

CONFIDENTIAL - DEAN NEIKIRK, PH.D.

UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE PATENT TRIAL AND APPEAL BOARD

CASE IPR 2020-00512  
U.S. Patent No. 9,186,052

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SAMSUNG ELECTRONICS CO., LTD, and SAMSUNG  
ELECTRONICS AMERICA, INC.,

Petitioners,  
v.

CELLECT, LLC,  
Patent Owner.

-----X

CONFIDENTIAL DEPOSITION  
VIA ZOOM VIDEOCONFERENCING  
OF  
DEAN NEIKIRK, PH.D.  
Friday, October 9, 2020

Reported By:

LINDA J. GREENSTEIN

JOB NO. 1041

AMG Reporting LLC 917-969-4493

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<p>Page 2</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 October 9, 2020 3 11:03 A.M. EST 4 5 6 7 Confidential Deposition held via 8 Zoom Videoconferencing of Dean Neikirk, 9 Ph.D., taken by Respective Parties, before 10 Linda J. Greenstein, a Certified Shorthand 11 Reporter and Notary Public of the State of 12 New York. 13 14 15 16 17 18 19 20 21 22 23 24 25</p>	<p>Page 3</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 A P P E A R A N C E S: 3 (All parties appearing via Zoom 4 Videoconferencing) 5 6 7 ROPES &amp; GRAY, L.L.P. 8 Counsel for Petitioners 9 1900 University Avenue 10 6th Floor 11 East Palo Alto, California 12 94303-2284 13 BY: JAMES L. DAVIS, JR., ESQ. 14 650.617.4794 15 james.l.davis@ropesgray.com 16 17 18 19 20 KRAMER LEVIN NAFTALIS &amp; FRANKEL, L.L.P. 21 Counsel for Patent Owner Collect, LLC 22 1177 Avenue of the Americas 23 New York, New York 10036 24 BY: JEFFREY H. PRICE, ESQ. 25 212.715.7502 jprice@kramerlevin.com  Also Present: ROPE &amp; GRAY, L.L.P. Carolyn Redding, Esq.</p>
<p>Page 4</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 THE COURT REPORTER: Good 3 morning. 4 We're here in the Matter of 5 Samsung versus Collect. 6 Today is Friday, October 9, 7 2020. 8 Counsel, do you agree that the 9 witness will be sworn today remotely? 10 MR. PRICE: Yes, I agree. 11 MR. DAVIS: Yes. This is Jim 12 Davis for petitioners. 13 I agree. 14 THE COURT REPORTER: You may 15 proceed. 16 DEAN NEIKIRK, PH.D., 17 having been first duly sworn, was examined 18 and testified as follows: 19 EXAMINATION BY 20 MR. PRICE: 21 Q. Good morning, Dr. Neikirk. 22 A. Good morning. 23 Q. How are you today? 24 A. Just fine. 25 How are you?</p>	<p>Page 5</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 Q. Can I please have you state your 3 full name for the record. 4 A. Dean Paul Neikirk. 5 Q. And do you understand why you're 6 here today? 7 A. My understanding today is to 8 testify with respect to my declaration in 9 connection with an IPR petition. 10 Specifically, one referring to Claim 2 of 11 the '052 patent. 12 Q. And this is, just for the 13 record, IPR 2020-00512. 14 Is that your understanding? 15 A. I've forgotten the number, but I 16 think that sounds right, yes. 17 Q. Is it correct that you provided 18 one declaration for two different 19 proceedings covering the same patent that 20 we're going to be talking about today? 21 A. Yes, that's correct. 22 Q. Okay. And half of your 23 declaration was the subject of a deposition 24 yesterday; is that correct? 25 A. I don't know whether it's half.</p>

<p style="text-align: right;">Page 6</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>At least half, probably more than half was</b> 3 <b>yesterday.</b> 4 Q. Okay. And we are talking about 5 U.S. Patent Number 9,186,052 today; 6 correct? 7 <b>A. That's my understanding, yes.</b> 8 Q. And the proceeding that we're 9 talking about today, you cited a few 10 different pieces of what you term prior 11 art, including a reference called Swift, 12 Ricquier, Suzuki and Larson. 13 Does that sound right? 14 <b>A. Yes, that is correct.</b> 15 Q. Have you ever been deposed 16 before? 17 <b>A. Yes, I have.</b> 18 Q. It was yesterday. 19 Were you deposed before that? 20 <b>A. Many times, yes.</b> 21 Q. Roughly how many times would you 22 say you've been deposed? 23 <b>A. Probably in the last 15 years,</b> 24 <b>I've been deposed at least 50 times.</b> 25 Q. So you're familiar with what</p>	<p style="text-align: right;">Page 7</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 we're going to be doing here today. I'm 3 going to be asking you questions and you're 4 going to be answering to the best of your 5 ability. 6 I'll just ask, I know I've done 7 a bunch of these depositions now on Zoom 8 and it can get a little bit difficult, you 9 know, with some lag and just the very 10 nature of doing this by video, where it's 11 very easy for us to start talking over one 12 another. 13 But I'm going to do my best not 14 to talk over you and I'll ask that you do 15 the same, and I think that will help us 16 move along and get a nice clear record. 17 Sound good? 18 <b>A. Yes, it does. I'll try very</b> 19 <b>hard to wait just a moment after the end of</b> 20 <b>your question before I begin an answer.</b> 21 Q. Okay. Perfect. 22 Okay. In your declaration, you 23 have a section beginning on page 12 24 regarding legal standards. 25 Do you see that?</p>
<p style="text-align: right;">Page 8</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. Yes, page 12 of the exhibit</b> 3 <b>number, so Exhibit 1004, page 12 of 256.</b> 4 <b>I will note that the table of</b> 5 <b>contents page numbering is slightly</b> 6 <b>different than the exhibit page numbering,</b> 7 <b>but, yes, my section on legal standards</b> 8 <b>starts on page 12 of the exhibit.</b> 9 Q. Perfect. 10 I'll do my best to make sure 11 that we're -- to give you the exhibit page 12 numbers as we're going through today so 13 that we're on the same page. 14 <b>A. Thank you.</b> 15 MR. PRICE: And, Jim, you're 16 okay with not marking these exhibits and 17 just using the exhibit numbers as they are 18 in this case? 19 MR. DAVIS: Yes. 20 BY MR. PRICE: 21 Q. So just to confirm that your 22 declaration that we're talking about now is 23 labeled Exhibit 1004; correct? 24 <b>A. That's what I have, yes, Samsung</b> 25 <b>Exhibit 1004.</b></p>	<p style="text-align: right;">Page 9</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Can you turn to page 16 of your 3 declaration, which is still in this "Legal 4 Standards" section. 5 <b>A. Page 16.</b> 6 Q. Do you see you have a section 7 heading here called "Claim Construction"? 8 <b>A. Yes, that's correct.</b> 9 Q. What is your understanding of 10 what claim construction is in an inter 11 partes review proceeding? 12 MR. DAVIS: Objection. 13 <b>A. In this matter, my understanding</b> 14 <b>is that neither party is proposed to have</b> 15 <b>any claim terms construed, and I have used</b> 16 <b>plain and ordinary meaning for all claim</b> 17 <b>terms.</b> 18 <b>A claim construction process, as</b> 19 <b>I understand it, is a rather involved and</b> 20 <b>in-depth investigation as to whether</b> 21 <b>certain terms in a claim have -- need to be</b> 22 <b>clarified.</b> 23 <b>In a court proceeding,</b> 24 <b>ultimately the Court determines if there</b> 25 <b>are any and what they are, the actual</b></p>

<p style="text-align: right;">Page 10</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>constructions.</b> 3 <b>My understanding is in a</b> 4 <b>proceeding like an IPR, I think ultimately</b> 5 <b>the board rules as to if any terms require</b> 6 <b>construction, and if so, what those</b> 7 <b>constructions will be.</b> 8 Q. You mentioned plain and ordinary 9 meaning. 10 What is a "plain and ordinary 11 meaning" to you? 12 A. So to -- well, I believe that 13 plain and ordinary indicates it's just 14 something viewed in terms of one of 15 ordinary skill in the art, or what one of 16 ordinary skill in the art at the time 17 period at issue, would understand the terms 18 -- the words and the claims to mean. 19 It does mean that they are 20 somewhat context sensitive because 21 obviously words in the claim may refer to 22 other pieces of it, but that there is no 23 other definition for those terms. It's 24 what one of ordinary skill would broadly 25 expect them to mean.</p>	<p style="text-align: right;">Page 11</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. And in considering Claim 2 of 3 the '052 patent that we're going to be 4 talking about today, it's your contention 5 that every claim term should be accorded 6 its plain and ordinary meaning, there's no 7 special meaning for any of the claim terms; 8 is that right? 9 MR. DAVIS: Objection. 10 Form. 11 A. I don't know that I'd 12 characterize it as my contention. 13 My understanding is that no one 14 suggested that any terms be construed and I 15 have not done so. I've applied only plain 16 and ordinary meaning to all the phrases and 17 words in Claim 2. 18 Q. Do you have an understanding of 19 who has the -- which party has the initial 20 burden of providing construction for claim 21 terms in inter partes review proceeding? 22 MR. DAVIS: Objection. 23 Form. 24 A. Honestly, I don't recall who has 25 the initial burden. I have certainly seen</p>
<p style="text-align: right;">Page 12</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>both petitioners and patent owners provide</b> 3 <b>constructions before, proposed</b> 4 <b>constructions before, but I don't honestly</b> 5 <b>know who has the initial burden.</b> 6 Q. In preparing your declaration 7 for this case, is it correct to say that 8 you did not find it necessary to provide 9 any further explanation of what any claim 10 term in Claim 2 means to a person of 11 ordinary skill in the art other than what's 12 black and white on the page? 13 MR. DAVIS: Objection. 14 Form. 15 A. Well, I applied the plain and 16 ordinary meaning to all of the words in the 17 claim, again, as I mentioned before, you 18 have to read the claim in its entirety. 19 I didn't see anything in there 20 that I didn't think that one of ordinary 21 skill in the art would be able to 22 understand in its plain and ordinary 23 fashion. 24 Q. I'm going to ask you to flip 25 over to Claim 2 of the '052 patent.</p>	<p style="text-align: right;">Page 13</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Do you have that in front of 3 you? 4 A. I do. Let me get to Claim 2. 5 I have that in front of me. 6 Q. So when providing your opinion 7 on the patentability of Claim 2, did you 8 consider the meaning of the term "image 9 sensor" as it's used in the claim? 10 MR. DAVIS: Objection to form. 11 A. Again, only in its plain and 12 ordinary sense. The image sensor is in the 13 claim itself specified what it includes. 14 So no, I didn't do any other substitution 15 or -- or claim construction analysis for 16 the two words "image sensor." 17 Q. And what does an image sensor 18 include in the context of Claim 2? 19 A. Well, the claim is quite clear 20 that the said image sensor includes a first 21 circuit board, having a length and a width. 22 That length and width -- of that 23 circuit board defines a first plane, so I 24 am paraphrasing slightly from the claim 25 language.</p>

<p style="text-align: right;">Page 14</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 That that first circuit board 3 includes an array of CMOS pixels thereon 4 and that it further goes on to say that the 5 plurality of CMOS pixels within said array 6 of CMOS pixels, each include an amplifier. 7 It further goes on to say that 8 the first circuit board -- let's see, how 9 does it phrase it -- "Said first circuit 10 board further including timing and control 11 circuitry thereon. Said timing and control 12 circuitry being coupled to said array. 13 "CMOS pixels said image sensor 14 producing a video" -- "a pre-video signal." 15 So those are all of the 16 characteristics that the claim requires, 17 all the things that need to be present in 18 its image sensor. 19 Q. So in coming to your 20 understanding of what an image sensor is in 21 Claim 2, is it correct to say that the 22 image sensor is not just the pixel array? 23 A. Well, it certainly calls for a 24 pixel array and a first circuit board. 25 The first circuit board includes</p>	<p style="text-align: right;">Page 15</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 an array of CMOS pixels thereon, but there 3 are both the circuit board and CMOS pixels 4 required. 5 Q. Is that consistent with the way 6 that the term "image sensor" is used in the 7 art to refer to more than just the photo 8 sensitive pixel array? 9 MR. DAVIS: Objection to form. 10 A. I think image sensor is used in 11 a number of different ways. In some pieces 12 of art, it might refer to only the devices 13 that convert light to an electric signal. 14 In others, it might very well refer to a 15 collection of many things beyond just that. 16 I don't think there's one and 17 only one meaning for it, but in terms of 18 the context of the claim, I think the plain 19 and ordinary meaning is clear, it lays out 20 in the claim what has to be present. 21 Q. Does your declaration include 22 all of your opinions that you have in this 23 case? 24 MR. DAVIS: Objection to form. 25 A. It contains all of my opinions</p>
<p style="text-align: right;">Page 16</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 relative to the -- and today if we're 3 talking about Exhibit 1004 specific to the 4 IPR petitions related to the '052 patent, 5 yes. 6 Q. Are there any corrections to the 7 declaration that you're aware of that you'd 8 like to make at this time? 9 A. You know, I may have noticed -- 10 we've done three of these now, three 11 different declarations. 12 There was a small typo here and 13 there. I don't even remember whether there 14 were any in this, but they were the kind of 15 typo that were very clear in context that 16 it was a typo, but none of them were -- I 17 don't think I'd phrase any of them as being 18 consequential. So, no, no other 19 corrections. 20 Q. Did you write this declaration? 21 A. So all of the opinions in this 22 declaration are mine. They were arrived at 23 after careful study and extensive 24 discussion with counsel. Some sections of 25 this I probably typed myself. Other</p>	<p style="text-align: right;">Page 17</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 sections someone else may have acted as the 3 scribe, but certainly this is my 4 declaration, these are my opinions. 5 Q. What do you mean by acted as a 6 scribe? 7 A. Well, in discussions trying to 8 -- as I analyzed art and discussed it with 9 counsel, they might very well have tried to 10 reduce some of the -- the things that I was 11 saying to the written -- to written word, 12 to put it on page. 13 Q. Okay. But you signed off on 14 every word, every argument, everything in 15 your declaration? 16 A. All of the arguments in the 17 declaration are mine, and, yes, I certainly 18 signed off on them. 19 Q. Okay. Were there any portions 20 of your declaration that were written down 21 by a scribe that you felt the need to 22 correct? 23 MR. DAVIS: Counsel, at that 24 point you're getting into actual 25 conversations between counsel and the</p>

<p style="text-align: right;">Page 18</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 witness and that's going to be privileged. 3 MR. PRICE: Are you directing 4 the witness not to answer? 5 MR. DAVIS: Are you seeking -- 6 is that what you're seeking -- 7 MR. PRICE: Yes, that is my open 8 question. 9 DIR MR. DAVIS: I'm objecting that 10 that's privileged and I'm instructing the 11 witness not to answer. 12 BY MR. PRICE: 13 Q. Did you provide a list of the 14 documents that you relied on in preparation 15 of your declaration? 16 <b>A. So I was looking in this -- in</b> 17 <b>this exhibit. I don't think there's -- I</b> 18 <b>don't see a separate list of documents</b> 19 <b>considered, but all of the documents that I</b> 20 <b>have considered are referenced.</b> 21 <b>There are certain documents that</b> 22 <b>I based my opinions on in terms of</b> 23 <b>obviousness -- of invalidity, and I've</b> 24 <b>cited a number of other documents that I</b> 25 <b>viewed as background. They are cited in</b></p>	<p style="text-align: right;">Page 19</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>the report and all of those documents are</b> 3 <b>cited.</b> 4 <b>I don't think I've made a</b> 5 <b>separate list of them. You'll find them in</b> 6 <b>context in the report -- in the</b> 7 <b>declaration, excuse me.</b> 8 Q. All right. Thank you. 9 So I'm on the very -- the very, 10 very end of your declaration there's an 11 Appendix B, a list of materials considered. 12 <b>A. I was looking at the table of</b> 13 <b>contents, my apologies, and, yes, there is</b> 14 <b>an Appendix B.</b> 15 Q. Okay. So are these all of the 16 documents that you relied on in preparing 17 your declaration? 18 <b>A. Yes, it is. Let me just make</b> 19 <b>sure that -- yes, it is.</b> 20 Q. Were there any documents that 21 you reviewed in preparing for your 22 declaration in this case that you did not 23 cite directly in your declaration and did 24 not appear on Appendix B? 25 MR. DAVIS: Counsel, at that</p>
<p style="text-align: right;">Page 20</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 point, again, I think you're trying to get 3 into work product, so, that, again, would 4 be privileged. 5 MR. PRICE: No, counsel, I'm 6 just trying to figure out the universe of 7 materials that Dr. Neikirk considered in 8 forming his opinions and want to be sure -- 9 MR. DAVIS: Reframe your 10 question that way so you're asking about 11 that. So you're asking about the documents 12 that he considered in forming his opinions 13 here. Not whether or not he reviewed 14 anything else outside of those. 15 MR. PRICE: Yes. 16 BY MR. PRICE: 17 Q. My question is, did you rely on 18 any documents not cited in Appendix B in 19 forming your opinions and that are laid out 20 in your declaration? 21 <b>A. No, I did not. These -- in</b> 22 <b>Appendix B, the references cited therein</b> 23 <b>are the basis of my opinions.</b> 24 <b>I did not rely on any documents</b> 25 <b>other than these as a bases for my</b></p>	<p style="text-align: right;">Page 21</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>opinions.</b> 3 Q. Do you have access to Exhibit 4 Number 2004, which was filed by the patent 5 owner in this case? 6 <b>A. Let me look in my stack.</b> 7 Q. This is the Laser Focus World 8 article that was written by Eric Fossum. 9 <b>A. That sounds familiar, so I do</b> 10 <b>think I do, but let me try to find the tab.</b> 11 <b>It's not in that binder.</b> 12 <b>So what exhibit number did you</b> 13 <b>use again? I'm sorry.</b> 14 Q. Exhibit 2004. 15 <b>A. I do not believe I have an</b> 16 <b>exhibit labeled 2004. I have a Laser Focus</b> 17 <b>World exhibit. It's labeled Samsung</b> 18 <b>Exhibit 1048, so I don't know whether</b> 19 <b>that's the same one or not.</b> 20 Q. That could be the same one. Let 21 me verify. 22 <b>A. It's listed in my materials</b> 23 <b>considered, Exhibit 1048, Fossum, "Active</b> 24 <b>Pixels Sensor Challenges CCDs," Laser Focus</b> 25 <b>World, Volume 29, Issue 6 from June 1993.</b></p>

<p style="text-align: right;">Page 22</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b></p> <p>2 Q. Perfect.</p> <p>3 <b>A. I do have that in front of me.</b></p> <p>4 Q. So you did review this article</p> <p>5 in preparing your declaration; is that</p> <p>6 correct?</p> <p>7 <b>A. I did. One of my other</b></p> <p>8 <b>references, Swift, also refers to this</b></p> <p>9 <b>article.</b></p> <p>10 Q. And what is your understanding</p> <p>11 of why Swift references this article?</p> <p>12 <b>A. Well, I think I can quote</b></p> <p>13 <b>directly from Swift, and I think this is on</b></p> <p>14 <b>page 145 of my declaration, bottom of the</b></p> <p>15 <b>page, and to quote from the declaration:</b></p> <p>16 <b>"Swift confirms this, as it</b></p> <p>17 <b>provides that 'information on IPS-type</b></p> <p>18 <b>sensors can be found in Fossum '93.'</b></p> <p>19 <b>And then I have a quotation from</b></p> <p>20 <b>Fossum that Fossum states:</b></p> <p>21 <b>"In the active pixel sensors,</b></p> <p>22 <b>several active transistors are</b></p> <p>23 <b>monolithically integrated in the pixel.</b></p> <p>24 <b>These transistors are used for amplifying</b></p> <p>25 <b>the pixel output."</b></p>	<p style="text-align: right;">Page 23</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b></p> <p>2 <b>A general discussion in Swift is</b></p> <p>3 <b>at Column C, for Swift it would be page 10,</b></p> <p>4 <b>I think, and then this Exhibit 1048 is the</b></p> <p>5 <b>Fossum article.</b></p> <p>6 Q. Thank you.</p> <p>7 Turning back to page 12 of your</p> <p>8 declaration.</p> <p>9 <b>A. I'm back to page 12.</b></p> <p>10 Q. Do you see where you say that at</p> <p>11 the bottom of the page, you understand "the</p> <p>12 claim may be invalid if the subject matter</p> <p>13 described by the claim as a whole would</p> <p>14 have been obvious to a hypothetical person</p> <p>15 of ordinary skill in the art"?</p> <p>16 <b>A. Oh, yes, it's the very first</b></p> <p>17 <b>sentence, yes, I see that.</b></p> <p>18 Q. Are you a person of ordinary</p> <p>19 skill in the art?</p> <p>20 <b>A. I probably -- given our -- the</b></p> <p>21 <b>proposed definition of "ordinary skill in</b></p> <p>22 <b>the art" that I've used here, I would</b></p> <p>23 <b>assume I would qualify as one of more than</b></p> <p>24 <b>ordinary skill in the art.</b></p> <p>25 Q. And were you a person of</p>
<p style="text-align: right;">Page 24</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b></p> <p>2 ordinary skill in the art or more than</p> <p>3 ordinary skill in the art at the time of</p> <p>4 the invention of the '052 patent?</p> <p>5 <b>A. In the mid-1990s, I had</b></p> <p>6 <b>completed a Ph.D. that was specifically on</b></p> <p>7 <b>imaging, focal point arrays, and had been</b></p> <p>8 <b>working in that general area for another</b></p> <p>9 <b>ten-plus years, so I would say I qualified</b></p> <p>10 <b>as more than an ordinary skill in the</b></p> <p>11 <b>mid-'90s.</b></p> <p>12 Q. Okay. But your opinions are</p> <p>13 from the point of view of a person of</p> <p>14 ordinary skill in the art; is that correct?</p> <p>15 <b>A. Yes. That my understanding of</b></p> <p>16 <b>how I have to do this analysis is reading</b></p> <p>17 <b>the claims and the phrases in the claims,</b></p> <p>18 <b>plain and ordinary meaning as viewed by one</b></p> <p>19 <b>of ordinary skill and reading the</b></p> <p>20 <b>references and what they disclose and what</b></p> <p>21 <b>would be understood by one of ordinary</b></p> <p>22 <b>skill. That's my understanding of how I</b></p> <p>23 <b>have to do this kind of analysis.</b></p> <p>24 Q. And so how did you ensure that</p> <p>25 your more than ordinary skill in the art</p>	<p style="text-align: right;">Page 25</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b></p> <p>2 and plus the passage of, you know, nearly</p> <p>3 20 years didn't color your analysis of the</p> <p>4 obviousness of Claim 2 of the '052 patent?</p> <p>5 <b>A. Well, I'd say start with what is</b></p> <p>6 <b>explicitly disclosed by the references, and</b></p> <p>7 <b>if something is explicitly expressly</b></p> <p>8 <b>disclosed by reference, then there's not</b></p> <p>9 <b>much to interpret.</b></p> <p>10 <b>I look at anything that might</b></p> <p>11 <b>require one of ordinary skill in the art to</b></p> <p>12 <b>understand further and look at -- try to</b></p> <p>13 <b>look at it through the eyes -- and I think</b></p> <p>14 <b>the person of ordinary skill in the art --</b></p> <p>15 <b>let me see where that is in my declaration</b></p> <p>16 <b>-- I was just going to read the -- there it</b></p> <p>17 <b>is. Let's see.</b></p> <p>18 <b>Paragraph 36 on page 19 of my</b></p> <p>19 <b>declaration is where I stated what I used,</b></p> <p>20 <b>a person of ordinary skill in the art</b></p> <p>21 <b>relating the technology of the '052 patent</b></p> <p>22 <b>would have had a minimum of a Bachelor's</b></p> <p>23 <b>degree in electrical engineering, physics</b></p> <p>24 <b>or related field and approximately two</b></p> <p>25 <b>years of professional experience in the</b></p>



<p style="text-align: right;">Page 26</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 field of imaging devices. 3 Additional graduate education 4 could substitute for professional 5 experience or significant experience in the 6 field can substitute for formal education. 7 I have a Bachelor's degree in 8 physics. I know what I was taught there. 9 I have been an instructor of graduate 10 students by the mid-1990s for about 11 12 years, 11 years, and so I know what we 12 taught our graduate student. 13 So that's two years of 14 professional experience. I know what we 15 covered in our Master's education. 16 So I used things like that to 17 guide me in understanding what I believe 18 one of ordinary skill in the art would be 19 able to do. 20 Q. And you're confident that your 21 more than ordinary skill in the passage of 22 over 20 years didn't color your analysis at 23 all? It didn't lead you down the path of 24 using hindsight to combine references or 25 anything like that; is that correct?</p>	<p style="text-align: right;">Page 27</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. I am confident that I did my</b> 3 <b>best to apply this level of ordinary skill</b> 4 <b>and given the disclosures and the</b> 5 <b>references I've used, I think that was</b> 6 <b>fairly easy to do.</b> 7 Q. Okay. I'd like to turn over to 8 the Swift reference, which is labeled 9 Exhibit 1005 in this case. 10 (Exhibit 1005 for 11 identification, Swift reference, shown to 12 witness.) 13 BY MR. PRICE: 14 <b>A. I have Swift in front of me.</b> 15 Q. When did you first become aware 16 of this Swift reference? 17 MR. DAVIS: To the extent that 18 that involves a conversation with counsel, 19 I caution you not to reveal any of the 20 details of that discussion, Dr. Neikirk. 21 <b>A. So I probably became aware of it</b> 22 <b>-- I don't know -- sometime in the last</b> 23 <b>year.</b> 24 Q. Were you aware of the Swift 25 reference before you were engaged to work</p>
<p style="text-align: right;">Page 28</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 on these IPR proceedings? 3 <b>A. I don't specifically recall this</b> 4 <b>reference. I have certainly read many</b> 5 <b>articles over the years, but honestly, most</b> 6 <b>of the time I'm reading journal articles</b> 7 <b>and not patent disclosures, and honestly</b> 8 <b>not too often European patent/disclosures,</b> 9 <b>of which this is one.</b> 10 Q. And why is that? Why do you 11 more often read journal articles instead of 12 patent documents? 13 <b>A. Well, as an academic doing</b> 14 <b>research in areas that are hopefully</b> 15 <b>advancing the state of the art, the journal</b> 16 <b>articles frequently provide me with a great</b> 17 <b>deal of information about what other</b> 18 <b>researchers are doing.</b> 19 <b>Whether those have yet been</b> 20 <b>embodied in a patent or not, it's not</b> 21 <b>unusual that I can learn more from the</b> 22 <b>journal articles sooner, but at the same</b> 23 <b>time the kind of information provided by a</b> 24 <b>journal article and a patent frequently is</b> 25 <b>somewhat different.</b></p>	<p style="text-align: right;">Page 29</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>It's just as an academic,</b> 3 <b>usually my interests are more in the kind</b> 4 <b>of information of the journal articles.</b> 5 Q. Can you tell me your general 6 understanding of what Swift discloses? 7 MR. DAVIS: Objection. 8 Form. 9 <b>A. So I have an overview of Swift</b> 10 <b>in my declaration starting on page 144.</b> 11 <b>Swift's abstract starts with a</b> 12 <b>reference to a miniature camera. He</b> 13 <b>illustrates a miniature camera in an image</b> 14 <b>sensor mounted in a housing. He identifies</b> 15 <b>that the image sensor is a CMOS image</b> 16 <b>sensor. He further actually identifies</b> 17 <b>that it's a so-called active pixel-type</b> 18 <b>CMOS sensor.</b> 19 <b>He provides information about</b> 20 <b>circuitry, at least in terms of functions,</b> 21 <b>and where those functions could be located</b> 22 <b>relative to printed circuit boards inside</b> 23 <b>his miniature camera.</b> 24 <b>I think that would probably be a</b> 25 <b>brief overview of the different things that</b></p>

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **Swift discusses.**  
3 Q. And as you mentioned earlier,  
4 Swift references the Fossum Laser Focus  
5 World article on page 10; correct?  
6 **A. Yes, the reference when Swift --**  
7 **yes, I believe it is on page 10. Let me**  
8 **just flip to page 10. That's what I have**  
9 **in my declaration, and if you look at page**  
10 **10 of Swift, the top paragraph is talking**  
11 **about Swift's image sensor labeled 51 and**  
12 **that it is preferably of a CMOS APS type.**  
13 **He then identifies sort of a**  
14 **characteristic that:**  
15 **"APS acts similarly to random**  
16 **access memory, wherein each pixel contains**  
17 **its own selection readout transistors."**  
18 **And then says: "Further**  
19 **information on APS-type sensors may be**  
20 **found in the publication Laser Focus**  
21 **World," the one that we were discussing a**  
22 **few minutes ago.**  
23 Q. Do you recall earlier we were  
24 talking about the meaning of "image sensor"  
25 in the context of the '052 patent?

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **board.**  
3 **And this is just as I explained**  
4 **earlier, image sensor gets used differently**  
5 **by different people.**  
6 **The context in Swift is clear.**  
7 **He's talking about what I frequently will**  
8 **call the focal point array, the device that**  
9 **converts light to an electrical signal.**  
10 **Distinct from Claim 2 of the**  
11 **'052 patent, which includes other necessary**  
12 **parts, such as a first circuit board.**  
13 Q. So I'd like to dive into that a  
14 little bit more.  
15 So element 51, which Swift  
16 refers to as the image sensor, you said  
17 it's not a printed circuit board, but it's  
18 -- a focal array, is that correct? Is that  
19 what you said?  
20 MR. DAVIS: Objection to form.  
21 **A. The device that converts light**  
22 **to an electrical signal, and in this**  
23 **particular case, Swift is discussing the**  
24 **CMOS APS type of pixel.**  
25 **When assembled into an array and**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **A. I do.**  
3 Q. So on page 10, and this is the  
4 native page 10 of Swift, not the exhibit  
5 number, there's some discussion of an image  
6 sensor 51.  
7 Do you see that?  
8 **A. I do.**  
9 Q. Is it your understanding that  
10 the term "image sensor" as used in Swift is  
11 used in the same manner as it's used in the  
12 '052 patent?  
13 MR. DAVIS: Objection.  
14 Form.  
15 **A. So in the '052 patent, as we**  
16 **discussed earlier, in Claim 2, an image**  
17 **sensor is discussed and it clearly states**  
18 **things that -- or must be included in that**  
19 **image sensor.**  
20 **In Swift, he's talking about**  
21 **components to put in his miniature camera**  
22 **50, and specifically a component he labels**  
23 **as 51, which, given the rest of the**  
24 **context, given Figure 2 of Swift, is not a**  
25 **printed circuit board -- is not a circuit**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **used to form -- in a -- behind a lens, the**  
3 **place you put it is usually called the**  
4 **focal point, and so another term that**  
5 **people frequently use is focal point array.**  
6 **I tend to use that term because**  
7 **when I did my own graduate work, that's**  
8 **what we called them, but they were an array**  
9 **of devices designed to convert light to**  
10 **electrical signal used with a lens.**  
11 Q. Is it fair to say that this  
12 image sensor 51 referred to in Swift is on  
13 a semiconductor chip?  
14 MR. DAVIS: Objection.  
15 Form.  
16 **A. So in Swift, 51 is identified as**  
17 **CMOS. That tells me that it's silicon.**  
18 **And it's a particular architecture. He**  
19 **does refer to Fossum for further details.**  
20 **These are devices that are**  
21 **fabricated in and on a silicon substrate,**  
22 **yes.**  
23 Q. So when I'm looking at, for  
24 example, Figure 2 of Swift, am I looking at  
25 a semiconductor chip 51 mounted on a

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 printed circuit board 52? Is that fair to  
3 say?  
4 A. So I have on page 146 of my  
5 declaration Figure 2, where I've added some  
6 colors and some annotations.  
7 But 51 is -- well, actually it's  
8 51 and the things in red are the image  
9 sensor, including a first circuit board  
10 using claim language.  
11 51 itself, in Swift, is  
12 identified as being a CMOS APS sensor type.  
13 That would include a silicon substrate,  
14 that those pixels are fabricated in and on.  
15 That it is mounted to Swift's board 52. He  
16 discusses elsewhere, but he does discuss  
17 that.  
18 That his drawing is an  
19 unpackaged bare silicon substrate. He  
20 doesn't give those kind of details or  
21 whether it's a packaged one, but he clearly  
22 states that it is mounted on an  
23 electrically connected to board 52.  
24 Q. Is it your understanding that  
25 that image sensor 51 includes only a pixel

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 electrically connected to both circuit  
3 board 52 and image sensor 51, and has  
4 circuitry to process the image signals  
5 received from image sensor 51 and audio  
6 signals from microphone 54 connected to  
7 circuit board 52."  
8 And I referenced page 9 of  
9 Swift, lines 7 through 13. And if you go  
10 to -- so it's page 11 of the exhibit to  
11 page 9 of Swift itself. You'll see that it  
12 says: "Various circuitry components are  
13 mounted on the circuit board 53 to provide  
14 power to the image sensor 51, to cross  
15 image signals received therefrom and also  
16 to process audio signals from a miniature  
17 microphone 54."  
18 And I won't continue to read,  
19 but that gives you an idea of some of the  
20 examples that Swift gives as to the  
21 location of certain types of circuitry,  
22 certain functional descriptions.  
23 Q. Now, are there other components  
24 necessary for a CMOS image sensor to output  
25 a signal to a television, for example,

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 array?  
3 MR. DAVIS: Objection.  
4 Form.  
5 A. So Swift identifies the type of  
6 sensor. He doesn't otherwise discuss where  
7 to place other circuitry.  
8 He does discuss where to place  
9 some circuitry, but that's with respect to  
10 board 53. Other circuitry he doesn't  
11 specify a location for.  
12 Q. What type of circuitry does he  
13 specify should be on board 53?  
14 MR. DAVIS: Objection.  
15 Form.  
16 A. So, again, he doesn't say -- the  
17 one example he gives -- let me find this.  
18 And I'm trying to find the best quotation  
19 for this.  
20 So let's see -- so, for  
21 instance, on page 147 of my declaration in  
22 paragraph 231, the last sentence, I guess  
23 it's also the second sentence in paragraph  
24 231:  
25 "Circuit board 53 is

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 besides just the pixel array, the video  
3 processing and power supply on board 53?  
4 MR. DAVIS: Objection to form.  
5 A. So in order to operate an array,  
6 there needs to be a way of getting the data  
7 out from each pixel and, broadly speaking,  
8 that requires timing and control circuitry  
9 to get that out, and that's true for  
10 virtually every array I know of.  
11 I suppose, again, there might be  
12 some strange exotic version that -- that  
13 somehow builds that in, but even if it's  
14 built in, it still requires timing and  
15 control circuitry.  
16 Q. And does Swift disclose where  
17 the timing and control circuitry is in his  
18 miniature camera?  
19 A. I don't -- I think Swift is  
20 silent on that particular topic. He just  
21 says that on board 53 there is circuitry  
22 components to process image signals  
23 received from image sensor 51, but he  
24 doesn't give any other details about the  
25 operation of 51 other than it's preferably

<p style="text-align: right;">Page 38</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>an active -- CMOS active pixel-based</b> 3 <b>sensor.</b> 4 Q. Would a person of ordinary skill 5 in the art reading Swift understand where 6 the timing and control circuitry would be? 7 <b>A. I think one of ordinary skill</b> 8 <b>would understand that timing and control</b> 9 <b>circuitry would be needed.</b> 10 <b>I think that they would</b> 11 <b>understand that it's obvious that it would</b> 12 <b>be a design choice as to where to place it.</b> 13 <b>In my own analysis, I pointed to</b> 14 <b>Ricquier that discusses timing and control</b> 15 <b>circuitry, and specifically discloses that</b> 16 <b>that can be, so off-chip -- yesterday we</b> 17 <b>kept using the phrase "off-chip," but I</b> 18 <b>think Ricquier uses a slightly different</b> 19 <b>phrase, so let me go to that, to use</b> 20 <b>Ricquier's words directly.</b> 21 <b>So I had discussed -- so what</b> 22 <b>Ricquier said, to quote, is "timing</b> 23 <b>controller (realized in an off-chip driving</b> 24 <b>unit)."</b> 25 And I believe one of ordinary</p>	<p style="text-align: right;">Page 39</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 skill in the art reading that would 3 recognize this is referring to timing and 4 control circuitry. He called it "timing 5 controller," and he explicitly says that 6 that can be done off-chip. 7 So, again, one of ordinary skill 8 in the art, I think would recognize that 9 it's a design choice where to put it. This 10 teaching makes it quite clear that you can 11 place it on another part, and Swift 12 discloses two circuit boards, so place it 13 on another circuit board. 14 Q. So we spoke earlier about how 15 Swift references the Eric Fossum Laser 16 Focus World article, which was Exhibit 1048 17 in this case; correct? 18 <b>A. Yes, we did.</b> 19 Q. And is it your contention that a 20 person of ordinary skill in the art reading 21 Swift would not turn to the Laser Focus 22 World article that's referenced in Swift, 23 but would instead reference this Ricquier 24 reference which is a test set up for an 25 early passive pixel array, in order to</p>
<p style="text-align: right;">Page 40</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 determine where Swift's timing control 3 circuitry is? 4 MR. DAVIS: Objection. 5 Form. 6 <b>A. I -- I would not agree with your</b> 7 <b>characterization of Ricquier as being "an</b> 8 <b>early." I don't know what that means.</b> 9 <b>But in terms of what one of</b> 10 <b>ordinary skill in the art would have</b> 11 <b>available to them, they would have all the</b> 12 <b>art in the field. Not just Laser Focus,</b> 13 <b>not just Ricquier. They'd have all of it.</b> 14 <b>They would be aware of the teachings</b> 15 <b>provided by all of that art.</b> 16 Q. So I think my question is a 17 little different from the answers that 18 you're giving me, so -- and I want to be a 19 little bit more clear. 20 So originally I was asking 21 about, because you said that Swift doesn't 22 explicitly teach where the timing and 23 control circuitry is located in its 24 miniature camera; correct? 25 <b>A. Yes, I believe I did say that.</b></p>	<p style="text-align: right;">Page 41</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Okay. 3 So my question was, and correct 4 me if I'm wrong, you also said that the 5 timing and control circuitry is necessary 6 to have images released from the image 7 sensor to further circuitry; correct? 8 <b>A. I think one of ordinary skill in</b> 9 <b>the art would understand they're going to</b> 10 <b>need timing and control to work with the</b> 11 <b>CMOS array.</b> 12 Q. Okay. So my question really is, 13 as just a person of ordinary skill in the 14 art who's reading Swift, and keep in mind 15 that it specifically references this Laser 16 Focus World article, is it your 17 understanding that Swift doesn't teach a 18 person of ordinary skill in the art where 19 in its system the timing and control 20 circuitry would be located? 21 And just to clarify it a little 22 bit, I'm not asking about -- and we'll get 23 to this later, I'm sure -- I'm not asking 24 about where a person of ordinary skill in 25 the art might have considered putting a</p>

<p style="text-align: right;">Page 42</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 timing and control circuitry, but 3 specifically where in Swift a person of 4 ordinary skill in the art would understand 5 that circuitry to be located. 6 MR. DAVIS: Objection. 7 Form. 8 <b>A. No. Swift is quite clear that</b> 9 <b>the arrangement of components -- and let me</b> 10 <b>find his statements with respect to this,</b> 11 <b>for instance.</b> 12 <b>On page 19 of Swift itself, so</b> 13 <b>it's page 21 of the exhibit, starting, for</b> 14 <b>instance, at line 8, it says:</b> 15 <b>"All of the features disclosed</b> 16 <b>in the specification, including any</b> 17 <b>accompanying claims, abstracts and</b> 18 <b>drawings, and/or all of the steps of any</b> 19 <b>method or process so disclosed may be</b> 20 <b>combined in any combination, except</b> 21 <b>combinations where at least some of the</b> 22 <b>features and/or steps are mutually</b> 23 <b>exclusive."</b> 24 <b>He then proceeds to say that:</b> 25 <b>"Each feature disclosed in this</b></p>	<p style="text-align: right;">Page 43</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>specification, including any accompanying</b> 3 <b>claims, abstracts and drawings, may be</b> 4 <b>replaced by alternative features serving</b> 5 <b>the same, equivalent or similar purpose,</b> 6 <b>unless expressly stated otherwise."</b> 7 <b>"Thus, unless expressly stated</b> 8 <b>otherwise, each feature disclosed is one</b> 9 <b>example only of a generic series of</b> 10 <b>equivalence or similar features."</b> 11 <b>He then proceeds to say:</b> 12 <b>"The invention is not restricted</b> 13 <b>to the details of the foregoing</b> 14 <b>embodiments."</b> 15 <b>In reading Swift, his only</b> 16 <b>reference to the laser focus article is to</b> 17 <b>find further information on APS-type</b> 18 <b>sensors. He doesn't provide any other</b> 19 <b>expressly stated information about timing</b> 20 <b>and control.</b> 21 <b>He's clearly said that if he</b> 22 <b>doesn't expressly state it, equivalent or</b> 23 <b>similar purposes -- alternatives -- are</b> 24 <b>available.</b> 25 <b>Q. But you mean you just told me,</b></p>
<p style="text-align: right;">Page 44</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 though, that Swift doesn't explicitly state 3 where the timing control circuitry is, so 4 that's not a feature disclosed in the 5 specification, is it? 6 <b>A. And by not disclosing it,</b> 7 <b>there's no press statement as to where it</b> 8 <b>must be, one of ordinary skill in the art</b> 9 <b>would recognize that leaves them</b> 10 <b>alternatives.</b> 11 <b>Q. But that only -- that line only</b> 12 <b>talks about each feature disclosed; isn't</b> 13 <b>that correct?</b> 14 <b>MR. DAVIS: Objection to form.</b> 15 <b>A. One of the features disclosed is</b> 16 <b>the APS CMOS pixels, and by so disclosing,</b> 17 <b>one of ordinary skill in the art would</b> 18 <b>recognize they need timing and control</b> 19 <b>circuitry.</b> 20 <b>But I don't believe that Swift</b> 21 <b>says you have to put it in any specific</b> 22 <b>location. It's a question of a design</b> 23 <b>choice for one of ordinary skill.</b> 24 <b>Q. Okay. On page 18 of Swift, it</b> 25 <b>talks about Figure 7.</b></p>	<p style="text-align: right;">Page 45</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 Do you see that? 3 <b>A. I do.</b> 4 <b>Q. And, again, this is the native</b> 5 <b>page number.</b> 6 <b>Do you see that it refers to</b> 7 <b>image sensor 201 as having light sensitive</b> 8 <b>area on the sensor?</b> 9 <b>A. So it says, "image sensor 201;</b> 10 <b>e.g., of APS type," so, for example, of APS</b> 11 <b>type.</b> 12 <b>He then says that the light</b> 13 <b>sensitive area on the sensor is located</b> 14 <b>asymmetrically on the sensor. He does say</b> 15 <b>that.</b> 16 <b>Q. So is it your understanding from</b> 17 <b>this description of image sensor 201 that</b> 18 <b>there's a light sensitive area on the</b> 19 <b>sensor and there's another area of the</b> 20 <b>sensor that is not a light sensitive area?</b> 21 <b>A. Well, in every array, there's</b> 22 <b>light sensitive area and areas that are not</b> 23 <b>light sensitive. Within a pixel, there are</b> 24 <b>devices that are not -- ideally, are not</b> 25 <b>light sensitive.</b></p>

<p style="text-align: right;">Page 46</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>In any dye, there's always</b> 3 <b>peripheral regions. Whether they carry any</b> 4 <b>circuitry or not, that is not designed to</b> 5 <b>be light sensitive.</b> 6 <b>Here he's talking about</b> 7 <b>orientations with respect to lenses.</b> 8 <b>And if you look at Figure 7, you</b> 9 <b>can see what 201 is pointing to that entire</b> 10 <b>box. He hasn't internally labeled, but he</b> 11 <b>seems to indicate a box, there's only one</b> 12 <b>box in there that is -- appears to be</b> 13 <b>located asymmetrically. That's what he</b> 14 <b>discloses.</b> 15 Q. So in that box that's 16 asymmetrical to the overall box, that's the 17 light sensitive area; correct? 18 A. <b>He doesn't actually say that, so</b> 19 <b>I don't know for sure.</b> 20 Q. It says the light sensitive area 21 on the sensor 201 is located asymmetrically 22 on the sensor; right? 23 A. <b>He does say that, yes.</b> 24 Q. So I just want to make sure that 25 we're on the same page here.</p>	<p style="text-align: right;">Page 47</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 So there's a box circled in 3 dashed lines that's labeled 201; correct? 4 A. Well, I think the dashed circle 5 is supposed to indicate the illumination 6 from the lens 204. 7 201, I can't tell what it points 8 to. I believe it's pointing to the 9 entirety of that object down there. 10 As we discussed before, Swift's 11 image sensor, I already pointed out that he 12 doesn't say whether it's a bare silicon dye 13 or a packaged one, although the more common 14 configuration would be packaged. 15 So I think -- I don't know which 16 piece of that entire object shown in Figure 17 7 at the bottom is supposed to be 201, but 18 I think -- it's equally likely it's the 19 entirety of that thing, not simply what's 20 inside the circle. 21 I think the circle is indicating 22 illumination. It's not a marker of a part. 23 Q. Okay. 24 MR. PRICE: We've been going for 25 about an hour.</p>
<p style="text-align: right;">Page 48</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Is this a good time for a break? 3 <b>THE WITNESS: It's fine.</b> 4 MR. PRICE: I'll leave it up to 5 you how long do you want. 6 <b>THE WITNESS: Ten minutes,</b> 7 <b>please.</b> 8 MR. PRICE: Sounds good. 9 (A recess was taken.) 10 BY MR. PRICE: 11 Q. Welcome back. 12 Did you speak with anybody about 13 the substance of your testimony during the 14 break? 15 A. <b>No, I did not.</b> 16 Q. Do you recall before the break 17 we were talking about the image sensor 201 18 on Swift's page 18? 19 A. <b>Yes, I do recall.</b> 20 Q. And we were talking about how 21 sensor 201 has a light sensitive area 22 located asymmetrically on the sensor; 23 correct? 24 A. <b>Yes.</b> 25 Q. Does that tell you that there</p>	<p style="text-align: right;">Page 49</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 are more components on image sensor 201 3 besides the pixel array, which I assume you 4 would say is the light sensitive area? 5 A. <b>No, it doesn't tell me that.</b> 6 Q. No? What does it tell you? 7 A. <b>It doesn't tell me anything</b> 8 <b>other than the light sensitive area is</b> 9 <b>asymmetrically located.</b> 10 Q. A person of ordinary skill in 11 the art reading this would not have any 12 idea why the light sensitive area is 13 located asymmetrically? 14 MR. DAVIS: Objection to form. 15 A. <b>I believe they would, if you</b> 16 <b>read the paragraph on page 18, he's</b> 17 <b>discussing an optical configuration, and</b> 18 <b>the asymmetry is related to a desire about</b> 19 <b>the optical path.</b> 20 <b>It's not really about the design</b> 21 <b>of the silicon integrated circuit. It's</b> 22 <b>about arranging an optical path, such that</b> 23 <b>you use an off optical axis imaging</b> 24 <b>configuration.</b> 25 Q. Okay. I'd like to delve into</p>

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 that a little bit more because in the last  
3 sentence of that paragraph doesn't it say  
4 that: "The aperture is positioned  
5 asymmetrically on the lens holder 202 in  
6 order to match the asymmetry of the  
7 sensor"?  
8 **A. Yes, it does.**  
9 Q. So the optical path is -- this  
10 is saying that the optical path is based on  
11 the asymmetry of the sensor; isn't that  
12 right?  
13 **A. No. I think what it's saying is**  
14 **that you want an asymmetrical system and**  
15 **you make sure that the aperture is matched**  
16 **in terms of the asymmetry that you use.**  
17 **It's what it says.**  
18 Q. It's not what it says, but why  
19 would a person of ordinary skill in the art  
20 want an asymmetric system?  
21 MR. DAVIS: Object to the form.  
22 **A. Off-axis imaging is just one of**  
23 **many imaging configurations. Aberrations**  
24 **are different. He doesn't explain what his**  
25 **particular goal for this one is.**

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 **A. Yes, I have.**  
3 Q. And is it your understanding  
4 that the location of where components are  
5 in the devices claimed in the '052 patent  
6 are not relevant?  
7 MR. DAVIS: Objection.  
8 Form.  
9 **A. So you identified components.**  
10 **The electrical circuit**  
11 **components and their locations are**  
12 **relevant.**  
13 Q. So is it not relevant to  
14 understand where Swift teaches putting the  
15 electrical circuit components in his  
16 camera?  
17 MR. DAVIS: Objection.  
18 Form.  
19 **A. This teaching that you're**  
20 **referring to, about Figure 7, is only about**  
21 **where the photo sensitive areas are**  
22 **relative to the lens.**  
23 **It's not about any other --**  
24 Q. That's not true --  
25 MR. DAVIS: Counsel, don't cut

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **So I don't know really exactly**  
3 **why he was interested in this. It's**  
4 **certainly nothing that I did in my**  
5 **analysis. It's not relevant to the claims**  
6 **of the '052 patent.**  
7 Q. Okay. So looking back at Figure  
8 7, can you point to me where a person of  
9 ordinary skill in the art would understand  
10 the semiconductor device that includes the  
11 pixel array to be in this figure?  
12 **A. Again, it's not an analysis I've**  
13 **done because it's not relevant to the '052**  
14 **patent, so I see several rectangles and I**  
15 **haven't tried to determine whether one of**  
16 **those rectangles represents silicon and**  
17 **another rectangle represents an optical**  
18 **window. I don't -- I haven't done that**  
19 **analysis.**  
20 Q. So you've reviewed the '052  
21 patent; correct?  
22 **A. I have.**  
23 Q. You've read the specification?  
24 **A. I have.**  
25 Q. You've read the claims; correct?

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 off the witness. It's very difficult here  
3 with all the videoconferencing. Please  
4 don't cut off the witness.  
5 MR. PRICE: My apologies.  
6 Proceed.  
7 **A. I believe I finished my answer.**  
8 **I'm sorry.**  
9 Q. So, again, what this paragraph  
10 is talking about is the location of a light  
11 sensitive area on the image sensor itself;  
12 isn't that correct?  
13 MR. DAVIS: Objection.  
14 Form.  
15 **A. It specifically says, "light**  
16 **sensitive areas on the sensor 201," yes.**  
17 Q. So does this tell a person of  
18 ordinary skill in the art that there is a  
19 light sensitive area of the image sensor  
20 and a non-light sensitive area of the  
21 sensor?  
22 **A. Well, one of ordinary skill**  
23 **doesn't need to be told that.**  
24 **Every imaging array has**  
25 **non-light sensitive areas.**

<p style="text-align: right;">Page 54</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Okay. So in an active pixel 3 array, as Swift says, you know, could be 4 used preferably, right, there are non-light 5 sensitive areas within the pixel array 6 itself; is that correct? 7 <b>A. Of course, yes.</b> 8 Q. And what kind of devices are 9 non-light sensitive that are within the 10 bounds of the pixel array? 11 <b>A. Well, within every pixel are</b> 12 <b>transistors used for access, amplification,</b> 13 <b>and ideally they are designed to be not</b> 14 <b>light sensitive. If they're light</b> 15 <b>sensitive, they usually don't function</b> 16 <b>properly.</b> 17 <b>Some people actually put metal</b> 18 <b>to mask that circuitry. There is always</b> 19 <b>metal present to build the transistors.</b> 20 <b>That causes shadowing.</b> 21 <b>So only a certain fraction of</b> 22 <b>the area of each pixel is, to use Swift's</b> 23 <b>term, light sensitive area. That's what</b> 24 <b>they refer to as fill factor.</b> 25 Q. And so you told me earlier that</p>	<p style="text-align: right;">Page 55</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 you believe that this dotted line circle 3 around what's labeled 201 in Figure 7 is 4 the light that's shown onto the image 5 sensor; is that correct? 6 <b>A. That was my first guess. Again,</b> 7 <b>I have not analyzed this figure.</b> 8 Q. And -- 9 <b>A. In any detail besides your</b> 10 <b>conversation today.</b> 11 Q. Because you didn't think it was 12 relevant? 13 MR. DAVIS: Objection. 14 Form. 15 <b>A. The relevant teachings of Swift</b> 16 <b>I have carefully elucidated in my</b> 17 <b>declaration.</b> 18 <b>This alternative optical</b> 19 <b>configuration, I didn't see it as being</b> 20 <b>particularly relevant.</b> 21 Q. So, again, we're referring to 22 Figure 7 here. It looks like that circle 23 is centered around that innermost box in 24 Figure 7. 25 Do you agree with that?</p>
<p style="text-align: right;">Page 56</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. I'm not sure whether in that</b> 3 <b>prospective drawing it's exactly centered</b> 4 <b>or not.</b> 5 Q. What in that bottommost part of 6 Figure 7 do you see as being asymmetrical? 7 <b>A. I honestly am not sure what he's</b> 8 <b>trying to illustrate. Given the text, the</b> 9 <b>inner two rectangles, one rectangle seems</b> 10 <b>to be offset relative to the other, but</b> 11 <b>that's all I can see.</b> 12 <b>He hasn't provided further</b> 13 <b>information about what all -- what each of</b> 14 <b>those two rectangles are supposed to</b> 15 <b>represent, nor has he explained what the</b> 16 <b>outer perimeter represents or the thickness</b> 17 <b>represents, so I don't know exactly what</b> 18 <b>he's trying to indicate there.</b> 19 Q. Okay. But it says -- you know, 20 you mentioned that one of these rectangles 21 is offset; correct? 22 <b>A. In that perspective</b> 23 <b>illustration, it does look like the</b> 24 <b>innermost rectangle, or square, I don't</b> 25 <b>know what the shape is exactly, precisely,</b></p>	<p style="text-align: right;">Page 57</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>it could be a square -- is offset.</b> 3 <b>And the way I would look at the</b> 4 <b>picture I might use the word to the left of</b> 5 <b>the next rectangle. It's closer to one</b> 6 <b>edge of the rectangle than the other. It</b> 7 <b>certainly would appear.</b> 8 Q. And you don't find it -- that 9 offset of that inner rectangle to clearly 10 represent the fact that the light sensitive 11 area on the image sensor is located 12 asymmetrically on the sensor? 13 MR. DAVIS: Objection. 14 Form. 15 <b>A. It might. I don't know what is</b> 16 <b>inside that inner rectangle. When he says</b> 17 <b>light sensitive area, and draws this</b> 18 <b>picture, is he drawing one pixel or an</b> 19 <b>array of pixels? I mean, he doesn't say,</b> 20 <b>and within an array of pixels, parts are</b> 21 <b>light sensitive. Is he talking about</b> 22 <b>displacing the entire array of pixels?</b> 23 <b>Perhaps.</b> 24 <b>But, again, this is not an</b> 25 <b>analysis I've done.</b></p>



<p style="text-align: right;">Page 58</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Because you thought it was 3 irrelevant to determine where the 4 electrical components of Swift's image 5 sensor were located; is that correct? 6 MR. DAVIS: Objection. 7 Form. 8 <b>A. This statement on page 18 of</b> 9 <b>Swift refers to where a light sensitive</b> 10 <b>area is. It doesn't refer to the location</b> 11 <b>of any other circuitry.</b> 12 <b>I think it says what it says. I</b> 13 <b>don't think it implies anything else.</b> 14 Q. Are you familiar with 15 semiconductor fabrication techniques? 16 <b>A. I'm sorry, the question -- the</b> 17 <b>audio cut out for me.</b> 18 Q. Sorry about that. I'll re-ask. 19 Are you aware of semiconductor 20 fabrication techniques? 21 <b>A. I've been teaching that material</b> 22 <b>in undergraduate and graduate courses for</b> 23 <b>close to 30 years, yes.</b> 24 Q. Is it common in semiconductor 25 manufacturing to provide a semiconductor</p>	<p style="text-align: right;">Page 59</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 dye design where you have one part of the 3 chip that has some sort of an active area, 4 some sort of circuitry, and then large 5 portions of the chip with no circuitry 6 components on them whatsoever? 7 MR. DAVIS: Objection. 8 Form. 9 <b>A. It depends on what the chip is</b> 10 <b>trying to do. It depends on whether you</b> 11 <b>needed large areas for bond pads, for</b> 12 <b>instance, how you arrange those, so it</b> 13 <b>varies.</b> 14 Q. So is it your contention that 15 you could look at the image sensor 201 in 16 Figure 7 and see the inner rectangle 17 referring to, for example, a pixel array, 18 and then that the rest of the image sensor 19 being completely empty space? 20 MR. DAVIS: Objection. 21 Form. 22 <b>A. I don't know that the rest of</b> 23 <b>this has anything to do with the silicon</b> 24 <b>dye at all.</b> 25 Q. Why is that?</p>
<p style="text-align: right;">Page 60</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. Well, again, I already explained</b> 3 <b>to you, I don't know what the second from</b> 4 <b>this innermost rectangle is or the next</b> 5 <b>rectangle outside that or that periphery</b> 6 <b>that's drawn there. Is it meant to</b> 7 <b>indicate a package with an optical window,</b> 8 <b>in which case it's possible that the</b> 9 <b>silicon itself is only the innermost</b> 10 <b>rectangle and it's simply mounted not in</b> 11 <b>the center of the package.</b> 12 <b>I can't tell, I haven't done the</b> 13 <b>analysis. But I don't think there's</b> 14 <b>anything there to suggest to me that, for</b> 15 <b>instance, the second rectangle represents</b> 16 <b>silicon while the innermost rectangle</b> 17 <b>represents only the pixel array.</b> 18 <b>I can't tell.</b> 19 Q. And that's because Swift is 20 vague; is that correct? 21 MR. DAVIS: Objection. 22 Form. 23 <b>A. I think Swift has been very</b> 24 <b>clear that the location of components is</b> 25 <b>open to the designer, I read you that</b></p>	<p style="text-align: right;">Page 61</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>paragraph, unless something is mutually</b> 3 <b>exclusive.</b> 4 <b>And here he says locate the --</b> 5 <b>so back to the discussion of Figure 7, he</b> 6 <b>identifies a lens holder 202, aperture 203,</b> 7 <b>lens 204, and he says that the light</b> 8 <b>sensitive area on the sensor 201 is located</b> 9 <b>asymmetrically on the sensor. That's all</b> 10 <b>it says.</b> 11 <b>He's never said that the sensor</b> 12 <b>is only monolithic. One piece of silicon.</b> 13 <b>He didn't really say. In fact, most</b> 14 <b>silicon sensors are packaged so that you</b> 15 <b>can mount them on boards. He hasn't</b> 16 <b>explained that.</b> 17 Q. Is it a reasonable 18 interpretation of Swift that the innermost 19 rectangle is a pixel array and that the 20 balance of the chip is used for other 21 circuitry components? 22 MR. DAVIS: Objection to form. 23 <b>A. I don't think it's reasonable.</b> 24 <b>It's possible. I think it's possible</b> 25 <b>because Swift says you can put things in</b></p>

<div>Page 62</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2     different places, and it is a design 3     choice. 4         So one of ordinary skill might 5     elect, if they have dye area to spare. Of 6     course, that means the dye is larger, 7     potentially more expensive, probably more 8     expensive. 9         But Swift is open to various 10    design choices. I think that looking at 11    Figure 7 and reaching the conclusion that 12    the second of the rectangles represents a 13    silicon substrate and the innermost 14    rectangle represents only a portion of that 15    silicon substrate is quite a leap, but is 16    it possible? I suppose it's possible. 17    Q. If it's a leap to come to that 18    conclusion, what do you think the more 19    reasonable conclusion about what Swift is 20    showing here in Figure 7 is? 21    A. You know, I have not analyzed 22    this figure to try to determine less or 23    more reasonable interpretations. 24         I -- you know, that would 25    require an analysis that I'm not -- I'm</div>	<div>Page 63</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2     just not going to do on the fly. Given the 3     limited disclosure, I'm not sure that I can 4     reach a conclusion one way or the other. 5         Q. And, again, you didn't do that 6     analysis to begin with because you didn't 7     believe it was relevant where the various 8     components of Swift's camera were located; 9     correct? 10         MR. DAVIS: Objection to form. 11    A. That is not at all what I 12    testified to. 13         I do believe it is relevant 14    where the electrical circuitry components 15    are. Swift identifies the location of 16    some. He clearly identifies that others 17    you can place at different locations. It's 18    a design choice. 19         So I never said that the 20    location of electrical components were 21    irrelevant. 22         Q. You did use the term 23    "irrelevant," didn't you, earlier with 24    respect to Figure 7? 25         MR. DAVIS: Objection to form.</div>
<div>Page 64</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2    A. Specifically with respect to 3    Figure 7 and whether that innermost 4    rectangle being offset from the next 5    rectangle indicated where circuitry was 6    located, given the other claim disclosures 7    in the text of Swift, I didn't feel that 8    this -- just -- it was just another 9    embodiment. 10         I didn't see it say anything in 11    the paragraph on page 18 about electrical 12    circuitry other than the light sensitive 13    area. 14         It didn't say anything about the 15    image processing circuitry, it didn't say 16    anything about timing and control. It 17    didn't say anything else except about light 18    sensitive area, which was not a relevant 19    concern, in my analysis. 20         Q. Okay. And do you maintain that 21    the asymmetricality of this Figure 7 is 22    driven by the fact that you want the 23    incident light on the image sensor to be 24    asymmetrical rather than the chip -- the 25    image sensor itself to be asymmetrical?</div>	<div>Page 65</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2         MR. DAVIS: Objection to form. 3    A. Honestly, he doesn't say why to 4    do it, and so I would respectfully -- 5         Q. He doesn't say that the 6    apertures position to asymmetrically in 7    order to match the asymmetry of the sensor? 8    A. Of course he does because if the 9    light doesn't fall on the sensor, it won't 10   work. 11         Q. Right. But you don't read this 12   to say that there's an asymmetric sensor 13   and then you need to design the optical 14   system to match the sensor? 15   A. I read it as they go together. 16         I don't know why he would use an 17   asymmetrical sensor, other than one of the 18   other more obvious possibilities is that he 19   wanted to use off-axis imaging. 20         And if you did that, of course, 21   you would match the aperture because you 22   need to make sure the light goes where the 23   -- what is it -- the photo -- the light 24   sensitive area is. Having it elsewhere is 25   of no use.</div>

<p style="text-align: right;">Page 66</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 But, again, I have not analyzed 3 this in any great detail, so I -- I don't 4 have any opinions, as I sit here right now. 5 I don't know what I would conclude or 6 whether there's enough to draw a 7 conclusion. 8 Q. You mentioned off-axis imaging. 9 Is that a concept that's known 10 to those of ordinary skill in the art? 11 <b>A. It certainly is. In optical</b> 12 <b>systems design.</b> 13 Q. And why would a person of 14 ordinary skill in the art design a system 15 to be off-axis, an optical approximately 16 system to be off-axis? 17 MR. DAVIS: Objection. 18 <b>A. Off-axis aberrations are quite</b> 19 <b>different than on-axis, and in certain</b> 20 <b>optical system designs, the off-axis</b> 21 <b>aberrations are actually less than they are</b> 22 <b>on-axis, as an example.</b> 23 Q. What's the basis for your 24 testimony there? 25 <b>A. 30 years of optical system</b></p>	<p style="text-align: right;">Page 67</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 design. But to put it more in one of 3 ordinary skill in the art, by the time I 4 was halfway through graduate school, I had 5 been taught how to do optical system design 6 and aberrations are one of the first things 7 you discussed. 8 And off-axis imaging was known, 9 I'd say, by 19 -- well, I learned it in 10 about 1981. I think it was a very old 11 topic in 1981. 12 I'm trying to remember, my first 13 optics course was in 1978 using a textbook 14 by Jenkins and White. 15 Again, that's a long time ago. 16 I don't remember whether off-axis imaging 17 was discussed there or not. 18 Q. I think my optics textbook was 19 by Saleh and Teich, if I remember. 20 And just one more time, reading 21 Swift in combination with that Laser Focus 22 World article, that specifically talks 23 about integrating timing and control 24 circuitry into a CMOS image sensor, that 25 doesn't provide a person of ordinary skill</p>
<p style="text-align: right;">Page 68</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 in the art any indication of what might be 3 in the area of image sensor 201 not covered 4 by the light sensitive area? 5 MR. DAVIS: Objection. 6 Form. Narrative. Foundation. 7 <b>A. So let's go back to the Laser</b> 8 <b>Focus article, specifically, if you don't</b> 9 <b>mind, because in your question you said</b> 10 <b>that that disclosed where timing and</b> 11 <b>control is.</b> 12 And so I'd actually like to 13 check to see what it said about 14 incorporating other circuitry, which I do 15 believe it mentioned as a possibility, but 16 I don't recall whether it specifically said 17 timing and control or not. 18 That, I think, is exhibit -- my 19 exhibit number is 1048. Let's see. 20 So I believe that the discussion 21 is a section entitled: "Developing APS 22 Technology," is on page 8 of my exhibit. 23 It's page 85 of the Laser Focus article. 24 And I'm just scanning down to 25 see he talks mostly about the pixels</p>	<p style="text-align: right;">Page 69</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>themselves.</b> 3 He has a paragraph about making 4 the pixels smaller and having high fill 5 factor. 6 I'm going to move to the next 7 page, page 9 of my exhibit, 1048, page 86 8 in the article. 9 Again, it seems to be mostly 10 about the pixels themselves. Talks about 11 the possibility to use in HDTV, but in that 12 case he flags it because it's more amenable 13 to camera miniaturization and power 14 miniaturization than the CCD. 15 He talks about high radiation 16 environments. He talks about extended 17 spectral ranges. 18 He says in the last paragraph: 19 "Compared to CCD, some 20 operations, such as time delay and 21 integration and pixel binning, will be 22 harder to achieve with APS than with CCDs." 23 I may have missed something, but 24 I don't think that he said that timing and 25 control was integrated -- necessarily</p>

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **integrated on the chip.**  
3 Q. But you did review this article  
4 when trying to determine what Swift was  
5 teaching to a person of ordinary skill in  
6 the art; correct?  
7 MR. DAVIS: Objection to form.  
8 **A. I certainly read this, but I**  
9 **didn't review -- I did not view this as an**  
10 **-- in Swift's wording, being an express --**  
11 **an express statement of where timing and**  
12 **control must be.**  
13 **I didn't see that at all. He**  
14 **was referring to this to obtain some other**  
15 **details about APS pixels. But he made it**  
16 **quite clear on page 19 that unless**  
17 **something was expressly stated, any other**  
18 **arrangement can be viewed as being allowed,**  
19 **if you will.**  
20 **And I certainly didn't read this**  
21 **statement back in -- on page 10, as being**  
22 **an express statement that says timing and**  
23 **control must be on the same silicon with**  
24 **the APS pixels.**  
25 Q. Okay. I just want to clarify,

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **disclosed in the Laser Focus World.**  
3 **Certainly didn't say that.**  
4 Q. Is it your contention that if  
5 Swift says that you can put anything  
6 anywhere, that it would have been obvious  
7 to rearrange the components of Swift's  
8 camera in every single possible  
9 permutation?  
10 MR. DAVIS: Objection.  
11 Form.  
12 **A. Well, I think that the -- that**  
13 **the portions of Swift that he discusses,**  
14 **there aren't very many permutations.**  
15 **There are two boards and one**  
16 **sensor, and he discloses, for instance,**  
17 **that video processing on what he labels as**  
18 **board 53.**  
19 **I believe what he's saying is**  
20 **that one of ordinary skill does have design**  
21 **choices, putting it on one circuit board or**  
22 **the other of which there are two, so there**  
23 **are two circuit board choices.**  
24 **It should be -- I think he's**  
25 **saying -- he's not saying you can't do**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 you said that Swift references the Laser  
3 Focus World article in terms of -- speaking  
4 about the pixels; is that right?  
5 MR. DAVIS: Objection. Form.  
6 **A. To quote, he said:**  
7 **"Further information on APS-type**  
8 **sensors may be found, in the publication,"**  
9 **and this is in Laser Focus World. That's**  
10 **the phrasing he used.**  
11 Q. So he's talking about  
12 information on the sensors. Not the  
13 pixels; correct?  
14 MR. DAVIS: Objection.  
15 Form.  
16 **A. Certainly the article makes some**  
17 **-- well, mostly it talks about the pixels.**  
18 **I didn't see much else in there.**  
19 **You know, given the context of**  
20 **the entire paragraph, clearly, Swift was**  
21 **focusing on the type of pixel, but he**  
22 **didn't restrict it to that.**  
23 **Again, he also didn't state that**  
24 **this disclosure is expressly limited to**  
25 **exactly what is disclosed and only what is**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **that. I think Swift says you can have one**  
3 **circuit board and you put everything on one**  
4 **board.**  
5 **So he does give some -- some**  
6 **direction. He gives some options. But I**  
7 **think the idea that there are many**  
8 **permutations here, well, there are only two**  
9 **boards and there's a limited amount of**  
10 **circuitry.**  
11 **I think it is a design choice as**  
12 **to how you select to put certain portions**  
13 **of the circuitry on one board versus the**  
14 **other.**  
15 Q. You've mentioned the phrase  
16 "design choice" many times so far in your  
17 testimony today.  
18 What is your understanding of  
19 what "design choice" means?  
20 **A. Well, in the context of this**  
21 **art, the references, including the '052**  
22 **patent, tend to give general descriptions**  
23 **of functional circuitry -- of circuit**  
24 **function.**  
25 **They give mechanical arrangement**

<p style="text-align: right;">Page 74</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 of certain components, usually the circuit 3 boards and the -- the sensor itself, and 4 frequently how they're oriented in housings 5 and so on. 6 The details of the circuitry, 7 actual schematic circuit diagram, the 8 selection of electrical components to build 9 that circuit, those are all design choices 10 that are left to one of skill reading these 11 references. 12 Q. So are you aware that the phrase 13 "design choice" is a legal term of art in 14 the patent laws? 15 A. In broad terms, I wouldn't be 16 surprised, but I'm referring to things that 17 one of ordinary skill in the art would need 18 to do to build one of these. That's a 19 design process. And they have to make 20 choices. 21 Do you use 5 percent resistors 22 or 10 percent resistors? Those are design 23 choices that I believe these references 24 leave to the -- one of ordinary skill, and 25 when I refer to where to place circuits,</p>	<p style="text-align: right;">Page 75</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 I'm referring to a choice open to one of 3 ordinary skill as to how they select where 4 to put components. 5 Q. So you're not making sort of a 6 legal conclusion that these references and 7 the combinations and modifications that 8 you're proposing meet the legal definition 9 of a design choice, are you? 10 A. I am not a lawyer and I don't 11 believe that it's my job or appropriate for 12 me to reach a legal conclusion. 13 You know, I believe that I am 14 supposed to examine the art in view -- in 15 the eyes of one of ordinary skill, try to 16 understand whether the art is related to 17 each other, whether I would believe that 18 one of ordinary skill would have these 19 pieces of art in their hands, if you will, 20 and what they're going to have to do. And 21 that's the sense in which I'm referring to 22 design choice. 23 I'm not a lawyer and I don't 24 think that I should draw a legal 25 conclusion.</p>
<p style="text-align: right;">Page 76</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Would a person of ordinary skill 3 in the art understand that there might be 4 trade-offs in terms of -- I don't know -- 5 performance, noise, any number of variables 6 based on where these components are located 7 in an imaging system? 8 A. I think it probably depends on 9 which components we're discussing, which 10 circuitry, what its function is. 11 There are usually trade-offs. 12 Area, you know, where you have space, is a 13 simple one. 14 So, yes, I think one of ordinary 15 skill in the art would recognize the 16 potential of trade-offs, and that's one of 17 reasons why they would look to the art for 18 illustrations. 19 For instance, Ricquier, which 20 places its driving -- timing -- "timing 21 controller," I think is the phrase Ricquier 22 uses -- off-chip. 23 That's information, I think, 24 relative to one of ordinary skill in the 25 art telling them that if they place it</p>	<p style="text-align: right;">Page 77</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 off-chip, there's a reasonable expectation 3 of success, right, that somebody has taught 4 me that it worked. 5 Ricquier gives actual 6 performance data for his imaging system. 7 Q. It might be a good time to move 8 over to Ricquier. 9 Does Ricquier disclose any 10 benefits for implementing its timing 11 circuitry, if that's the word he used, 12 off-chip, as you've termed it. 13 MR. DAVIS: Objection. 14 Form. 15 A. Ricquier states -- let's see. 16 So that's my Exhibit 1038, and 17 he refers to the off-chip driving unit on 18 page 10 of the exhibit in the second full 19 paragraph. 20 He goes through the timing and 21 control signals that need to be applied, 22 that one of his goals is to get this 23 resolution -- different resolutions. 24 He doesn't say that there was 25 any problem with it. He doesn't say that</p>

<p style="text-align: right;">Page 78</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>there was any advantage to it. He's</b> 3 <b>illustrating that this is a choice, it's</b> 4 <b>the choice he made, to put it off-chip.</b> 5 Q. Doesn't Ricquier say that in the 6 future he would expect all of these -- the 7 timing circuitry would be integrated into 8 the image sensor? 9 MR. DAVIS: Objection. 10 Form. 11 <b>A. I don't recall that he uses</b> 12 <b>those words. If you could point me to a</b> 13 <b>specific location, I'll be glad to read it.</b> 14 Q. You can move over to page 8 of 15 the exhibit. 16 <b>A. I'm there.</b> 17 Q. In the second-to-last paragraph, 18 that last sentence, do you see that, 19 beginning: "A CMOS technology..."? 20 <b>A. I do.</b> 21 Q. It says: 22 "A CMOS technology was chosen 23 because it offers the selective 24 addressability, together with the 25 possibility of further co-integration of</p>	<p style="text-align: right;">Page 79</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 processing electronics on the same chip." 3 <b>A. I do see that.</b> 4 Q. So do you read that as referring 5 to -- as including the timing circuitry 6 that's off-chip in Ricquier? 7 <b>A. Well, I'm not sure that I would</b> 8 <b>refer to the timing control circuitry as</b> 9 <b>processing electronics.</b> 10 <b>It's a broad statement about</b> 11 <b>possibilities. If you read the next</b> 12 <b>paragraph, last sentence on that page</b> 13 <b>moving into the next, he talks about:</b> 14 <b>"CMOS architectures have been</b> 15 <b>realized with intelligent operations at the</b> 16 <b>pixel side."</b> 17 <b>So he's also talking about, gee,</b> 18 <b>you can do more things at the pixels.</b> 19 <b>That's not timing and control.</b> 20 <b>You know, it's a generic</b> 21 <b>statement saying that you can put -- that</b> 22 <b>there's at least a possibility in the</b> 23 <b>future of further co-integration.</b> 24 <b>He doesn't give any -- he</b> 25 <b>doesn't say co-integration of timing and</b></p>
<p style="text-align: right;">Page 80</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>control. He doesn't say not that.</b> 3 <b>Again, what he discloses is that</b> 4 <b>using an off-chip driving unit, his array</b> 5 <b>functioned and met his desired --</b> 6 <b>apparently functioned at a level he was</b> 7 <b>happy with, a frame -- 125 full frames per</b> 8 <b>second, 20 -- minimum data rate of</b> 9 <b>10 megahertz, that's on page 14.</b> 10 <b>So I think certainly he's</b> 11 <b>disclosed a number of things, but this</b> 12 <b>general statement I don't take as a</b> 13 <b>teaching that says to one of ordinary skill</b> 14 <b>in the art, "you must place the driving</b> 15 <b>unit on-chip."</b> 16 Q. Earlier you stated that Ricquier 17 doesn't teach any benefit to having the 18 driving unit, the timing controller 19 off-chip; is that correct? 20 MR. DAVIS: Objection. 21 Form. 22 <b>A. I'm not sure that I used that</b> 23 <b>phrasing.</b> 24 <b>He states that he used an</b> 25 <b>off-chip driving unit and then he proceeds</b></p>	<p style="text-align: right;">Page 81</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>to discuss the performance of an imager.</b> 3 <b>So I would say he's clearly</b> 4 <b>shown that with that off-chip driving unit,</b> 5 <b>he was able to achieve these levels of</b> 6 <b>performance, including frame rates --</b> 7 <b>images per second, data rates and so on.</b> 8 <b>He does not expressly state that</b> 9 <b>that was as a result of placing the driving</b> 10 <b>circuitry off-chip, just as he doesn't</b> 11 <b>expressly state that you must place the</b> 12 <b>driving circuitry on-chip to achieve this</b> 13 <b>performance.</b> 14 <b>Clearly, he doesn't because he</b> 15 <b>says the opposite. He put it off-chip.</b> 16 Q. Is it your opinion that a person 17 of ordinary skill in the art would have had 18 motivation to implement -- reading Ricquier 19 -- would give a person of ordinary skill in 20 the art motivation to implement Swift's 21 timing and control circuitry off-chip? 22 MR. DAVIS: Objection. 23 Form. 24 <b>A. Well, I believe I stated</b> 25 <b>something similar to that exactly in my</b></p>

<p style="text-align: right;">Page 82</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>declaration. That Swift, in light of</b> 3 <b>Ricquier --</b> 4 Q. And where is that? 5 A. Let me see if I can find it. 6 So, for instance, on page 152, 7 about the middle of the page, I state: 8 "A person of ordinary skill in 9 the art would have been further motivated 10 to apply Ricquier's known teachings in 11 implementing Swift's image sensors because 12 of Ricquier's advantages of using a timing 13 and controller that could be located 14 off-chip," and to explain what advantages 15 those could be: 16 "Flexibility in selecting from 17 several design choices for fitting the 18 components into available space, which is a 19 goal of Swift. Placing various circuitry 20 on various layers." 21 Let's see -- Ricquier on page 3. 22 So I think Ricquier is teaching 23 that you have options that function and 24 that's part of what would motivate one of 25 ordinary skill in the art to use Ricquier</p>	<p style="text-align: right;">Page 83</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 in the context of Swift in terms of, for 3 instance, locating timing and control 4 circuitry somewhere other than what 5 requires dye area. 6 I think that's -- so, for 7 instance, continuing on that page, 8 specifically, "a person of ordinary skill 9 in the art would have been motivated to 10 apply Ricquier's teaching of an option 11 timing and control circuit and implementing 12 Swift's image sensor by locating the timing 13 and control circuit on, for example, the 14 opposite side of Swift's circuit board 52, 15 in order to minimize the camera's overall 16 size," which was clearly something of 17 interest to Swift. 18 And I believe the '052 said 19 their interest was in making small cameras. 20 Again, I think all those 21 teachings together. 22 Q. I have a couple of questions 23 about your testimony here. 24 In that first sentence that you 25 read me, beginning with:</p>
<p style="text-align: right;">Page 84</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 "A person of ordinary skill in 3 the art would have been further motivated," 4 there are a number of phrases in quotation 5 marks, including "fitting the components 6 into the available space," "placing 7 circuitry on various layers and 8 stack-wise." 9 Are those teachings in Ricquier? 10 Are those phrases in Ricquier? 11 A. Those particular quotations are, 12 I don't believe, in Ricquier. 13 I believe they're in the '052 as 14 objectives. 15 Q. Okay. So you're looking at the 16 teachings of the '052 patent to come up 17 with the motivation to modify Swift with 18 Ricquier; is that right? 19 MR. DAVIS: Objection to form. 20 A. No, no. I'm pointing out that 21 what would be accomplished, what one of 22 ordinary skill in the art, Swift, for 23 instance, teaches making compact -- he 24 wants to make a small camera head. 25 Swift, his first three words are</p>	<p style="text-align: right;">Page 85</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 "a miniature camera," so there's already 3 motivation right in Swift to be trying to 4 make something small. 5 This is just an indication that 6 Swift is in the same general field as the 7 '052. People who want to make small 8 cameras. 9 Ricquier is providing 10 information that -- that facilitates that. 11 Q. Just to be clear, this sentence 12 where you're specifically talking about 13 what you referred to as Ricquier's 14 advantage of using a timing controller 15 located off-chip, those advantages are all 16 advantages that come out of the '052 17 patent; is that right? 18 MR. DAVIS: Objection. 19 Objection to form. 20 A. I think those are all advantages 21 that one of ordinary skill in the art would 22 recognize are important for making a 23 miniature camera. 24 I believe that these are all 25 quotations from the '052 patent.</p>

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 Q. Now, in that second sentence,  
3 you talk about implementing Swift's image  
4 sensor by locating the timing and control  
5 circuitry on, for example, the opposite  
6 side of Swift's circuit board 52.  
7 Do you see that?  
8 **A. I do.**  
9 Q. And you reference this Tanuma  
10 document.  
11 Do you see that?  
12 **A. I do.**  
13 Q. Does Tanuma disclose mounting  
14 timing control circuitry on the opposite  
15 side of a circuit board that includes an  
16 image sensor?  
17 MR. DAVIS: Objection to form.  
18 **A. I don't know that Tanuma calls**  
19 **out timing and control circuitry**  
20 **specifically. It's an illustration that is**  
21 **known, I believe this is broadly known to**  
22 **one of ordinary skill.**  
23 That, again, it's a design  
24 choice where to put circuitry components,  
25 and the two-sided boards had been available

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **known to one of ordinary skill.**  
3 Q. So for this support for this  
4 sentence that we've been talking about,  
5 aside from Tanuma, you also cite Suzuki; is  
6 that correct?  
7 **A. I do.**  
8 Q. And you cite Suzuki specifically  
9 for this -- what you refer to in the  
10 parenthetical here is "mounting circuitry  
11 on the opposite side of chip connecting  
12 board 226 from image pickup chip 221."  
13 Do you see that?  
14 **A. I do.**  
15 Q. Where does he teach doing that?  
16 **A. Well, I reference Figure 2. If**  
17 **we look at Suzuki.**  
18 So that's my Exhibit 1015 and  
19 Figure 2 is on page 2 of the exhibit. And  
20 the image sensor in Suzuki is 221, 226, 227  
21 and 228 are circuit boards, and looking at  
22 that figure, I believe he's illustrating  
23 components mounted on the boards. He  
24 doesn't label them. He doesn't call out  
25 what kind of components.

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **for a long time. Placing some components**  
3 **on one side and other components on the**  
4 **other reads to reduce board size.**  
5 This was an example of someone  
6 putting an imaging sensor on one side and  
7 other circuit components on the other.  
8 I don't know that Tanuma  
9 specifically limited it to timing and  
10 control circuitry.  
11 Q. Does Tanuma contemplate putting  
12 timing and control circuitry on the  
13 opposite side of that circuit board?  
14 MR. DAVIS: Objection to form.  
15 **A. We'd have to pull out Tanuma**  
16 **again to take a look and see which things.**  
17 But, again, in my analysis, my  
18 point here is that Ricquier is taught that  
19 his timing control is off-chip.  
20 It's a design choice as to where  
21 you put that on the boards. Swift provides  
22 two boards. Boards have two sides. You  
23 could -- you could assemble components on  
24 either side of either board. And this is  
25 simply a design choice that would have been

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 But you see there are rectangles  
3 drawn on those, just as he drew a rectangle  
4 for the image sensor which is mounted on  
5 226.  
6 You see the rectangle on the  
7 back of 226, back relative to the image  
8 sensor. I believe this is illustrating  
9 where you could mount components.  
10 Swift -- I'm sorry -- Suzuki has  
11 a goal of providing a very compact camera  
12 head. His abstract provides a compact  
13 camera head. So use of space is at  
14 premium.  
15 You see the same thing  
16 illustrated in Figure 3, where he adds  
17 pieces. So that's what I pointed to as  
18 illustrating that.  
19 Q. Okay. And so in Suzuki, you can  
20 look at these unlabeled boxes in Figure 2  
21 and determine that that's circuitry mounted  
22 on an opposite side of a board with -- with  
23 a discussion of those boxes?  
24 MR. DAVIS: Objection to form.  
25 **A. That they are components that**



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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **you need to assemble circuitry, yes, I**  
3 **think you would see that.**  
4 Q. So just to be clear, you can  
5 take an unlabeled box in Suzuki and make an  
6 assumption of what that teaches to a person  
7 of ordinary skill in the art, but you're  
8 not able to do the same thing with Swift;  
9 correct?  
10 MR. DAVIS: Objection.  
11 Form. Foundation.  
12 **A. I have no idea what you're**  
13 **referring to in Swift, specifically. If**  
14 **you'd like to point me to that, we can**  
15 **discuss that.**  
16 **In Suzuki, reading the entirety**  
17 **of the reference, which one of ordinary**  
18 **skill would do, applying their level of**  
19 **ordinary skill, it would be -- knowing**  
20 **which kind of circuit components those are,**  
21 **certainly that's not disclosed because**  
22 **Suzuki has limited disclosure about where**  
23 **to put what. Again, design choices.**  
24 **But I believe one of ordinary**  
25 **skill in the art would be well aware of**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **And, in fact, he later says one**  
3 **that's close to the size of the imaging**  
4 **device.**  
5 Q. Can we turn to column 2 of  
6 Suzuki.  
7 **A. Of Suzuki. I'm there.**  
8 Q. So starting at line -- roughly  
9 around line 50, you see Suzuki refers to a  
10 circuit module 222 that includes a chip  
11 connecting circuit board. That's at 226  
12 that we've been discussing?  
13 **A. I see that.**  
14 Q. And it also discloses circuit  
15 board 227, including a circuit for driving  
16 the solid-state image pickup chip?  
17 **A. I see that.**  
18 Q. Would you consider the circuit  
19 for driving the solid-state image pickup  
20 chip to be timing and control circuitry?  
21 MR. DAVIS: Objection.  
22 Form.  
23 **A. It doesn't say which kind of**  
24 **drivers he's putting there. You know,**  
25 **timing and control has to provide signals.**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **double-side mounting. I mean, using a**  
3 **two-sided printed circuit board is truly**  
4 **old. And this is just an illustration that**  
5 **would fit with that knowledge.**  
6 Q. Okay. But there's no disclosure  
7 in this specification of Suzuki about  
8 mounting anything on the other side of  
9 circuit boards, is there, other than this  
10 unlabeled box in Figure 2?  
11 MR. DAVIS: Objection.  
12 Form.  
13 **A. So let's see -- I see a lot of**  
14 **discussion about methods to connect one**  
15 **board to another. He does refer to 228 as**  
16 **having pins on one side. And I don't**  
17 **recall whether he has any specific**  
18 **discussions of locating components on both**  
19 **sides.**  
20 **But, again, double-sided boards**  
21 **were well-known, very old, and in trying to**  
22 **minimize area, again, a well-known design**  
23 **approach. I think that just matches with**  
24 **Suzuki's overall goal of providing a**  
25 **compact camera head.**

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 **Driving circuitry is not specifically**  
3 **defined. It might. So it may give you an**  
4 **option of putting it off-chip.**  
5 **I don't think it excludes it. I**  
6 **don't know whether it explicitly discloses**  
7 **it.**  
8 Q. Ricquier refers to its timing  
9 circuitry as a driving unit; correct?  
10 **A. I need to look and see where he**  
11 **actually refers to timing circuitry.**  
12 Q. On page 10.  
13 **A. Oh, of Ricquier. I'm sorry, I**  
14 **thought you were talking about Suzuki.**  
15 **Yes, he explicitly refers to**  
16 **timing control being realized in an**  
17 **off-chip driving unit, that's correct.**  
18 Q. Okay. So would a person of  
19 ordinary skill in the art understand a  
20 timing controller to be something that's  
21 included in a driving unit?  
22 MR. DAVIS: Objection.  
23 Form. Vague.  
24 **A. So we're back in Suzuki, I**  
25 **assume, and he talks about --**

<p style="text-align: right;">Page 94</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. I'm just trying to get an idea 3 of how a person of ordinary skill in the 4 art would interpret these terms. 5 <b>A. Well, in Ricquier --</b> 6 MR. DAVIS: Objection. 7 Form. 8 <b>A. In Ricquier, he uses the words</b> 9 <b>directly together, so there's no question</b> 10 <b>what Ricquier is including.</b> 11 <b>In Suzuki, he just says "driving</b> 12 <b>circuit," but he does say:</b> 13 <b>"Driving circuit, a circuit for</b> 14 <b>driving the solid-state image pickup chip</b> 15 <b>221 and a circuit for amplifying the video</b> 16 <b>signal of solid-state image pickup chip</b> 17 <b>221."</b> 18 <b>That -- in Suzuki this could</b> 19 <b>include timing and control. I think that's</b> 20 <b>possible, and it would align and say, if</b> 21 <b>you will, in the sense that Ricquier says</b> 22 <b>you can put the timing controller off-chip.</b> 23 Q. Do you have a sense of what type 24 of image sensor Suzuki is contemplating 25 here in his -- for his camera head?</p>	<p style="text-align: right;">Page 95</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. Suzuki only refers to it as a</b> 3 <b>solid-state image pickup device. That's</b> 4 <b>all Suzuki says.</b> 5 Q. So is it -- would a person of 6 ordinary skill in the art understand Suzuki 7 to be talking about any type of solid-state 8 image pickup device known in the art? 9 <b>A. Other than he talks about in his</b> 10 <b>situation, he wishes to use a solid-state</b> 11 <b>image pickup chip that, per se, is small.</b> 12 <b>That's in the middle -- it's in column 1 at</b> 13 <b>about line, oh, 25 -- starting at line 25.</b> 14 <b>So I don't think he's talking</b> 15 <b>about a 6-inch by 6-inch wafer scale</b> 16 <b>solid-state image pickup device, but he</b> 17 <b>hasn't restricted it to one specific type.</b> 18 <b>So I would say that he's left</b> 19 <b>that open to one of ordinary skill, to pick</b> 20 <b>their solid-state image pickup device.</b> 21 Q. All right. 22 MR. PRICE: We've been going for 23 about an hour again. 24 Let's take another short break. 25 (A recess was taken.)</p>
<p style="text-align: right;">Page 96</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>BY MR. PRICE:</b> 3 Q. Welcome back. 4 <b>A. Thank you.</b> 5 Q. Paragraph 239 of your 6 declaration, please. 7 <b>A. I'm there.</b> 8 Q. So in this paragraph, you say 9 that: "Like Swift, Ricquier is also 10 reasonably pertinent to the alleged 11 problems identified in the '052 patent, of 12 arranging circuitry of CMOS image sensor, 13 including to minimize the device's size or 14 profile area." 15 Do you see that? 16 <b>A. I do.</b> 17 Q. Can you point me to where 18 Ricquier discloses minimizing the device's 19 size or profile area? 20 <b>A. So I don't think that, in fact,</b> 21 <b>Ricquier explicitly points to that, but he</b> 22 <b>points to using a solid-state imaging</b> 23 <b>array, a device.</b> 24 <b>He points specifically to a CMOS</b> 25 <b>image sensor, and Ricquier itself built a</b></p>	<p style="text-align: right;">Page 97</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>device that was -- he identified a pixel</b> 3 <b>pitch of 19 microns and that it was a</b> 4 <b>256-by-256 square device, which works out</b> 5 <b>to be about a 5-millimeter chip.</b> 6 <b>So what he discloses is</b> 7 <b>something that I think would fall into the</b> 8 <b>general category of trying to minimize the</b> 9 <b>device's size.</b> 10 Q. Does Ricquier disclose any as 11 sort of goal of minimizing device size? 12 MR. DAVIS: Objection to form. 13 <b>A. I don't know that Ricquier</b> 14 <b>specifically states that.</b> 15 <b>He does mention -- let's see --</b> 16 <b>so he's looking at industrial machine</b> 17 <b>vision applications, some of which might</b> 18 <b>require small systems, some of which might</b> 19 <b>not.</b> 20 <b>He clearly was very concerned</b> 21 <b>about speed. But, again, I just think this</b> 22 <b>is a general area. He identifies his chip</b> 23 <b>size, which is approximately 5 millimeters,</b> 24 <b>which I think falls into that general</b> 25 <b>category.</b></p>

<p style="text-align: right;">Page 98</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. I'm just trying to understand 3 why you wrote that Ricquier was like Swift, 4 and reasonably pertinent to reducing the 5 device's size or profile area. 6 What was the basis for saying 7 that Ricquier has that same kind of goal, 8 like Swift? 9 <b>A. Well, Swift is also using a CMOS</b> 10 <b>imaging device. Ricquier is a CMOS imaging</b> 11 <b>device.</b> 12 <b>Ricquier is providing more</b> 13 <b>information about the CMOS imaging device.</b> 14 <b>And Swift --</b> 15 Q. I -- 16 <b>A. Excuse me, I'm sorry. I was</b> 17 <b>done.</b> 18 Q. I said but you can't point me to 19 anything in Ricquier that's disclosed as 20 being in any way related to minimizing the 21 device's size or profile area, is there? 22 MR. DAVIS: Objection. 23 Form. 24 <b>A. Well, he talks about pixel</b> 25 <b>pitch. He talks about what limits that</b></p>	<p style="text-align: right;">Page 99</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>size, although he said it was his column</b> 3 <b>amplifiers. I don't know that he uses the</b> 4 <b>word "small." I'm looking to see his -- I</b> 5 <b>think that the general content is</b> 6 <b>applicable to this.</b> 7 <b>I don't know that Ricquier</b> 8 <b>specifically uses the word "small" or</b> 9 <b>"reduced size."</b> 10 Q. In that same sentence that we 11 referred to in paragraph 239, you also note 12 -- you also say that: 13 "Ricquier is reasonably 14 pertinent to the alleged problems of 15 reducing image noise in CMOS sensors?" 16 Do you see that? 17 <b>A. I do.</b> 18 Q. What's the basis for your 19 statement that Ricquier is designed to 20 reduce image noise in CMOS sensors? 21 <b>A. Well, Ricquier has -- his field</b> 22 <b>is industrial machine vision applications.</b> 23 <b>He later says critical industrial</b> 24 <b>applications. He goes over noise</b> 25 <b>characteristics. And so I believe he</b></p>
<p style="text-align: right;">Page 100</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>clearly was concerned with that.</b> 3 <b>He identifies dominant noise</b> 4 <b>sources. I think all of those are related</b> 5 <b>to having sufficiently low noise to be used</b> 6 <b>in certain applications.</b> 7 Q. Do any of Ricquier's discussion 8 about noise and -- I'm not sure that you 9 pointed me to anything about reducing 10 noise, but does any of Ricquier's 11 discussion of noise characteristics have 12 anything to do with placing its timing and 13 control -- or his timing controller 14 off-chip? 15 MR. DAVIS: Objection. 16 Form. 17 <b>A. So -- I'm sorry, would you</b> 18 <b>repeat the question one more time.</b> 19 Q. Sure, I'll repeat the question. 20 Does any of Ricquier's 21 discussion of noise characteristics relate 22 at all to its decision to implement its 23 timing controller off-chip? 24 MR. DAVIS: Objection. 25 Form.</p>	<p style="text-align: right;">Page 101</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. So I think what Ricquier would</b> 3 <b>teach one of ordinary skill in the art is</b> 4 <b>that there was not a -- by locating his</b> 5 <b>timing control in an off-chip driving unit,</b> 6 <b>that any noise penalty -- he may have some</b> 7 <b>-- was not substantial.</b> 8 <b>He gives his noise performance</b> 9 <b>in accordance that they were adequate for</b> 10 <b>his applications using an off-chip driver.</b> 11 <b>He doesn't say that putting the</b> 12 <b>off-chip driver made the noise better, but</b> 13 <b>what I believe he's teaching is that it did</b> 14 <b>not make it worse.</b> 15 Q. And what are you relying on in 16 Ricquier to make that conclusion? 17 <b>A. Well, first of all, the fact</b> 18 <b>that that was his choice, and then he used</b> 19 <b>that in all of his performance evaluations,</b> 20 <b>including a characterization on noise -- of</b> 21 <b>his noise characteristics on page 14 of the</b> 22 <b>exhibit.</b> 23 <b>I think that's what one of</b> 24 <b>ordinary skill in the art would understand.</b> 25 <b>Again, I didn't say that he taught that</b></p>

<p style="text-align: right;">Page 102</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>putting it off-chip made it better. I</b> 3 <b>think one of ordinary skill in the art</b> 4 <b>would learn from this is that it did not</b> 5 <b>prevent it from functioning at high speed</b> 6 <b>and high frame rates.</b> 7 Q. Okay. But in your declaration, 8 you say that it's -- you know, Ricquier is 9 reasonably pertinent to the problem of 10 reducing image noise in CMOS sensors, and 11 summary in the context of combining 12 Ricquier's off-chip timing unit with Swift. 13 So I'm trying to understand, 14 what's the basis of your opinion that 15 implementing the timing circuitry off-chip 16 is related in any way to reducing image 17 noise in CMOS sensors? Can you give me the 18 basis for that statement? 19 MR. DAVIS: Object to the form. 20 <b>A. I gave you my answer, which is</b> 21 <b>that what this teaches is that it did not</b> 22 <b>make it worse. I believe that it still</b> 23 <b>makes it pertinent to the topic, but</b> 24 <b>Ricquier itself doesn't say it made the</b> 25 <b>noise better by moving it off-chip.</b></p>	<p style="text-align: right;">Page 103</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>I would agree with that.</b> 3 Q. Okay. But in your declaration, 4 you do say that Ricquier talks about noise 5 reduction; isn't that right? Is that 6 parenthetical at the end of the sentence? 7 <b>A. So the reference really there is</b> 8 <b>talking about CMOS and intelligent systems,</b> 9 <b>and, yes, that citation is -- does not say</b> 10 <b>noise reduction. It doesn't.</b> 11 <b>His noise discussion is</b> 12 <b>elsewhere. I think what he's showing is he</b> 13 <b>could get high-performance for critical</b> 14 <b>applications with the characteristics of</b> 15 <b>this system, including using an off-chip</b> 16 <b>timing and controller.</b> 17 Q. Does Ricquier -- 18 <b>A. I believe that makes it</b> 19 <b>pertinent, but I would agree that Ricquier</b> 20 <b>itself does not say that it reduced noise.</b> 21 Q. And Ricquier doesn't do any sort 22 of comparison between on-chip and off-chip 23 timing controllers with respect to noise 24 reduction; correct? 25 <b>A. He did not present data for</b></p>
<p style="text-align: right;">Page 104</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>something with an on-chip controller. He</b> 3 <b>presented data for one with an off-chip.</b> 4 <b>He concluded that he had a</b> 5 <b>device for time critical industrial</b> 6 <b>applications, so he didn't do a comparison,</b> 7 <b>but what he showed was that placing it</b> 8 <b>off-chip still allowed him to build his</b> 9 <b>device with sufficient performance for his</b> 10 <b>applications.</b> 11 Q. Turn back to the Laser Focus 12 World article. It's 1048 again, if you 13 don't mind. 14 <b>A. I have it.</b> 15 Q. So I'll ask you to turn to page 16 8 of the exhibit, which is native page 85. 17 <b>A. I have it.</b> 18 Q. Do you see the paragraph in the 19 left-most column that begins with: "To get 20 high transfer efficiency..."? 21 <b>A. I do.</b> 22 (Discussion held off the 23 record.) 24 Q. You see that paragraph that 25 begins with: "To get high transfer</p>	<p style="text-align: right;">Page 105</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>efficiency..."?</b> 3 <b>A. I see that.</b> 4 Q. "CCDs are often driven with 5 relatively high voltages by microelectronic 6 standards." 7 <b>A. I see that.</b> 8 Q. You see also where it says that: 9 "They also represent high enough 10 capacitance loads to driving electronics to 11 make on-chip integration of clocks and 12 drivers nearly impractical"? 13 <b>A. I do see that.</b> 14 Q. And then the final sentence in 15 that paragraph says: 16 "Yet, on-chip integration is the 17 key to achieving future camera 18 miniaturization." 19 <b>A. I see that.</b> 20 Q. Do you understand that to be 21 talking about on-chip integration of the 22 driving electronics referred to in that 23 previous sentence? 24 MR. DAVIS: Objection. 25 Form.</p>

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 A. I don't know. Not necessarily.  
3 He says, "On-chip integration is  
4 the key to achieving future camera  
5 miniaturization."  
6 I think that is broadly  
7 something that pretty much everyone agreed,  
8 that making things smaller could be  
9 accomplished that way.  
10 Whether this sentence was that  
11 the key thing to integrate was driving  
12 electronics, he just said that that's not  
13 practical, so I don't know what he meant,  
14 really, exactly. It's a broad --  
15 Q. I'm sorry, he's saying that it's  
16 impractical in the CCD context; correct?  
17 MR. DAVIS: Objection.  
18 Form.  
19 A. He is saying that -- it is  
20 important to realize that he's mentioning  
21 for the high voltage it's off, and not  
22 always, and for the high capacitance -- the  
23 capacitance is high. There's no question.  
24 So he is talking about CCDs  
25 there.

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 is different from clocks and drivers. So I  
3 -- I don't know that his previous -- last  
4 sentence in the previous paragraph was  
5 meant to say that the thing that's the most  
6 critical to integrate is the on-chip clocks  
7 and drivers.  
8 He may very well have included  
9 that in one of the things that he thought  
10 was important to put on. I wouldn't -- I  
11 don't know either way.  
12 You know, his next sentence, he  
13 talks about on-chip signal processing, so  
14 clearly he thinks that's important.  
15 Q. But he does say that on-chip  
16 integration is key to achieving future  
17 camera miniaturization; right?  
18 A. That's what he says, yes.  
19 Q. Do you have a reason to disagree  
20 with him?  
21 A. Well --  
22 MR. DAVIS: Objection to form.  
23 A. He says future camera  
24 miniaturization, and I think it's always a  
25 function of trade-offs. Sometimes adding

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 Q. Specifically, he's -- in this  
3 section of the article, he's comparing the  
4 drawbacks of CCDs to the benefits of CMOS;  
5 isn't that right?  
6 A. Yes, this entire section is  
7 entitled: "CCD Strengths and Weaknesses,"  
8 and he identifies advantages and  
9 disadvantages.  
10 Q. And so reading these two  
11 sentences together, you don't read on-chip  
12 integration in the final sentence to refer  
13 to the same an on-chip integration referred  
14 to in the previous sentence?  
15 A. It might, but if you read the  
16 next -- I don't know that it's exclusively  
17 that.  
18 If you read the next paragraph,  
19 and it states:  
20 "The CCD fabrication process is  
21 quite different from the complementary  
22 metal oxide semiconductor process - the  
23 preferred technology for implementation of  
24 on-chip signal processing."  
25 Well, on-chip signal processing

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1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.  
2 more circuitry on-chip is a good thing. It  
3 may come with a cost penalty as dye area  
4 increases.  
5 Sometimes when that circuitry  
6 isn't critical to function, it may well be  
7 better or cheaper, or both, to put it  
8 off-chip.  
9 I think that this article was a  
10 broad statement that, as a broad statement,  
11 I would agree with.  
12 As a broad goal, it's nice to be  
13 able to put more on, but when you get to  
14 the specific situation, you might conclude  
15 you're better off putting it off-chip. It  
16 -- it just depends. It's a design choice,  
17 again.  
18 Q. Going back to Claim 2 of the  
19 '052 patent, do you read Claim 2 to be  
20 broad enough to include the circuitry being  
21 both on-chip and off-chip?  
22 MR. DAVIS: Objection.  
23 The question cut out.  
24 MR. PRICE: I'm sorry, I'll  
25 repeat it.

<p style="text-align: right;">Page 110</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 BY MR. PRICE: 3 Q. In Claim 2 of the '052 patent, 4 do you read Claim 2 to cover circumstances 5 in which the timing and control circuitry 6 is both on-chip and off-chip? 7 MR. DAVIS: Objection to form. 8 <b>A. Claim 2 requires that the first</b> 9 <b>circuit board include an array of CMOS</b> 10 <b>pixels thereon, and it further requires</b> 11 <b>that the first circuit board first include</b> 12 <b>timing and control circuitry thereon.</b> 13 <b>So in both cases, something has</b> 14 <b>to be on the circuit board thereon.</b> 15 <b>If the timing and control</b> 16 <b>circuitry is separate from the CMOS pixels,</b> 17 <b>which are thereon, but it's still on</b> 18 <b>printed circuit board 1, that would satisfy</b> 19 <b>the claim language.</b> 20 <b>If the circuitry were on the</b> 21 <b>CMOS chip, and that CMOS chip is on the</b> 22 <b>circuit board, then the circuitry is still</b> 23 <b>on the circuit board.</b> 24 <b>So, yes, actually, I think it</b> 25 <b>would cover both. But in my analysis in my</b></p>	<p style="text-align: right;">Page 111</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>declaration, I explicitly discuss a</b> 3 <b>combination, which I believe makes it</b> 4 <b>obvious to place it off-chip, but on the</b> 5 <b>first circuit board.</b> 6 Q. I'd like to turn back to Swift 7 for a little while. 8 Can you turn to page 9 of the 9 Swift reference? 10 <b>A. Swift's page 9 or the exhibit</b> 11 <b>page 9?</b> 12 Q. Yes, the native page 9. 13 <b>A. Page 9 of Swift which is page 11</b> 14 <b>of Exhibit 1038.</b> 15 Q. In that last paragraph, Swift 16 talks about a maximum diameter of the 17 housing. 18 Do you see that? 19 <b>A. Yes, he does. I see it.</b> 20 Q. And it says: 21 "The maximum diameter of the 22 housing may be 38 millimeters and the 23 overall length of the housing may be 24 38 millimeters." 25 Do you see that?</p>
<p style="text-align: right;">Page 112</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 <b>A. He does say that.</b> 3 Q. And Swift refers to that 4 38-millimeter housing as "very small" in 5 that paragraph; is that right? 6 <b>A. He does.</b> 7 Q. Now, Suzuki, which is 8 Exhibit 1015, boasts a smaller housing 9 diameter; right? 10 <b>A. Suzuki, I believe, discloses</b> 11 <b>about 10 millimeters for the outer diameter</b> 12 <b>of the camera.</b> 13 Q. Can you tell me what accounts 14 for the difference in size between the 15 Swift and Suzuki cameras? 16 MR. DAVIS: Objection. 17 Form. 18 <b>A. Well, Suzuki has -- I think</b> 19 <b>probably just how they elected to place the</b> 20 <b>components on boards, largely.</b> 21 <b>You know, in Swift, he doesn't</b> 22 <b>say that embodiment that you used -- that</b> 23 <b>you gave dimensions for was referring to --</b> 24 <b>I'm trying to see which one -- sorry -- so</b> 25 <b>I was looking for another one.</b></p>	<p style="text-align: right;">Page 113</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>There he talks about maximum</b> 3 <b>diameter of 38 millimeters, the one you</b> 4 <b>pointed to. He gives another example as</b> 5 <b>Figure 4, where it has to fit in a hole of</b> 6 <b>diameter 25 millimeters, so Swift has given</b> 7 <b>two examples with dimensions.</b> 8 <b>He did call -- he used the word</b> 9 <b>"very small" for 38 millimeters, but he</b> 10 <b>also gives another one that's substantially</b> 11 <b>smaller than that, so I don't think Swift</b> 12 <b>is defining dimensions to be -- what</b> 13 <b>dimensions corresponds to very small.</b> 14 <b>In Suzuki, he does manage to fit</b> 15 <b>things into a camera head that's</b> 16 <b>10 millimeters in diameter. Suzuki</b> 17 <b>specifies as an image pickup chip size, and</b> 18 <b>he specifies a stacking arrangement of</b> 19 <b>components.</b> 20 <b>I think really the difference is</b> 21 <b>probably just how one selects the</b> 22 <b>components and arrangements on boards,</b> 23 <b>along with, given the application, how</b> 24 <b>small is very small. How small is small</b> 25 <b>enough for your application.</b></p>

<p style="text-align: right;">Page 114</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. So in order to meet the size 3 limitation of Claim 2, you're contending 4 that it would have been obvious to modify 5 Swift with Suzuki; is that correct? 6 A. So that discussion, that in 7 particular -- what I labeled as element 2J 8 in my labeling system, which is page 182 of 9 my declaration, the exhibit page 182. 10 And, in particular, I do point 11 to Suzuki, who gives specific dimensions. 12 I have discussed how he -- some 13 of the ways he achieves this, and in terms 14 of the motivation to combine, that's 15 actually back on -- starting on page 153, 16 where I discuss Swift's disclosure of 17 circuit boards, and Swift does disclose 18 circuit board 53 at right angles to circuit 19 board 52. This is in paragraph 243 on page 20 154 of my declaration. 21 He clearly states that you could 22 do other arrangements. If you look at 23 Suzuki, Suzuki has done another arrangement 24 of boards. He has placed them parallel and 25 stacked.</p>	<p style="text-align: right;">Page 115</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 As I discuss on page 244, I 3 think that one of ordinary skill would 4 recognize that that arrangement of boards 5 could be applied to the general teachings 6 of Swift and achieve a device of diameter 7 between 8-1/2 and 10 millimeters. 8 And, in particular, what needs 9 to be, what size limited is not the outer 10 housing, but in particular, the image 11 sensor along the first plane, but the first 12 plane is defined by the first circuit 13 board. The circuit board has to fit in the 14 housing. 15 And if you look at, for 16 instance, Suzuki's boards, they fit in a 17 housing; and, hence, must be smaller than 18 the 10 millimeters. 19 His image sensor is 8-1/2 20 millimeters, I believe, and he illustrates 21 his boards as being comparable in size, so 22 they're not smaller than 2 millimeters. 23 Q. Okay. So in your opinion, the 24 difference between Swift and Suzuki is 25 going to be in the components that are</p>
<p style="text-align: right;">Page 116</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 located on that circuit board housing the 3 imaging chip; correct? 4 MR. DAVIS: Objection to form. 5 A. I wouldn't -- I don't think it's 6 -- sizing the boards to support the 7 functions necessary, Swift is illustrating 8 a device with, and in Swift it's a solid 9 state sensor with all its associated 10 electronics producing video as an output, 11 and he's fit all of that circuitry into a 12 housing that's about 10 millimeters in 13 diameter. 14 I think what that is teaching 15 one of ordinary skill is that that is 16 clearly possible. I believe it's 17 demonstrating something that this is 18 something that one can accomplish. 19 Again, Swift, for one 20 application, he ended up with 21 38 millimeters, for another he ended up 22 with 25, but that was because of different 23 constraints on how he was mounting. 24 He didn't say that Swift 25 couldn't make it even smaller.</p>	<p style="text-align: right;">Page 117</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. I'm wondering, can you tell me 3 what specifically would have to be moved 4 around in your combination of Swift and 5 Suzuki to allow Swift to get down to the 6 same size as Suzuki? 7 MR. DAVIS: Objection. 8 Form. 9 A. I don't think it's a question of 10 what has to be moved around. 11 Swift does not specify any exact 12 electrical components or a schematic 13 circuit necessary to provide the various 14 functions. One of ordinary skill is going 15 to have to build that, design that 16 themselves. 17 Suzuki has also a solid-state 18 camera producing a video output, and I 19 think that what it demonstrates is that it 20 is possible, clearly, Suzuki shows it, to 21 build circuits with associating the 22 components and fit it into this smaller 23 space. 24 So it's not a question of moving 25 things around in Swift. Swift didn't</p>

<p style="text-align: right;">Page 118</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 really say where all of the components were 3 to start with, nor did he identify what 4 they were all were. He identified a broad 5 function, which for Suzuki also has to do, 6 he has to convert to video. 7 <b>Suzuki shows that you can do it</b> 8 <b>in a size of less than 10 millimeters.</b> 9 Q. Okay. And so Suzuki does show 10 that you can get an outer diameter of the 11 housing to 10 millimeters, but does Suzuki 12 show that capability while putting the 13 timing control circuitry on the same 14 circuit board as the image pickup chip? 15 MR. DAVIS: Object to form. 16 <b>A. Suzuki itself -- let's go to</b> 17 <b>Suzuki again.</b> 18 <b>He specifies that it's a</b> 19 <b>solid-state image pickup device -- he talks</b> 20 <b>about placing circuitry that drives the</b> 21 <b>solid-state image pickup chip on his board</b> 22 <b>227.</b> 23 <b>Suzuki, if you look at Figure 2,</b> 24 <b>you'll see 227, so that's where he says to</b> 25 <b>put circuitry that -- for driving the</b></p>	<p style="text-align: right;">Page 119</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 solid-state image pickup chip. I think we 3 discussed earlier whether that could 4 include timing and control, and I said I 5 think it could. 6 <b>He talks about amplifying the</b> 7 <b>video's signal from the chip and later I</b> 8 <b>think he says that he puts that out</b> 9 <b>through, depends on the back, and he</b> 10 <b>identifies that that's a video signal.</b> 11 <b>So he actually discusses a</b> 12 <b>number of functionalities that would fit on</b> 13 <b>board 227, within his housing, and they are</b> 14 <b>not on the chip.</b> 15 Q. Can you tell from just the 16 disclosure in Suzuki what components of the 17 camera system are located on its 18 solid-state image pickup chip? 19 <b>A. Again, Suzuki only identifies,</b> 20 <b>if you will, sort of a functional</b> 21 <b>description. Circuit for driving. Circuit</b> 22 <b>for amplifying. I'm in column 2 starting</b> 23 <b>at line 50.</b> 24 <b>He never identifies the</b> 25 <b>electrical components used to build that.</b></p>
<p style="text-align: right;">Page 120</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 He doesn't say anything about components 3 on-chip or off-chip. He does talk about 4 functions, circuitry for providing 5 functions that are certainly not on-chip. 6 <b>They are on a board.</b> 7 Q. And one of those functions is a 8 circuit for amplifying the video signal; 9 correct? 10 <b>A. He does say that, yes.</b> 11 Q. In a CMOS imager, CMOS APS 12 imager, do you have a separate circuit for 13 amplifying a signal or is the amplification 14 done at the pixel site? 15 MR. DAVIS: Objection. 16 Form. 17 <b>A. Well, first, the reference is in</b> 18 <b>the reference of the video signal. Not of</b> 19 <b>the pixel signal.</b> 20 <b>But if you're asking me does, in</b> 21 <b>an active CMOS pixel array does it contain</b> 22 <b>an amplifier in each pixel, yes, it does.</b> 23 <b>He may also have other</b> 24 <b>amplifiers, and I believe we've looked at</b> 25 <b>examples of that, not in the context of</b></p>	<p style="text-align: right;">Page 121</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 this claim, but -- let's see, what would be 3 a good example of that. 4 <b>Ackland, for instance, has other</b> 5 <b>amplifiers. Ricquier has amplifiers,</b> 6 <b>column amplifiers. So there might be quite</b> 7 <b>a few amplifiers, some on-chip, some off.</b> 8 <b>Some in the pixel and some not in the</b> 9 <b>pixel.</b> 10 Q. In Ricquier, isn't -- doesn't it 11 have column amplifiers because it's a 12 passive pixel array, not an active pixel 13 array? 14 <b>A. So Ricquier is a passive image</b> 15 <b>sensor, but I don't think that's the only</b> 16 <b>reason to have his amplifier.</b> 17 <b>He talks about some of the</b> 18 <b>properties, and once you get to the column</b> 19 <b>level driving the output, you notice on the</b> 20 <b>right-hand side he has an amplifier for</b> 21 <b>driving a single line output.</b> 22 <b>The one reason to put amplifiers</b> 23 <b>in each pixel is to help overcome any</b> 24 <b>parasitics of the rogue column address</b> 25 <b>lines, but that doesn't mean that once the</b></p>



<p style="text-align: right;">Page 122</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 signal is read out, it's big enough already 3 to output onto a common analog output line, 4 as it is in Ricquier. 5 I believe in Ricquier he 6 mentions -- on page 8, actually, identifies 7 a dominant noise source as being column 8 amplifiers, but then he gets -- he does an 9 electron calculation, noise -- equivalent 10 noise electrons to get a dynamic range. 11 But I think if you put a -- if 12 you put a pixel amplifier in, clearly helps 13 with a rogue column address -- readout 14 lines from the column lines, but it's 15 pretty common, I think, to do other things 16 after that. 17 Q. This video signal that's 18 amplified by Suzuki's amplifier, do you 19 have an understanding of whether that's a 20 pre-video signal or a post-video signal in 21 the parlance of the '052 patent claims? 22 MR. DAVIS: Objection. 23 Form. 24 <b>A. So let me try to find the</b> 25 <b>section of my declaration.</b></p>	<p style="text-align: right;">Page 123</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 So in -- I'm trying to get the 3 references straight. 4 In Swift itself -- sorry -- so 5 this is relevant for claim element 2F, 6 which I start the discussion on page 169 of 7 my declaration because that's where the 8 second circuit board, including circuitry 9 thereon to convert said pre-video to 10 post-video. 11 Swift discloses that it takes -- 12 and so if you look at paragraph 269 of my 13 declaration, it takes images -- image 14 signals from 51, and then passes it to a 15 video processor and circuitry components 16 that convert it to the signal that can be 17 received by a monitor television. 18 That video processor and 19 circuitry components are on board 53. 20 So it's clear that in Swift, the 21 conversion from pre-video, the output from 22 the image sensor 51 to video, output to the 23 television monitor, is done on board 53, 24 and -- 25 Q. I'd like to dive in on that, if</p>
<p style="text-align: right;">Page 124</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 we can. 3 Where in Swift -- 4 MR. DAVIS: Counsel, counsel. 5 He was saying "and" and was interrupted. I 6 didn't know if the answer was finished. 7 <b>A. You asked about Suzuki so I was</b> 8 <b>going to go back to Suzuki.</b> 9 Q. Okay. I'm sorry. I thought you 10 were done. You can finish your answer, 11 please. 12 <b>A. So in my arguments -- in my</b> 13 <b>opinions that I've elucidated in my</b> 14 <b>declaration, the identification of the</b> 15 <b>circuitry and the requirement I found in</b> 16 <b>Swift to be clear.</b> 17 I was not looking to Suzuki for 18 that disclosure. 19 Q. Okay. So is it fair to say that 20 you didn't consider whether or not that's a 21 pre-video or post-video signal that's being 22 amplified in Suzuki? 23 MR. DAVIS: Objection. 24 Form. 25 <b>A. So, again, I did not look to</b></p>	<p style="text-align: right;">Page 125</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Suzuki for that disclosure, pre-video to 3 post-video, as being on the second board. 4 I looked to Swift for that. 5 Q. Okay. 6 So let's turn to Swift then. I 7 do have a few questions about this pre to 8 post-video conversion and your reading of 9 Swift. 10 Can you point me to where in 11 Swift it says that there's conversion from 12 pre-video to post-video on circuit board 13 53? 14 <b>A. So let me find the right</b> 15 <b>location here. I'm looking right now at</b> 16 <b>page 170 of my declaration. And the</b> 17 <b>quotation there is from Swift. I just have</b> 18 <b>to find the -- where the precise cite --</b> 19 <b>I'm sorry, I'm looking at Suzuki, excuse</b> 20 <b>me. I've got to get to Swift.</b> 21 My apologies, I usually try to 22 have the citation right there in the 23 quotation, but in this case it looks like I 24 didn't list it there. 25 So we're discussing circuit</p>

<div>Page 126</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 board 53. Let me try to find that in 3 Swift. Okay, there, I found it. 4         So if you look at page 9 of 5 Swift, it's page 11 of the exhibit, and 6 starting at line -- what is that -- 7, it 7 states: 8         "Various circuitry components 9 are mounted on the circuit board 53 to 10 provide power to the image sensor 51, to 11 process image signals received 12 therefrom" -- so that's signals from 51 -- 13 "and also to process audio signals from 14 miniature microphone 54." 15         And then I'll not read the rest 16 of this sentence. It's about the audio. 17         It then says: 18         "A cable 55 is connected to 19 printed circuit board 53, passes to the 20 rear boards." 21         At this point I don't think it 22 says that it goes directly to a television, 23 but it does elsewhere, that it can go to a 24 monitor. 25         So it's saying that it takes the</div>	<div>Page 127</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 signal from the image sensor 51, it 3 processes that and outputs video. 4         So Swift didn't use the terms 5 pre and post-video, but he identified a 6 signal that -- the output of this image 7 sensor, 51, that's the pre-video. 8         And he identifies that the 9 output from board 53 is video, and it's not 10 right there, but it's elsewhere, where he 11 says that the cable can be connected to the 12 monitor. 13         Q. In this passage that you pointed 14 me to, it doesn't specifically say that 15 whatever circuitry is processing image 16 signals is doing any pre to post-video 17 conversion, does it? 18         MR. DAVIS: Objection. 19         Form. 20         A. Again, Swift didn't use the 21 terms pre and post. It used the image 22 signals from 51. That's pre-video. 23         What comes off of 51, if we look 24 to Ricquier or Suzuki -- Ricquier, for 25 instance, it's an analog signal. It's not</div>
<div>Page 128</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 video. 3         If we look to the art for active 4 pixel sensors, like Ackland, it's not a 5 video signal. 6         He processes that and he clearly 7 states that after that, he outputs a video 8 signal. 9         So I think one of ordinary skill 10 in the art reading this would understand it 11 that way. 12         Q. Now, you are aware that there 13 are CMOS image sensors that output video 14 that are directly capable of being shown on 15 the screen; correct? 16         MR. DAVIS: Objection to form. 17         A. Today? In today's technological 18 world, yes, I'm aware of that. 19         In the time frame that we're 20 interested in, I was not aware of a single 21 chip that both converted light to 22 electricity and converted to a standard 23 video format. 24         Q. Okay. You're not aware of 25 anything like that at the time?</div>	<div>Page 129</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2         A. It's possible that someone might 3 have described such a thing. 4         I am not aware of an actual chip 5 at the time. Again, it's possible. But 6 certainly what was obvious to one of 7 ordinary skill in the art looking at the 8 literature, the Laser Focus article, was 9 that the signal would be pre-video -- would 10 not be video, and that's why in Swift, 11 there's a board to put that into -- into a 12 standard video format. 13         Q. But Swift doesn't talk about a 14 standard video format, does it? 15         MR. DAVIS: Object to the form. 16         A. So Swift says -- let me find the 17 right spot. 18         So on page 15 of Swift -- well, 19 let me go up a little bit higher. 20         On page 15 of Swift starting at 21 line 4, he talks about a system comprising 22 a camera, generally similar to camera 50, a 23 video monitor or TV on 55 being provided to 24 display a signal received from the camera. 25         Then in the next paragraph, he</div>

<div>Page 130</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2     says that camera 152 and monitor 152 -- 3     154, excuse me, are connected by means of a 4     cabling system. 5         That would certainly indicate to 6     me that the output from camera 152 has to 7     be in a video format capable of display on 8     a TV or a video monitor. 9         At the end of paragraph -- right 10    around line 21, 22, he explicitly states 11    that there's a plug, and that plug is 155. 12    Let me find that in his figures -- see if 13    he actually illustrates it. 14         So if you look at 56, he shows 15    basically a cabling system, where you can 16    plug this -- the output into things he 17    labels 161. 18         He mentions that plug 155 is a 19    SCART-type connector. Well, that is a 20    video connector, standard video connector. 21         The elements 161 are just socket 22    connectors, so he doesn't indicate there's 23    any circuitry there. 24         So all of this together clearly 25    indicates that the cabling system leaving</div>	<div>Page 131</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2     camera 152 is video, a standard video 3     format. 4         Q.    Okay. Right. 5         So this is all talking about 6     whatever -- what the signal is that's 7     leaving the camera, right, but it doesn't 8     demonstrate that the circuitry on board 53, 9     this processing circuitry, is what's 10    responsible for doing the conversion, does 11    it? 12         MR. DAVIS: Objection to form. 13    <b>A.   No. I wouldn't agree with that.</b> 14         He says back on page 9 that the 15    signal from the image sensor is processed 16    on board 53. It says that the cable is 17    connected to board 53. I know that cable 18    carries a video signal. 19         The signal from the image sensor 20    was not in video format. 21         Q.    Where does it say that the 22    signal from the image sensor was not in 23    video format? 24         MR. DAVIS: Counsel, I'm not 25    sure if he was done with his answer.</div>
<div>Page 132</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2     BY MR. PRICE: 3         Q.    I'm sorry. 4         <b>A.   It states that you have to</b> 5     process the image signals therefrom, and I 6     believe one of ordinary skill in the art 7     reading this, in light of knowledge at the 8     time, would understand that the signal from 9     image sensor 51 is a signal, not a video 10    signal, and that processing is required to 11    put it into video format. That would 12    occur, or that is stated to occur on board 13    53. 14         Q.    Is there other type of -- does a 15    person of ordinary skill in the art 16    understand that there's other type of image 17    and video processing that occurs for 18    signals departing an image sensor besides 19    just converting from pre to post-video? 20         MR. DAVIS: Objection. 21         Form. 22         <b>A.   There may be, and, in fact,</b> 23     Swift may do other, although he doesn't 24     specify anything except he has to get from 25     the image sensor signal to a video signal</div>	<div>Page 133</div> <div>1     <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2     that you can plug into a TV. 3         <b>So he doesn't discuss doing any</b> 4     other kinds of signal processing. 5         MR. PRICE: Is this a good time 6     to stop for lunch? 7         <b>THE WITNESS: That's fine with</b> 8     me. 9         (A luncheon recess was taken 10    from 2:16 p.m. EST to 3:02 p.m. EST) 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</div>

<p style="text-align: right;">Page 134</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 AFTERNOON SESSION 3 (Time Resumed: 3:02 p.m. EST) 4 DEAN NEIKIRK, PH.D., 5 having been previously duly sworn, resumed 6 and testified as follows: 7 CONTINUED EXAMINATION 8 BY MR. PRICE: 9 Q. Welcome back. 10 A. Thank you. 11 Q. Did you have any conversations 12 about the substance of your testimony with 13 anybody during the break? 14 A. No, I did not. 15 Q. I'd like you to turn back to 16 paragraph 232 of your declaration. 17 A. Paragraph 232 on page 147? I'm 18 there. 19 Q. That's correct, yes. 20 Let me know when you're there. 21 A. Oh, I'm there. I'm sorry. Yes, 22 I'm there. 23 Q. In your second sentence there, 24 you state, in one example -- in the first 25 sentence there, you say that:</p>	<p style="text-align: right;">Page 135</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 "Swift discloses configuring 3 circuit boards 52 and 53 and their 4 associated circuitry in multiple different 5 ways." 6 Do you see that? 7 A. I do. 8 Q. And in the next sentence you 9 refer to, in one example, a configuration 10 of circuit boards of 52 and 53, Swift 11 teaches disposing its components in other 12 orientations? 13 A. That's correct. 14 Q. Can you explain why you conclude 15 that Swift teaches disposing its circuit 16 boards in other orientations? 17 A. Well, as I've discussed further 18 there, Swift clearly states a little bit 19 later in the paragraph, I quoted from 20 Swift, that in this specification: 21 "Terms of absolute orientation 22 are used conveniently to denote usual 23 orientation of items in normal use and/or 24 as shown in the accompanying drawings, and 25 such items could be disposed in other</p>
<p style="text-align: right;">Page 136</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 orientations and in the context of this 3 specification. 4 "Terms of absolute orientation 5 should be top-bottom, left-right, 6 vertical-horizontal, et cetera, are to be 7 construed accordingly to include such 8 alternative orientations." 9 Q. What is your understanding of 10 the phrase "absolute orientation" in this 11 paragraph? 12 A. Well, he says right there: 13 "To denote the usual 14 orientations of items in normal use and/or 15 as shown in the accompanying drawings." 16 So, for instance, in Figure 2, 17 he does illustrate that board 53, the plane 18 of board 53 is perpendicular to the plane 19 of board 52. There's no question that's 20 what he shows. 21 But he also clearly states that 22 -- intends that other alternative 23 orientations would be included. 24 And, again, if you look on page 25 19, he clearly states that unless expressly</p>	<p style="text-align: right;">Page 137</p> <p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D. 2 stated otherwise, alternative features 3 serving the same equivalent or similar 4 purposes are allowed. 5 Q. Okay. I want to go back to -- 6 you sort of glossed over it. 7 What's meant by the phrase 8 "absolute orientation"? 9 MR. DAVIS: Objection. 10 Form. 11 A. I didn't gloss over that. I 12 answered it. 13 "Terms of absolute orientation 14 are used conveniently to denote the usual 15 orientation of items in normal use and/or 16 as shown in the accompanying drawings." 17 He says what he means. So, for 18 instance, in Figure 2, there's an 19 illustration, so that would match with his 20 statement "as shown in accompanied 21 drawings." 22 And in that drawing, the 23 orientation, the absolute orientation 24 illustrated is that board 53 is 25 perpendicular to board 52.</p>

<p style="text-align: right;">Page 138</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 But he furthermore states that 3 it should be interpreted to allow 4 alternative orientations. 5 And, again, for paragraph -- 6 page 19, in the two paragraphs that I 7 believe the one most relevant starts at 8 line 15, he has stated that: 9 "Unless it's the express 10 requirement or that it would be 11 incompatible with all the functions, that's 12 the only time you can't rearrange." 13 Making board 53 parallel to 52 14 would not render it nonfunctional. 15 Q. Okay. Again, I want to go back 16 to what's meant by "absolute orientation" 17 because what's meant by absolute 18 orientation is very clearly stated, that 19 when you're looking at the device in the 20 usual orientation or as shown in the 21 drawings, you can use words like 22 "top-bottom," "left-right" to refer to 23 directions. 24 Do you see that? 25 <b>A. That's also --</b></p>	<p style="text-align: right;">Page 139</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 MR. DAVIS: Objection. 3 Form. 4 BY MR. PRICE: 5 Q. I'm sorry? 6 <b>A. It says, to quote, "such items 7 could be disposed in other orientations." 8 "And in the context of the 9 specification in terms of absolute 10 orientation, such as top-bottom, 11 left-right, vertical or horizontal, et 12 cetera, are to be construed accordingly to 13 include such alternative orientations." 14 Q. So doesn't that mean that you 15 can flip over the Figure 2 so that the top 16 is on the bottom and that the absolute 17 orientations can switch accordingly? 18 Isn't that how you read that 19 paragraph? 20 <b>A. No, it's not.</b> 21 MR. DAVIS: Objection to form. 22 BY MR. PRICE: 23 Q. What's the difference between 24 "absolute orientation" and "relative 25 orientation" then?</b></p>
<p style="text-align: right;">Page 140</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. He's --</b> 3 MR. DAVIS: Objection to form. 4 <b>A. He has defined what he means by 5 absolute orientation, "used conveniently to 6 denote usual orientation of items in normal 7 use and/or as shown in the accompanying 8 drawings." 9 He said what he means. 10 He further says that the items 11 could be disposed in other orientations. 12 Q. So your reading of this 13 paragraph is that it allows for components 14 to be changed -- the relative orientation 15 of components to be changed; yes? 16 MR. DAVIS: Objection. 17 Form. 18 <b>A. As I've stated in that 19 paragraph, it is my opinion that Swift has 20 disclosed orienting circuit boards 52 and 21 53 and associated circuitry in multiple 22 different ways. 23 Yes, it is my opinion that Swift 24 allows the orientation of 53 with respect 25 to 52 to be changed.</b></b></p>	<p style="text-align: right;">Page 141</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Just to confirm, in this 3 paragraph, "absolute orientation" refers to 4 the relative orientation of specific 5 components; yes? 6 MR. DAVIS: Objection. 7 Form. 8 <b>A. The statement is: 9 "Terms of absolute orientation 10 are used conveniently to denote the usual 11 orientation of items in normal use and/or 12 as shown in the accompanied drawings." 13 There are multiple items shown 14 in the drawings. In Figure 2, there are, 15 one, two, three -- one, two, three, four, 16 five, six, seven, eight, nine, ten -- 17 eleven items. Eleven numbers. 18 Q. Okay. I just want to confirm 19 that when you read "absolute orientation," 20 you are reading that to include relative 21 orientation of various components? 22 MR. DAVIS: Objection. 23 Form. 24 <b>A. I am reading exactly what he 25 wrote.</b></b></p>

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 He says that "such items could  
3 be disposed in other orientations."  
4 That certainly is telling me  
5 that 53 could be moved while 52 stays in  
6 the same place, if you look at Figure 2.  
7 He's also determined -- he said:  
8 "Absolute orientation is to  
9 denote usual orientation in normal use  
10 and/or as it's shown in the accompanied  
11 drawings."  
12 He refers to items, and if you  
13 look at Figure 2, there are many items  
14 illustrated as part of that device.  
15 Q. Okay. So can you give me a yes  
16 or no, that your understanding of his  
17 phrase "absolute orientation" to include  
18 relative orientation?  
19 MR. DAVIS: Objection.  
20 Form. Asked and answered.  
21 A. I gave you the answer. The  
22 answer is exactly as he says, and he says --  
23 Q. You can't give me a yes or no?  
24 A. -- it means that you can move  
25 one component while leaving other

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2 to be allowed to be included.  
3 If you leave one item where it  
4 is in Figure 2, for instance, circuit board  
5 52, and move element 53, which Swift  
6 explicitly states is allowed, and move it  
7 in such a way that it is parallel to 52,  
8 Swift says that's fine.  
9 Q. So, yes, your interpretation of  
10 the phrase "absolute orientation" includes  
11 relative orientation?  
12 MR. DAVIS: Objection to form.  
13 Asked and answered about three  
14 or four times now.  
15 A. I have never said that.  
16 He says what absolute  
17 orientation means. He didn't use the  
18 phrase "relative orientation."  
19 I just described how moving  
20 circuit board 53 in the housing and leaving  
21 circuit board 52 is, in my opinion,  
22 disclosed and within -- or it is within  
23 what Swift is describing right there in my  
24 paragraph 232.  
25 I don't understand why you're

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 components in the same position.  
3 MR. DAVIS: And, counsel, I  
4 would -- sorry, go ahead.  
5 **THE WITNESS: I'm done.**  
6 MR. DAVIS: Counsel, I would  
7 again ask you to not interrupt the witness  
8 while he's answering a question, as you  
9 just again did there.  
10 MR. PRICE: My apologies, Jim.  
11 It's a little bit tough on the computer  
12 here.  
13 BY MR. PRICE:  
14 Q. So can you answer yes or no,  
15 that your interpretation of absolute  
16 orientation includes relative orientation  
17 of specific components?  
18 MR. DAVIS: Objection.  
19 Form. Asked and answered.  
20 A. I do not understand your  
21 conflation of relative orientation with  
22 absolute.  
23 He explains what absolute  
24 orientation means. He then says that  
25 alternative orientations of the items are

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1 **CONFIDENTIAL - DEAN NEIKIRK, PH.D.**  
2 trying to conflate or try to bring a new  
3 term in, "relative orientation."  
4 He used "absolute," but then he  
5 clearly stated that "items could be  
6 disposed in other orientations."  
7 He didn't say all the items  
8 together have to be moved to other -- he  
9 said "items."  
10 Q. So that paragraph refers to  
11 absolute orientations in terms of looking  
12 at a figure and being able to reference  
13 directions in terms of up-down, left-right,  
14 top-bottom, vertical-horizontal; yes?  
15 MR. DAVIS: Objection.  
16 Form.  
17 A. He says that it refers to usual  
18 orientation of items in normal use and/or  
19 as shown in accompanied drawings.  
20 He further states that you can  
21 dispose those in other orientations. He  
22 also states the terms such as top, bottom,  
23 left, right, vertical and horizontal are to  
24 be construed accordingly to include such  
25 alternative orientations.

<p style="text-align: right;">Page 146</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>So if you used a different</b> 3 <b>orientation of items, then you would</b> 4 <b>perhaps, in his original description of</b> 5 <b>top, bottom, left, right, vertical and</b> 6 <b>horizontal, in the new orientation, if he's</b> 7 <b>using top, bottom, left, right, vertical,</b> 8 <b>horizontal, in context of Figure 2, then</b> 9 <b>those terms might well not apply as</b> 10 <b>originally written in the alternative</b> 11 <b>orientation.</b> 12 <b>So you would have to adjust</b> 13 <b>those appropriately.</b> 14 Q. So as I understand it, if I took 15 Figure 2 and I turned it upside down, then 16 my top would be bottom and my bottom would 17 be top; correct? 18 MR. DAVIS: Objection. 19 Form. 20 A. In that hypothetical, I suppose 21 so, but he's talking about items. 22 You took all of the items and 23 rotated it. That's fine. Okay. But, 24 again, you're construing this paragraph to 25 also include relative orientations of</p>	<p style="text-align: right;">Page 147</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>various components in a figure; yes?</b> 3 MR. DAVIS: Objection. 4 Form. Asked and answered. 5 A. No. I am not construing 6 anything. The language is plain. It is 7 clear. It is clear what it would mean to 8 one of ordinary skill in the art applying 9 plain and ordinary meaning. That, of 10 course, is talking about claim language. I 11 didn't construe anything. 12 Q. Okay. I just wanted to confirm 13 that your understanding of absolute 14 orientation includes relative orientation. 15 MR. DAVIS: Objection. 16 Counsel, is that even a 17 question? Form. 18 A. If that was a question, I've 19 told you repeatedly no. I've told you what 20 absolute orientation is stated to mean in 21 Swift, along with the fact that you can 22 change the orientation of items and then 23 gave you an example. 24 I don't need to use a phrase 25 "relative." I don't really know why you're</p>
<p style="text-align: right;">Page 148</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>bringing that in. It's not relative in the</b> 3 <b>context of absolute.</b> 4 <b>He explained what he meant.</b> 5 Q. Okay. So what I mean by 6 relative is when two items you say are 7 perpendicular to one another, you don't 8 understand that as a relative term? 9 MR. DAVIS: Objection. 10 Form. 11 A. If that's what you mean, I can 12 understand what -- how you're using the 13 term "relative." 14 Q. So in terms of the disposition 15 of two components with respect to one 16 another, does your reading of absolute 17 orientation include changing those relative 18 orientations of particular items with 19 respect to one another? 20 MR. DAVIS: Objection. 21 Form. Asked and answered. 22 A. Given the express statements in 23 Swift, he tells you that you can change the 24 orientation of items, in the example you 25 gave, and I'm going to give the Figure 2.</p>	<p style="text-align: right;">Page 149</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>Board 52 remains as shown in</b> 3 <b>Figure 2. Board 53 is placed in an</b> 4 <b>alternative orientation, such that it is</b> 5 <b>now parallel to board 52.</b> 6 <b>It would be true that the</b> 7 <b>relative orientations of 52 and 53 have</b> 8 <b>been changed by moving the absolute</b> 9 <b>orientation of only one element 53, which</b> 10 <b>Swift clearly states that that is to be</b> 11 <b>allowed. Alternative orientations are to</b> 12 <b>be included.</b> 13 Q. Okay. I understand. Thank you. 14 MR. PRICE: I have no further 15 questions today. 16 MR. DAVIS: Off the record. 17 (A recess was taken.) 18 EXAMINATION BY 19 MR. DAVIS: 20 Q. Dr. Neikirk, do you have your 21 declaration in front of you, Exhibit 1004? 22 Do you have Exhibit 1004, 23 Doctor? 24 A. Yes, I'm sorry, I have two mute 25 buttons and I failed to turn one of them</p>

<p style="text-align: right;">Page 150</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>off. I do have it in front of me.</b> 3 Q. No problem. 4 Can you turn to page 153. 5 <b>A. So the exhibit page 153, which</b> 6 <b>has, for instance, paragraph 240 on it? Am</b> 7 <b>I in the right place?</b> 8 Q. Yes. 9 <b>A. I'm there.</b> 10 Q. And do you see the second half 11 or end, really, of paragraph 239, above 12 there? 13 <b>A. I do.</b> 14 Q. Do you see the first full 15 sentence and can you read that aloud? 16 <b>A. There's a sentence, the first</b> 17 <b>full sentence on the page:</b> 18 <b>"Furthermore, it was well-known</b> 19 <b>in the art that fitting of components into</b> 20 <b>available space and placement of circuitry</b> 21 <b>on various layers arranged stack-wise is a</b> 22 <b>common design consideration for portable</b> 23 <b>devices."</b> 24 Q. Do you see the quoted language 25 there in that sentence?</p>	<p style="text-align: right;">Page 151</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. I do.</b> 3 Q. Do you remember being asked 4 about quoted language like that during 5 questioning from Mr. Price? 6 <b>A. I do.</b> 7 Q. Where does that quoted language 8 come from? 9 <b>A. So that language, I think, is</b> 10 <b>from the PCB Design article.</b> 11 Q. Do you have Exhibit 1045? 12 <b>A. Let me look. Excuse me, that's</b> 13 <b>Exhibit 1045?</b> 14 Q. Yes. 15 <b>A. Sorry, it's not in either of</b> 16 <b>those two. I do not seem to have a printed</b> 17 <b>copy of that reference. I recall reviewing</b> 18 <b>an electronic version of it in the last</b> 19 <b>week, but I don't think I seem to have the</b> 20 <b>printed exhibit.</b> 21 Q. Okay. You provide a citation 22 there to PCB Design at pages 15 and 20. 23 Is that where those quotes come 24 from? 25 <b>A. Yes, I believe so.</b></p>
<p style="text-align: right;">Page 152</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 Q. Can you flip back one page to 3 page 152 of your declaration? 4 <b>A. Yes, page 152. I'm there.</b> 5 Q. Do you see those same quotes 6 around the middle of the page in reference 7 to, quote: 8 "Fitting the components into the 9 available space, placing circuitry on 10 various layers arranged stack-wise to allow 11 for a more compact camera head"? 12 <b>A. Yes, I do.</b> 13 Q. Where were those quotations 14 coming from? 15 <b>A. So the PCB Design Book doesn't</b> 16 <b>have the more compact head.</b> 17 <b>I've referred to Ricquier, pages</b> 18 <b>3 and 4.</b> 19 Q. Why don't we start with the 20 other quotes first, Doctor, the "fitting 21 components into the available space and 22 placing circuitry on various layers 23 arranged stack-wise..." 24 Do those come from the PCB 25 circuit board reference?</p>	<p style="text-align: right;">Page 153</p> <p>1 <b>CONFIDENTIAL - DEAN NEIKIRK, PH.D.</b> 2 <b>A. Those come from the PCB</b> 3 <b>reference, the reference that I've given on</b> 4 <b>the next page.</b> 5 MR. DAVIS: I have no further 6 questions at this time. 7 MR. PRICE: Do you mind if we 8 take five more minutes? 9 MR. DAVIS: Sure. 10 (A recess was taken.) 11 MR. PRICE: We have no recross. 12 MR. DAVIS: Off the record. 13 (Time Noted: 3:34 p.m. EST) 14 15 <u>DEAN NEIKIRK, PH.D.</u> 16 Subscribed and sworn to before me 17 this ____ day of ____, 2020. 18 19 20 21 22 23 24 25</p>



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<p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.</p> <p>2 C E R T I F I C A T E</p> <p>3</p> <p>4 I, Linda J. Greenstein, Professional</p> <p>5 Shorthand Reporter and Notary Public in and</p> <p>6 for the State of New York, do hereby</p> <p>7 certify that, DEAN NEIKIRK, PH.D., the</p> <p>8 witness whose deposition is hereinbefore</p> <p>9 set forth, was duly sworn and that such</p> <p>10 deposition is a true record of the</p> <p>11 testimony given by the witness to the best</p> <p>12 of my skill and ability.</p> <p>13 I further certify that I am neither</p> <p>14 related to or employed by any of the</p> <p>15 parties in or counsel to this action, nor</p> <p>16 am I financially interested in the outcome</p> <p>17 of this action.</p> <p>18 IN WITNESS WHEREOF, I have hereunto set</p> <p>19 my hand this 16th day of October 2020.</p> <p>20</p> <p>21 <u>Linda Greenstein</u></p> <p>22 Linda J. Greenstein</p> <p>23</p> <p>24 My commission expires: January 31, 2021</p> <p>25</p>	<p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.</p> <p>2 I N D E X</p> <p>3</p> <table border="0"><tr><td>4 WITNESS</td><td>EXAMINED BY</td><td>PAGE</td></tr><tr><td>5 DEAN NEIKIRK,</td><td>Mr. Price</td><td>4</td></tr><tr><td>6 PH.D.</td><td></td><td></td></tr><tr><td>7</td><td>Mr. Davis</td><td>149</td></tr></table> <p>8 ----- INFORMATION REQUESTS -----</p> <p>9 DIRECTIONS: 18</p> <p>10 RULINGS:</p> <p>11 TO BE FURNISHED:</p> <p>12 REQUESTS:</p> <p>13 MOTIONS:</p> <p>14 ----- E X H I B I T S -----</p> <p>15 NO. PAGE</p> <p>16</p> <p>17 (Exhibit 1005 for identification, 27</p> <p>18 Swift reference, shown to</p> <p>19 witness.)</p> <p>20</p> <p>21 (Exhibit retained by counsel)</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	4 WITNESS	EXAMINED BY	PAGE	5 DEAN NEIKIRK,	Mr. Price	4	6 PH.D.			7	Mr. Davis	149
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<p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.</p> <p>2 DEPOSITION ERRATA SHEET</p> <p>3</p> <p>4</p> <p>5 Our Assignment No.: 1041</p> <p>6 Case Caption: Samsung v. Collect, LLC</p> <p>7</p> <p>8 DECLARATION UNDER PENALTY OF PERJURY</p> <p>9</p> <p>10 I declare under penalty of</p> <p>11 perjury that I have read the entire</p> <p>12 transcript of my Deposition taken in the</p> <p>13 captioned matter or the same has been read</p> <p>14 to me, and the same is true and accurate,</p> <p>15 save and except for changes and/or</p> <p>16 corrections, if any, as indicated by me on</p> <p>17 the DEPOSITION ERRATA SHEET hereof, with</p> <p>18 the understanding that I offer these</p> <p>19 changes as if still under oath.</p> <p>20</p> <p>21 DEAN NEIKIRK, PH.D.</p> <p>22 Subscribed and sworn to on the ____ day of</p> <p>23 _____, 20 ____ before me.</p> <p>24</p> <p>25 Notary Public,</p> <p>in and for the State of _____.</p>	<p>1 CONFIDENTIAL - DEAN NEIKIRK, PH.D.</p> <p>2 DEPOSITION ERRATA SHEET</p> <p>3 Page No.____Line No.____Change to:_____</p> <p>4</p> <p>5 Reason for change:_____</p> <p>6 Page No.____Line No.____Change to:_____</p> <p>7</p> <p>8 Reason for change:_____</p> <p>9 Page No.____Line No.____Change to:_____</p> <p>10</p> <p>11 Reason for change:_____</p> <p>12 Page No.____Line No.____Change to:_____</p> <p>13</p> <p>14 Reason for change:_____</p> <p>15 Page No.____Line No.____Change to:_____</p> <p>16</p> <p>17 Reason for change:_____</p> <p>18 Page No.____Line No.____Change to:_____</p> <p>19</p> <p>20 Reason for change:_____</p> <p>21 Page No.____Line No.____Change to:_____</p> <p>22</p> <p>23 Reason for change:_____</p> <p>24</p> <p>25</p>												

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