighting control.</b> 6 Q Okay. And what do you mean by "formal 7 training," as referenced in paragraph 42? 8 <b>A Means formal, not casual.</b> 9 Q Okay. So what do you mean by "formal 10 training," with reference to your level of 11 ordinary skill in the art? 12 <b>A Formally trained in such experience.</b> 13 Q Is formal training referring to 14 education, like a university education? 15 MR. FITZSIMMONS: Objection. Form. 16 <b>A If it is related to automotive</b> 17 <b>lighting, yes.</b> 18 Q All right. And so, the next sentence 19 in paragraph 42, you say "This description is 20 approximate, and a higher level of education or 21 skill might make up for less experience, and vice 22 versa."</p>
<p>114</p> <p><b>1 declaration.</b> 2 Q All right. But your second 3 declaration, so you referred back to paragraphs 41 4 to you 43; is that correct? 5 <b>A That is correct.</b> 6 Q Can you read paragraph 42 of your first 7 declaration. 8 <b>A "Experience could take the place of</b> 9 <b>some formal training as domain knowledge may be</b> 10 <b>learned on the job. This description is</b> 11 <b>approximate, and higher level of education or</b> 12 <b>skill might make up for less experience, and vice</b> 13 <b>versa."</b> 14 Q Dr. Jiao, what did you mean by what's 15 described in paragraph 42? 16 MR. FITZSIMMONS: Objection. Vague. 17 Q So the first sentence, you say 18 experience could take the place of some formal 19 training. 20 What type of experience are you 21 referring to here? 22 <b>A For experience, it's listed in my</b></p>	<p>116</p> <p><b>1 A Yes.</b> 2 Q So by "higher level of education," what 3 are you referring to there? 4 <b>A Higher-level education, referring to</b> 5 <b>higher than what I listed in the previous</b> 6 <b>paragraph.</b> 7 Q Okay. All right. Can we refer back to 8 your other declaration, the second one, which is 9 1036. 10 Can you turn to paragraph 53, please. 11 <b>A 53?</b> 12 Q Yes. 13 <b>A Okay.</b> 14 Q Paragraph 53, it's on page 27, please. 15 <b>A Yes, I'm here.</b> 16 Q Can you read paragraph 53 for me, 17 please? 18 <b>A "As I previously explained, for</b> 19 <b>example, Exhibit 1003, paragraph 242, Karlsson's</b> 20 <b>emitted" light beam pattern -- I'm sorry, "emitted</b> 21 <b>light beam 50 is represented as a window that</b> 22 <b>shifts in the plane from left to right and from</b></p>

<p>117</p> <p>1 top to bottom, based on the data from input to 2 Karlsson's controller," Exhibit 1010, column 18 to 3 20 – column 19, 18, to 23. "I included the below 4 annotated figure in the same paragraph." 5 Q So is that window illustrated in the 6 figure that you have shown on page 28 of your 7 declaration? 8 A Yes. 9 Q So that would be the window of 50; is 10 that correct? 11 A It is the beam, light beam 50. 12 Q Does Karlsson provide any other 13 disclosure, any further disclosure of this emitted 14 light beam, which is represented as a window 15 that's illustrated in Figure 14? 16 MR. FITZSIMMONS: Objection. Form. 17 A Karlsson disclosed desired beam pattern 18 and direction. 19 Q Is it your opinion that that window, 20 that's referenced by numeral 50 in Figure 14, 21 represents the desired beam pattern of Karlsson? 22 MR. FITZSIMMONS: Objection. Form.</p>	<p>119</p> <p>1 else in the Karlsson reference? 2 MR. FITZSIMMONS: Objection. Vague. 3 A The window 50 is an example – 4 MR. FITZSIMMONS: Objection. Asked and 5 answered. 6 A As an example, selecting a group of 7 spotlight beams? 8 Q All right. Dr. Jiao, we had a number 9 of breaks today. During these breaks, did you 10 have any discussions with counsel about any of the 11 substance of your deposition here today? 12 A No. 13 MR. TURNER: All right. I don't have 14 any further questions, guys. 15 MR. FITZSIMMONS: Let's take a 16 ten-minute break or so. 17 MR. TURNER: Okay. Sounds good. 18 (Recess taken from 2:53 p.m. to 19 3:22 p.m.) 20 MR. FITZSIMMONS: We can go back on the 21 record. 22 No questions to redirect. So close out</p>
<p>118</p> <p>1 A Illustration Figure 14 is example, is 2 to select group of these micro – group of 3 spotlight beams in different – you can shift it 4 left and right, up and down, different shape, 5 different geometry to form the desired beam 6 pattern. This is just an example of select some 7 of these spotlight beams to form a beam pattern. 8 Q Okay. Does Karlsson provide any 9 additional closure, with reference to this example 10 that's illustrated in Figure 14, regarding the 11 window 50? 12 A I think I described the specification 13 for Karlsson's disclosure, who described various 14 other beam patterns and, also, describes various 15 of spotlight beam in terms of, you know, different 16 level, perhaps different aiming, noted as a D/I, 17 or D and I. And in various other places in the 18 specification, who described the combination of a 19 few of these, I, D, I, or D and I, form a desired 20 beam pattern and direction. 21 Q So the beam pattern's described. 22 Is this window 50 described anywhere</p>	<p>120</p> <p>1 the deposition. 2 MR. TURNER: Okay. Sounds good. 3 THE STENOGRAPHER: If I can get your 4 orders on the record before we lose you. 5 MR. TURNER: That's a good idea. I 6 would like a rough soon, and then a final about as 7 soon as you can provide it. 8 MR. FITZSIMMONS: We'll take the same, 9 please. 10 THE STENOGRAPHER: Thank you. 11 (Off the record at 3:25 p.m.) 12 13 14 15 16 17 18 19 20 21 22</p>

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CERTIFICATE OF REPORTER - NOTARY PUBLIC

I, JUDITH E. BELLINGER, RPR, CRR, the  
officer before whom the foregoing deposition was  
taken, do hereby certify that the foregoing  
transcript is a true and correct record of the  
testimony given; that said testimony was taken by  
me and thereafter reduced to typewriting under my  
direction; that reading and signing was not  
requested; and that I am neither counsel for,  
related to, nor employed by any of the parties to  
this case and have no interest, financial or  
otherwise, in its outcome.

IN WITNESS WHEREOF, I have hereunto set  
my hand and affixed my notarial seal this 12th day  
of December, 2023.  
My Commission Expires: January 1, 2027



NOTARY PUBLIC IN AND FOR  
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