

IN THE UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF CALIFORNIA

APPLE INC. )  
)  
)  
)  
VERSUS ) CAUSE NO.  
) IPR201801276  
)  
)  
QUALCOMM INCORPORATED )  
\_\_\_\_\_ )

DEPOSITION OF  
DR. JOHN DAVID VILLASENOR  
1300 MCKINNEY STREET, SUITE 5100  
HOUSTON, TEXAS 77010  
JULY 11, 2019  
9:15 A.M.

REPORTED BY:  
CHÉRIE E. WHITE  
CCR (LA), CSR (TX), CSR (MS), RPR  
NO. 19-80105

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S T I P U L A T I O N

IT IS HEREBY STIPULATED AND AGREED by and between counsel for the parties hereto that the deposition of the aforementioned witness is hereby being taken under the Louisiana Code of Civil Procedure, Article 1421, et seq., for all purposes, in accordance with law;

That the formalities of reading and signing are specifically waived;

That the formalities of sealing, certification and filing are specifically waived;

That all objections, save those as to form of the question and the responsiveness of the answer, are hereby reserved until such time as this deposition, or any part thereof, may be used or sought to be used in evidence.

\* \* \* \*

CHERIE E. WHITE, Certified Court Reporter,  
in and for the Parish of Orleans, State of  
Louisiana, officiated in administering the oath.

1 DR. JOHN DAVID VILLASENOR,  
2 after first having been duly sworn by the  
3 above-mentioned court reporter, did testify as  
4 follows:

5 EXAMINATION BY MR. AMON:

6 Q. Good morning, Dr. Villasenor.

7 A. Good morning.

8 Q. Could you please provide your full  
9 name and spell your last name for the record?

10 A. John David Villasenor,  
11 V-I-L-L-A-S-E-N-O-R.

12 Q. And could you please provide your  
13 address for the record?

14 A. Home address?

15 Q. Business address is fine.

16 A. Gosh. I always have trouble with  
17 the UCLA address.

18 Q. Or -- or you could provide home,  
19 whichever is easier for you.

20 MR. ROBINSON:

21 You may not want his home address on  
22 the record since this is --

23 THE WITNESS:

24 I can give you an address of UCLA.

25 I'm just not -- 405 Hilgard Avenue,

1           Los Angeles, California 90095; and that's  
2           somewhere on the campus, but it's a big  
3           campus, but I just remember using that as  
4           a mailing address at one point.

5       BY MR. AMON:

6           Q.     That's fine. You understand we are  
7           here to take your deposition today?

8           A.     Yes, I do.

9           Q.     And you've been deposed before,  
10          correct?

11          A.     Yes, I have.

12          Q.     When was the last time you were  
13          deposed, if you recall, approximately?

14          A.     Roughly, a month or two ago for  
15          maybe -- maybe closer to two months ago. I think  
16          it's -- I think that's about what it was.

17          Q.     And was that in a patent dispute?

18          A.     That was in a patent dispute. I was  
19          representing a company called Rohde & Schwarz.

20          Q.     And you sit through depositions on a  
21          fairly regular basis as part of your activities;  
22          is that fair?

23          A.     Well, I'm not sure what "fairly  
24          regular" is. I have certainly been deposed  
25          numerous times, but it's -- it's sporadic. It

1 depends on, you know, the -- the matters, the  
2 pace of matters I might be involved in.

3 Q. But this isn't your first time at  
4 the rodeo?

5 A. I have not -- this is not my first  
6 time being deposed, that's correct.

7 Q. Do you -- can you estimate how many  
8 times you've been deposed in the last two years?

9 A. In the last two years, I -- I don't  
10 recall. I believe -- I'm not sure if there was a  
11 list. I do have a list of matters I've been  
12 deposed in that I often have to submit. I don't  
13 recall if I've submitted it. So the reason I  
14 mention that is because I do have that  
15 information, but I don't recall whether it was  
16 part of the record in this proceeding or -- or  
17 not.

18 Q. Yeah. And I'll help -- I'll try to  
19 help you with that because I looked for it.

20 MR. AMON:

21 I'm going to hand you what has been  
22 previously marked as Exhibit 2002 to the  
23 IPR ending in '1250.

24 (Document tendered.)

25 BY MR. AMON:



1           Q.     And I'll ask you to identify  
2 Exhibit 2002, please?

3           A.     This looks like a CV, including the  
4 list of technical publications.

5           Q.     And this is your CV, fair?

6           A.     As far as I can tell. I mean, I  
7 haven't looked at every page, but this looks  
8 like -- looks like it.

9           Q.     And do you see the list of matters  
10 in which you've been deposed on this version of  
11 your CV?

12          A.     I don't -- I don't, but I  
13 wouldn't -- I don't include that, at least when I  
14 think of a CV, I don't think of a document that  
15 includes the matters I've been deposed on. I  
16 usually submit that when asked as a separate  
17 document.

18          Q.     Let me ask a different question.  
19 Can you estimate how many times you've been  
20 deposed in the last year, say?

21          A.     In the last year. Maybe four to  
22 six, but -- but that's a guess and it could be --  
23 that's just an estimate. I don't know for sure.

24          Q.     And in the last two years, have you  
25 been deposed in other matters for where you were

1 acting as an expert on behalf of Qualcomm®?

2 A. Yes, I believe I have. Yes, I think  
3 it was in relation to the district court case  
4 between Apple and Qualcomm® I believe I was  
5 deposed, and maybe you deposed me, I think.

6 Q. Good memory.

7 A. Yeah. And there may have been -- I  
8 can't remember whether -- can't remember whether  
9 there was -- there was another one or not. I  
10 just don't recall.

11 Q. You understand that your testimony  
12 here today is as if you were testifying before  
13 the PTAB?

14 A. Yes, I do.

15 Q. And if I use the abbreviation PTAB,  
16 do you know what that's referring to?

17 A. I think it's the Patent Trial and  
18 Appeals Court (sic).

19 Q. Perfect. And you understand that  
20 the PTAB may hear or read the testimony you  
21 provide here today?

22 A. Yes, I do.

23 Q. Dr. Villasenor, as I'm sure you're  
24 aware, it's important that you provide verbal  
25 answers, so nods of the head, uh-huh, uh-uh,

1 other nonverbal responses are difficult for the  
2 court reporter to record, so I will ask you to  
3 provide verbal responses to the -- to the extent  
4 possible. Do you understand that?

5 A. Yes, I do.

6 Q. And will you agree to do that?

7 A. I will do my best.

8 Q. Thank you. That's all we can ask.

9 You understand that you've given an  
10 oath here today?

11 A. Yes, I do.

12 Q. And that oath requires you to tell  
13 the truth --

14 A. Oh, yeah.

15 Q. -- yes?

16 A. Yes.

17 Q. The whole truth?

18 A. Yes.

19 Q. And nothing but the truth?

20 A. Yes. That's what I understand,  
21 yeah.

22 Q. And you'll do that?

23 A. Yes. To the best of -- now, I will  
24 testify honestly to the best of my knowledge. If  
25 I'm informed of something which is factually not

1 true and I say it, right. Right. So what I mean  
2 by that is if I'm told that, you know, a party  
3 filed a document on April 3rd and I say the party  
4 filed the document on April 3rd and it turns out  
5 the information given to me was incorrect, then  
6 that technically is not a true statement, but it  
7 would be true to the best of my knowledge.

8 Q. Okay. I -- I understand. I think I  
9 understand. I just want to make sure the record  
10 is clear because I don't want to misconstrue your  
11 words.

12 A. Right.

13 Q. And -- and the reason I say that is  
14 because what you testified a moment ago is, I  
15 won't testify honestly to the best of my  
16 knowledge.

17 A. Oh, sorry. That's a miss -- I will  
18 testify honestly to the best of my knowledge, but  
19 yeah.

20 MR. ROBINSON:

21 Thank you.

22 THE WITNESS:

23 I will attempt to be as accurate as  
24 possible and not -- not intentionally say  
25 anything that I know not to be true.

1 BY MR. AMON:

2 Q. I appreciate that. I plan to take a  
3 break about every hour. The only thing that I  
4 ask. And sorry. If -- if you need to take a  
5 break sooner than that, will you please let me  
6 know?

7 A. Yes.

8 Q. The only thing I ask is that if a  
9 question is pending that you answer the question  
10 before we take a break. Can we agree on that?

11 A. Yes.

12 Q. Are you being represented by counsel  
13 here today, Dr. Villasenor?

14 A. Yes. To my right is Eagle Robinson,  
15 who is I believe representing me.

16 Q. Do you recall when that  
17 representation started for this matter?

18 A. Well, when you are talking about  
19 that representation, you are talking about the  
20 firm and not Eagle Robinson specifically, right?

21 Q. Well, that -- it's a fair question.  
22 Let's start first with do you recall when the  
23 representation by the firm Norton Rose Fulbright  
24 related to the '132 IPR was commenced?

25 A. I'm not sure. I guess, I didn't

1 really think of -- well, two questions: I --  
2 I -- when I'm doing my IPR work, I didn't think  
3 of that as work in which the firm was  
4 representing me, so I'm not sure if your question  
5 is directed towards that or towards the specific  
6 issue of representation for the purposes of this  
7 deposition.

8 Q. Fair. Fair point, Dr. Villasenor.  
9 Let's take a step back. Do you recall when  
10 Norton Rose Fulbright retained you for work in  
11 the '132 IPRs?

12 A. I don't.

13 Q. For purposes of this deposition, do  
14 you recall when the -- the firm's representation  
15 of you began?

16 MR. ROBINSON:

17 Objection to the extent it calls for  
18 a legal conclusion or characterization.

19 THE WITNESS:

20 I -- I don't recall. I -- I don't  
21 recall there being a -- sort of a bright  
22 line day when anyone said to me, okay, I  
23 mean, starting today we are representing  
24 you. I think it's common practice when an  
25 expert is retained by a firm on behalf of

1           a client, that when the expert is deposed,  
2           an attorney from that firm also represents  
3           the expert during the deposition, but I  
4           don't recall any specific formal  
5           declaration on any particular date about  
6           that.

7   BY MR. AMON:

8           Q.     Do you recall when your work on the  
9           '132 IPRs commenced?

10          A.     I don't.

11          Q.     You understand that Mr. Robinson may  
12          pose objections from time to time during this  
13          deposition?

14          A.     I do, yes.

15          Q.     And do you also understand that  
16          unless he instructs you not to answer you are  
17          obligated to answer my questions to the best of  
18          your ability?

19          A.     Actually, I don't -- I don't fully  
20          agree. For example, if you ask me to divulge  
21          confidential information of a third party, even  
22          if he objected, I would not answer that question.

23          Q.     Okay. Even though you are obligated  
24          to do so, you understand that?

25          A.     I mean, I don't think I'm obligated

1 to divulge confidential information of a -- of a  
2 nonparty. I don't believe that's a correct  
3 statement of the law.

4 Q. You understand that you're here  
5 subject to a court order requiring you to be  
6 deposed?

7 A. I understand that I'm obligated  
8 to -- to appear for a deposition. I don't recall  
9 seeing a court order.

10 Q. If for any reason you don't  
11 understand a question that I ask, will you let me  
12 know?

13 A. Yeah.

14 Q. If you answer my questions without  
15 asking me to clarify, I'm going to interpret that  
16 as an indication you understood my question; is  
17 that -- is that a fair assumption?

18 A. I will try to understand the  
19 question to the best that I can, yes.

20 Q. And if you don't ask me to clarify,  
21 is it fair to assume that you understood what I  
22 asked?

23 MR. ROBINSON:

24 Objection. Calls for speculation.

25 THE WITNESS:



1                   Again, to the best of my ability.  
2                   There is -- as we all know, there's  
3                   situations where I can understand -- I can  
4                   have what I think is an understanding and  
5                   that might diverge from your  
6                   understanding, but if we -- if neither of  
7                   us knows that, I could answer the  
8                   question; and so subject to the  
9                   clarification, I can answer that, yes.

10       BY MR. AMON:

11               Q.     Any reason you can't give your best  
12       testimony today?

13               A.     Not that I'm aware of.

14               Q.     Did you take any medications  
15       currently that would effect your ability to  
16       testify?

17               A.     I am not taking any medications.

18               Q.     Did you get a decent night's sleep?

19               A.     Reasonable enough.

20               Q.     Anything else that would impair your  
21       ability to testify here today?

22               A.     Not that I'm aware of.

23               Q.     Dr. Villasenor, since it's in front  
24       of you, could I ask you to review Exhibit 2002,  
25       which you've previously identified as your

1 curriculum vitae, and tell me if that accurately  
2 reflects your educational and professional  
3 background?

4 A. I -- yes, it does. The only minor  
5 thing I changed is I think my title is slightly  
6 different at -- at Stanford than it is. It says  
7 -- it's me listed here, so it's actually senior  
8 fellow, but that's a small change.

9 Q. So just to be clear, I understand  
10 for university it should read national senior  
11 fellow or just senior fellow?

12 A. Senior fellow. They have -- they  
13 have changed it over the years and I don't seem  
14 to have updated this, but it was national fellow,  
15 then they called it visiting fellow and now they  
16 call it senior fellow, but -- but that's not --  
17 not shown here.

18 Q. Okay. But other than that, it  
19 accurately reflects your educational and  
20 professional background?

21 A. It does. Also, I mean, again,  
22 there's another title change at UCLA that I don't  
23 think is material, but it said visiting professor  
24 of law. That's no -- no longer true. I'm  
25 actually listed on the faculty without -- not

1 a -- not a visiting professor.

2 Q. And what courses do you teach as a  
3 professor of law?

4 A. I created and teach a course on  
5 digital technologies in The Constitution. So we  
6 look at what really interesting and important  
7 constitutional law questions are relating to new  
8 technology, so issues like digital privacy and so  
9 on and looked at it through the lens of -- you  
10 know, I think entered the First, Fourth and Fifth  
11 Amendment commerce course questions. I also  
12 created and taught a course on -- on block chain  
13 technologies.

14 Q. And what was the course on block  
15 chain technologies as it relates to the law  
16 school or as you being a professor of law?

17 A. I just looked at the technology of  
18 block chain technologies, and more broadly the  
19 law school is trying to -- I think they are  
20 trying to bring more technology, more instruction  
21 from people who have a background in technology  
22 so the students can get exposed to, you know,  
23 some of those issues from a technologically  
24 informed perspective.

25 Q. But you don't have a juris doctorate

1 degree, correct?

2 A. That is correct, I do not.

3 Q. You did not attend law school?

4 A. That is correct.

5 Q. You are not a lawyer?

6 A. That is correct.

7 Q. You have not sat for or taken a bar

8 exam in any state in the United States?

9 A. That is correct.

10 Q. Have you sat for or taken the patent

11 examiners exam?

12 A. The patent bar?

13 Q. Yeah.

14 A. I have not.

15 Q. Have you received any honorary

16 degrees in the area of law?

17 A. I have not.

18 Q. How long have you been a professor

19 of law?

20 A. That's a strange -- I mean, it's a

21 perfectly reasonable question, but it's -- it's

22 a -- it's a strange -- academia is a strange

23 place. So technically since last July, but I

24 actually only found out about that, I don't know,

25 a month, couple months, two months ago or

1 something. They -- they do these strange things  
2 called retroactive appointments in academia, so  
3 they didn't actually make that decision until  
4 late this spring and then they told me it was  
5 retroactive until last summer. So I'm not sure  
6 what that means in terms of what the right date  
7 is, but that's -- that's what I know.

8 Q. Okay. And, as far as you know,  
9 therefore you've been a professor of law since  
10 July of 2018, fair?

11 A. I've been on the faculty in the law  
12 school. The law school has multiple people who  
13 don't have law degrees who teach there, and I'm  
14 one of them.

15 Q. No. I understand, but I don't think  
16 that answered my question. My question was, as  
17 far as you know, you've been on the faculty at  
18 the law school since July of 2018?

19 A. Again, it depends because prior to  
20 that I was appointed as a visiting professor, so  
21 it depends on what you mean by "on the faculty."

22 Q. Well, I'm just using the testimony  
23 in the words that you just provided. So as far  
24 as you know, when did you begin -- when did your  
25 tenure as a faculty member of the law school

1 begin?

2 A. It depends what you mean by "faculty  
3 member." If -- if -- I'll ask you to clarify.  
4 Do you mean by a visiting professor is that -- is  
5 that a faculty member?

6 Q. Well, let's -- let's take it in  
7 pieces. When did you begin as a full-time  
8 faculty member of the law school?

9 A. Well, I don't think I would call  
10 myself a full-time faculty member of the law  
11 school. It's one -- one of multiple schools I  
12 teach at.

13 Q. So on your CV you made a correction,  
14 which -- sorry. Let me take a step back. On  
15 your CV, which is Exhibit 2002 to the '1250 IPR,  
16 you made a correction to your title at the  
17 University of California Los Angeles to where you  
18 removed the word visiting professor and said you  
19 were now a professor of law. As far as you know,  
20 did that title change/commence in July of 2018?

21 A. I was told after, yeah. Although, I  
22 didn't know that until -- I mean, again, it's  
23 this -- it's this strange thing at the  
24 university. As of August 2018, if you had asked  
25 anybody if the formal title was -- was not --

1     that title had not changed. That hadn't even  
2     been approved yet by anybody. And then -- and so  
3     through -- including through the time when I  
4     submitted this CV, I had no formal knowledge that  
5     the title change had occurred and then I was  
6     informed -- then again, they go through these  
7     approval processes and then they essentially  
8     retroactively make that status change. So -- so  
9     I guess if you had asked somebody in July of  
10    2018, then they would have said no, you don't  
11    have the sort of formal, you know, kind of  
12    non-visiting title, you just have the visiting  
13    title. And then if you asked them now looking  
14    back to July, they'd say, well, actually, no, you  
15    didn't have the visiting title, you have the  
16    non-visiting -- you had the non-visiting title,  
17    so you would get two different answers to the  
18    same question, both of which would be truthful  
19    answers, but they would be contradictory just  
20    because of this retroactive thing that they do.

21           Q.     Let me ask hopefully -- what will  
22    hopefully be a simpler question. When did you  
23    become a visiting professor of law at UCLA Law  
24    School?

25           A.     The first time would have been

1 maybe, I don't remember, roughly, four years ago  
2 when I started teaching the technology class  
3 related to the constitutional law questions. But  
4 I don't remember exactly what year it would have  
5 been.

6 Q. So roughly, 2015?

7 A. Roughly, but -- you know, but I  
8 don't -- again, I don't remember.

9 Q. Dr. Villasenor, do you consider  
10 yourself a constitutional law scholar?

11 A. Not in the sense of, you know, there  
12 are people that have full careers in that. No.  
13 I consider myself a technology scholar who  
14 engages with people not only in engineering  
15 schools.

16 MR. AMON:

17 I am going to hand you what has been  
18 previously marked 2001 in the IPR named  
19 '1250.

20 (Document tendered.)

21 BY MR. AMON:

22 Q. I'll ask you to identify what is  
23 Exhibit 2001 in the IPR named '1250, please?

24 A. This appears to be the declaration I  
25 submitted in relation to the '1250 IPR.



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MR. AMON:

I'm also going to hand you what has  
been previously marked as Exhibit 2005 in  
the '1251 IPR.

(Document tendered.)

BY MR. AMON:

Q. And I'll ask you to identify what is  
Exhibit 2005, please?

A. Again, you know, without -- without  
looking at all the pages, based on the cover, it  
looks to be the declaration I submitted in the  
'1251 IPR.

Q. If you look at Exhibit 2001 for the  
'1250, and I'll ask you to take a look through  
that, is there any reason to believe that is not  
a true, correct, and complete copy of the  
declaration that you submitted?

A. Again, I -- I have no reason to  
believe that -- if someone went in here and  
changed a word, I obviously wouldn't know that,  
but -- but I have no reason to believe that that  
has happened.

Q. And same question with respect to  
Exhibit 2005 in the '1251, do you have any reason  
to believe that that is not a true, complete, and

1 correct copy of the declaration you submitted in  
2 the '1251 declaration?

3 A. Same answer.

4 Q. Dr. Villasenor, with respect to the  
5 Exhibit 2001 in the '1250 IPR, do you wish to  
6 make any modification to your declaration at this  
7 time?

8 A. Not that I'm aware of.

9 Q. Do you wish to supplement anything  
10 at this time?

11 A. Nothing specific comes to mind;  
12 although, I reserve the right to give an answer  
13 which might be viewed as supplementation.

14 Q. Anything at all you want to change  
15 about your declaration, Exhibit 2001, in the  
16 '1250 IPR?

17 A. Not that I'm aware of.

18 Q. Same questions with respect to  
19 Exhibit 2005 in the '1251 --

20 A. Same --

21 Q. -- IPR?

22 A. Same answers.

23 Q. I'm sorry. One of the things that I  
24 failed to mention earlier is if we can -- for the  
25 court reporter's sake, if we could try not to

1 speak over one another. If you give me the  
2 courtesy of -- of letting me finish my question,  
3 I'll extend that same courtesy. Can we agree on  
4 that?

5 A. I will try to do that, yeah.

6 Q. Thank you. Dr. Villasenor, do you  
7 have an estimate of the amount of time that you  
8 spent working on the '132 patent IPRs?

9 A. I don't.

10 Q. Was it more than ten hours?

11 A. I expect it probably was.

12 Q. Do you expect it was more than  
13 50 hours?

14 A. You know, I -- I don't know. I --  
15 decent chance it was, but I haven't tallied it  
16 that way.

17 Q. How did you tally it?

18 A. That's varied over time. So I don't  
19 remember specifically, but if -- if I recall --  
20 it's been a while, but if I recall, these IPRs  
21 arose in conjunction with the district court  
22 litigation. And, gosh, I think it might have  
23 been 2402 is the district court litigation, the  
24 last four digits of the caption; although, I may  
25 be wrong about that. But my recollection is that

1 I was on billing for all my work in relation to  
2 that district court litigation, which included  
3 the IPRs. And then there was some points in time  
4 where I tallied stuff separately for different  
5 IPRs and then I started just tallying all the IPR  
6 work because I'm -- I'm involved in three IPRs.  
7 I just stopped breaking them out by IPR. I just  
8 started tallying them in totals. So that's a  
9 long answer explaining why it's -- it's all sort  
10 of mixed in.

11 Q. Is it fair that you spent a  
12 substantial amount of time working on the IPRs  
13 related to the '132?

14 A. And actually, I'm sorry. I  
15 should -- just to clarify a previous answer, I  
16 said I was working on multiple IPRs. I -- I  
17 should -- since there are two IPRs for the -- for  
18 the '132, I should clarify that what I meant is  
19 that I'm working on multiple IPR -- multiple  
20 patents that are subject to IPRs. So there's  
21 three different patents, and I -- I have I think  
22 spent a substantial amount of time in that work,  
23 but I don't recall how much.

24 Q. And your declaration is a result of  
25 that substantial, thoughtful work that you've put

1 into those IPRs for the '132, correct?

2 A. Well, I try to be thoughtful in --  
3 in the work.

4 Q. And you -- you believe you've done a  
5 thorough investigation with respect to the '132  
6 IPRs, correct?

7 A. I've -- I've tried to be thorough.  
8 I mean, there may be a typo or something in here,  
9 but I've -- I've tried to be thorough.

10 Q. And just so the record's clear, you  
11 mentioned that you are working on IPRs for three  
12 patents on behalf of Qualcomm®, correct?

13 A. That's right.

14 Q. The other two patents are -- and I'm  
15 just going to refer to the last three numbers --  
16 are the '861 patent; is that one of them?

17 A. Yes, it is.

18 Q. And then the other one would be the  
19 patent ending in 865; is that correct?

20 A. That is correct.

21 Q. Dr. Villasenor, do you know your  
22 billable rate for the IPR work?

23 A. Do I know what I'm charging in terms  
24 of hourly rate?

25 Q. Yes.

1           A.     Yes, of course, I know.

2           Q.     And what is that?

3           A.     It's \$800 an hour.

4           Q.     Aside from the IPRs related to the  
5     '132, the '861, and the 865 patent, and the  
6     corresponding district court litigation, have you  
7     worked for Qualcomm® on other matters in the last  
8     four years?

9           A.     Yes, I have.

10          Q.     Do you know -- can you estimate  
11     approximately how many other matters you worked  
12     on Qualcomm® during the last four years?

13          A.     I don't know precisely. So, for  
14     example, I don't -- I was involved in the  
15     Apple/Qualcomm® litigation and so I don't know  
16     how you would count that in terms of matters.

17          Q.     Okay. Did you have different  
18     billing numbers for each different Qualcomm®  
19     matter?

20          A.     My recollection is for the  
21     Apple/Qualcomm® cases that there were two.  
22     Again, I may be misrecalling, but I recall that  
23     there were two different district court actions  
24     that I was involved in. I mean, I think there  
25     was a lot more than that between the parties, but

1       that I was involved in that I recall.

2                       Right now I recall two, and one of  
3       which is the matter that led to these IPRs, and  
4       the other which for whatever reason didn't or at  
5       least didn't lead to the other IPRs I'm involved  
6       in; and I did bill separately for those two  
7       matters.

8               Q.       Aside from the Apple/Qualcomm®  
9       matters, have you been retained by Qualcomm® for  
10      other matters during the last four years?

11              A.       Yes, I have.

12              Q.       And do you -- can you estimate how  
13      many other matters, besides the Apple/Qualcomm®  
14      matters, that you've been retained by Qualcomm®?

15              A.       I don't know with certainty. It's a  
16      small number, but I don't -- I don't know the  
17      exact number.

18              Q.       When you say "it's a small number,"  
19      less than five?

20              A.       Probably less than five, yes, but  
21      I -- I don't -- I'm not sure.

22              Q.       Would those be listed on this  
23      document that you maintain regarding depositions  
24      and cases you've been retained on?

25              A.       To the extent that I have been

1     deposed, that's true. But it would not be true  
2     for matters that I haven't been deposed in.

3             Q.     Have you been -- strike that. Do  
4     you know if you've been retained by Qualcomm® on  
5     matters in -- during the last four years for  
6     which you have not been deposed?

7             A.     Yes.

8             Q.     And you've also been retained by  
9     Qualcomm® matters during the last four years  
10    during -- for which you have been deposed other  
11    than the Apple/Qualcomm® matters?

12            A.     Actually, not sure if that's -- I  
13    don't -- sitting here now, I don't actually  
14    recall.

15                   Well, there's one matter that was  
16    listed is the NVIDIA®/Qualcomm® case I was  
17    deposed for. I don't know. Like I don't recall  
18    whether that was -- whether I was retained before  
19    -- early than -- more than four years ago or  
20    less, but that's one matter that comes to mind  
21    that's I was deposed in and that was an Apple --  
22    that was not an Apple matter. It was a Qualcomm®  
23    matter, but it was -- it was quite a while ago.

24            Q.     Dr. Villasenor, if I could ask you  
25    to look at Exhibit 2001 for the '1250 IPR matter.



1 If I could ask you to turn to paragraphs 26  
2 through 29 of that declaration.

3 A. (Complied.) Okay.

4 Q. And -- and I am -- just for the sake  
5 of efficiency, I'm -- I'm not trying to put any  
6 words in your mouth. Is it fair that paragraphs  
7 26 through 29 of your declaration, you provide  
8 your Understanding of the Law of Anticipation and  
9 Obviousness?

10 A. Well, the titled section is titled  
11 Understanding of the Law of Anticipation and  
12 Obviousness, and so this is text that was  
13 provided by the attorneys and that I read and  
14 understood.

15 Q. And you anticipated one of my  
16 questions, which was if this was provided by the  
17 attorneys; and you answered it was, correct?

18 A. That's right.

19 Q. And if I asked you the same question  
20 about Exhibit 2005 on the '1251 at paragraphs  
21 20 -- 22 through 25, would your answer be the  
22 same?

23 A. I'm sorry. Which paragraphs?

24 Q. 22 through 25.

25 A. Yes, it's -- it's the same. I think

1 the text is identical.

2 Q. And, again, that was provided to you  
3 by the attorneys, correct?

4 A. My legal understanding is it was  
5 provided to me by the attorneys, that's correct.

6 Q. Turning back to Exhibit 2001 in your  
7 declaration that -- on the '1250 now at  
8 paragraph 37, you write, "It is my opinion that  
9 none of the Grounds 1A, 1B or 1C render the  
10 challenge claims unpatentable." Did I read that  
11 correctly?

12 A. Yes.

13 Q. And is -- is it fair that your  
14 opinion there summarizes that you don't believe  
15 that any of the grounds render the challenge  
16 claims either anticipated -- unpatentable as  
17 either anticipated or obvious?

18 A. My understanding is yeah, yeah.  
19 Something that -- that those would be the two  
20 ways in which they could be deemed unpatentable  
21 in an IPR.

22 Q. In reaching your opinion, what  
23 burden of proof did you apply to reach that  
24 conclusion?

25 MR. ROBINSON:

1                   Objection to form.

2           THE WITNESS:

3                   I'm sorry. I didn't understand  
4           the -- the question again?

5   BY MR. AMON:

6           Q.     Sure. In reaching that opinion that  
7   none of the Grounds 1A, 1B or 1C render the  
8   challenge claims unpatentable as anticipated  
9   or -- or obvious, what burden of proof did you  
10   apply to reach that conclusion?

11          MR. ROBINSON:

12                   Objection to form.

13          THE WITNESS:

14                   Well, I think under the -- the  
15   conclusion doesn't -- doesn't change  
16   depending on the burden of proof whether  
17   it's preponderance or clear and  
18   convincing.

19   BY MR. AMON:

20           Q.     I appreciate that. What burden of  
21   proof did you apply for purposes of the '132  
22   IPRs?

23          MR. ROBINSON:

24                   Objection to form.

25          THE WITNESS:

1                   Yeah. I mean, I -- I looked at them  
2                   both, but it didn't -- didn't even reach  
3                   the threshold for preponderance, so it  
4                   doesn't matter.

5       BY MR. AMON:

6               Q.     I'm sorry. Did you say you looked  
7       at it through both?

8               A.     Yeah.

9               Q.     Okay. And so you did an analysis  
10      using both preponderance and clear and convincing  
11      evidence?

12              MR. ROBINSON:

13                    Objection, form.

14              THE WITNESS:

15                    Well, I did an analysis with  
16      preponderance in mind, and had I found  
17      something to be unpatentable in  
18      preponderance, then I guess the question  
19      of whether the correct burden is the  
20      formal requirement is preponderance or  
21      clear and convincing would matter, but --  
22      but it doesn't matter in this case.  
23      For -- for me, it doesn't matter. It  
24      matters -- it may -- it may matter in a  
25      formal sense, but it's not -- it doesn't

1           even reach the preponderance level.

2       BY MR. AMON:

3           Q.     And where do you state that in your  
4       declaration?

5           A.     I don't -- I don't recall that I  
6       did. I've provided it to you now.

7           Q.     Is this the first time you've  
8       thought about what standard to apply in rendering  
9       the -- whether -- whether the Grounds 1A, 1B or  
10      1C would render the challenge claims  
11      unpatentable?

12          A.     Not at all. I think quite a lot  
13      about burden of proof. I've even written a paper  
14      about it.

15          Q.     Do you know what burden of proof  
16      applies for purposes of IPR?

17      MR. ROBINSON:

18              Objection, form.

19      THE WITNESS:

20              I don't recall. I think it might  
21      be -- I think it might be clear and  
22      convincing, but I'm not sure.

23      BY MR. AMON:

24          Q.     Would your answers to the questions  
25      that I just asked regarding burden of proof be

1 the same with respect to the conclusions that you  
2 draw in Exhibit 2005 in the '1251 --

3 A. Yes.

4 Q. -- IPR? Sorry. And would your  
5 answers be the same for the declarations that you  
6 submitted in the '861 IPR?

7 A. Yes.

8 Q. And would your answers be the  
9 same --

10 MR. ROBINSON:

11 Objection, form. Beyond the scope.

12 MR. AMON:

13 I'm not asking substantively. I'm  
14 asking about the burden of proof.

15 BY MR. AMON:

16 Q. And would you --

17 MR. ROBINSON:

18 We are not here to talk about the  
19 '861 or the 865, though.

20 BY MR. AMON:

21 Q. And would your answers be the same  
22 for the burden of proof questions that I just  
23 asked with respect to your declaration in the  
24 865 IPR?

25 MR. ROBINSON:

1                   Objection to form.

2                   THE WITNESS:

3                   In -- in none of those patents did I  
4                   find they are even reaching the  
5                   preponderance level.

6                   BY MR. AMON:

7                   Q.     Yes, sir. But that doesn't answer  
8                   my question. Would your answers be the same for  
9                   the declaration that you submitted -- for the  
10                  declaration you submitted in the IPR regarding  
11                  the 865 patent?

12                  A.     For all --

13                  MR. ROBINSON:

14                  Objection, form.

15                  THE WITNESS:

16                  For all of the three patents, all of  
17                  the art and assertions fail to meet even  
18                  the preponderance standard.

19                  BY MR. AMON:

20                  Q.     I -- I appreciate that, but would  
21                  your answers regarding the burden of proof that  
22                  you applied be the same for the IPRs -- for the  
23                  declaration you submitted in the 865 IPR?

24                  MR. ROBINSON:

25                  Objection, form. Asked and

1 answered. Beyond the scope.

2 THE WITNESS:

3 Like I said, I applied -- I looked  
4 at it through both lenses and found that  
5 it didn't -- that in no case did it even  
6 pass the preponderance level. I mean,  
7 it's just in case so I don't get  
8 misquoted. It -- none of the claims are  
9 rendered unpatentable under a  
10 preponderance analysis and none of them  
11 are rendered unpatentable under a clear  
12 and convincing analysis. The answer to  
13 both is the same.

14 BY MR. AMON:

15 Q. And you believe that the burden of  
16 proof that applies in IPR is clear and  
17 convincing, correct?

18 MR. ROBINSON:

19 Objection, form. Asked and  
20 answered.

21 THE WITNESS:

22 Yeah. I don't recall. But, again,  
23 as I testified, it's -- it's -- it's  
24 irrelevant in this case.

25 BY MR. AMON:



1           Q.     If I could ask you to turn to  
2 paragraph 51 of your declaration in the '1250  
3 matter, which is Exhibit 2001.

4           A.     I'm sorry. Paragraph?

5           Q.     51.

6           MR. AMON:

7                     Hold on. Give me one second. Sorry  
8 for the delay, Dr. Villasenor.

9 BY MR. AMON:

10          Q.     At paragraph 51, the second sentence  
11 of that paragraph reads, "The POSITA would  
12 understand that matched in this context means  
13 that a particular type of correction is  
14 predetermined or signed to a particular image  
15 feature." Did I read that correctly?

16          A.     Yes.

17          Q.     And that definition from matched  
18 would apply to both the '1250 and the '1251  
19 petitions?

20          A.     Yes.

21          Q.     Where did you find that definition  
22 for the term "matched" for purposes of the '132  
23 patent?

24          MR. ROBINSON:

25                     Objection to form.

1 THE WITNESS:

2 Well, first of all, I didn't know  
3 that I would -- I didn't term it a  
4 definition, but if you ask, I guess -- so,  
5 I guess, what is the question? Can I  
6 understand the question -- can you  
7 rephrase the question, perhaps?

8 BY MR. AMON:

9 Q. What about my question didn't you  
10 understand, Dr. Villasenor?

11 A. Well, you called it a definition and  
12 I -- I didn't call it a definition, and so I just  
13 stated what a person of ordinary skill in the art  
14 would understand.

15 Q. The phrase reads "matched in this  
16 context means that a particular type of  
17 correction is determined or assigned to a  
18 particular image feature." That isn't a  
19 definition?

20 MR. ROBINSON:

21 Objection, form. Mischaracterizes  
22 testimony.

23 THE WITNESS:

24 Again, I hadn't thought of it  
25 specifically as a definition in the sense

1           of naming it that. I just was expressing  
2           a view of what a POSITA would understand  
3           matched to be -- to mean in this context,  
4           so that's -- that's how -- that's why I  
5           wrote it that way. I didn't write what  
6           the definition of matched is.

7           MR. AMON:

8                     I'm going to hand you what is  
9           Exhibit 1001 to the '1250 declaration,  
10          which is --

11          (Document tendered.)

12   BY MR. AMON:

13           Q.     And could I ask you to identify what  
14   is Exhibit 1001, please?

15           A.     This looks like the '132 patent.

16           Q.     And, for the record, it's US Patent  
17   No. 8,447,132; is that correct?

18           A.     That's right.

19           Q.     And that is the patent that is the  
20   subject of the '1250 and '1251 IPRs?

21           A.     Yes.

22           Q.     And you've reviewed this patent in  
23   preparing your declarations for the '1250 and  
24   '1251 IPRs --

25           A.     I --

1 Q. -- true?

2 A. I have reviewed the patent, that's  
3 right.

4 Q. Any reason to believe this -- that  
5 this is -- strike that.

6 Any reason to believe that  
7 Exhibit 1001 is not a true, correct, and complete  
8 copy of the '132 patent?

9 A. Well, I haven't paged through every  
10 page or every word, but I have -- if it hadn't  
11 been tampered with and if it is what it purports  
12 to be, then that -- that would be the case.

13 Q. Do you have any reason to believe  
14 it's not?

15 A. I'm not -- not aware of any.

16 Q. And if I refer to it by the last  
17 three numbers, the '132 patent, you'll understand  
18 what I'm referring to, Dr. Villasenor?

19 A. Yes, I will.

20 Q. Thank you. Let me come back to my  
21 question about your statement that matched in  
22 this context means that a particular type of  
23 correction is predetermined or assigned to --  
24 predetermined or assigned to a particular image  
25 feature as contained in paragraph 51 of your

1 declaration, Exhibit 2001. Is there a statement  
2 in the '132 patent, Exhibit 1001, that reads  
3 "matched means that a particular type of  
4 correction is predetermined or assigned to a  
5 particular image feature"?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 I don't recall.

10 BY MR. AMON:

11 Q. Do you recall if the term "matched"  
12 appears anywhere in the specification of the '132  
13 patent other than in the claims?

14 A. I don't recall.

15 Q. When was the last time you looked at  
16 the '132 patent, Dr. Villasenor?

17 A. Yesterday.

18 Q. If I could ask you to look through  
19 the specification of the '132 patent?

20 And just, for the record, the  
21 specification is -- excluding the claims is about  
22 ten and a half columns long. So if I could ask  
23 you to look through that and tell me if you find  
24 any place in the specification that contains the  
25 statement "matched means that a particular type

1 of correction is predetermined or assigned to a  
2 particular image feature"?

3 A. Just for clarity, are you asking me  
4 to read the entire specification?

5 Q. The all ten and a half columns,  
6 yeah, and see if you find any place where the  
7 specification uses -- defines matched or uses the  
8 phrase matched as you have included in your  
9 paragraph 51?

10 A. Okay. So just so I don't -- I'm  
11 not -- I don't stand accused of running the  
12 clock, you are instructing me to read the entire  
13 specifications right now?

14 Q. All 11 columns, yeah.

15 A. Okay. (Complied.) Okay. So I  
16 don't -- the question again was?

17 Q. Let me -- let me ask a different  
18 question first.

19 A. Okay.

20 Q. Is there any place in the  
21 specification where you found the word matched is  
22 used?

23 A. I tried -- I -- I can't be sure. I  
24 didn't specifically notice it, but I was reading  
25 it fairly quickly given the circumstances.

1           Q.     Okay. But as far as you can tell,  
2     having spent the last bit of time reviewing the  
3     specification of the '132 patent, you haven't  
4     found any place where the word match or matched  
5     is referenced in the specification, correct?

6           A.     Well, first of all, it is in  
7     claim 1.

8           Q.     I said sorry. I'm sorry if my  
9     question was inaccurate. Let me -- let me be  
10    very clear because I want to make sure my  
11    question is clear for the record.

12                  When you spent the last 20 minutes  
13    reviewing the specification of the '132, you  
14    didn't find any place in the specification  
15    outside of the claims where the term match or  
16    matched is found, correct?

17           A.     In my brief review a moment ago, I  
18    didn't see that; although, you know, I -- I read  
19    it fairly quickly and under some pressure, and so  
20    I -- it would be easier if I had an electronic  
21    version to simply search, but I -- I -- I don't  
22    have that right now.

23           Q.     We will see if we can help you with  
24    that at one of the breaks.

25                  And in your review of the

1 specification of the '132 patent, did you find  
2 any place where matched -- where matched --  
3 excuse me. Strike that.

4 In your review of the '132  
5 specification, did you find any place in the  
6 specification where the phrase "matched" means  
7 that a particular type of correction is  
8 predetermined or assigned to a particular image  
9 feature is found?

10 A. Is there a question about that exact  
11 literal phrase or --

12 Q. Yeah.

13 A. Again, as I testified a moment ago,  
14 I don't recall seeing the word "matched." So by  
15 extension that means I don't recall seeing that  
16 phrase, although I can't be certain because I  
17 haven't -- again, I read it by eye in a  
18 relatively quick timeframe.

19 Q. For purposes of my next questions,  
20 and you can caveat it however you want, I'm going  
21 to ask you to assume that phrase and, in fact,  
22 the term "matched" doesn't appear any place in  
23 the '132 patent specification outside of the  
24 claims. In coming up with the -- your opinion  
25 that matched means that a particular type of



1 correction is predetermined or assigned to a  
2 particular image feature, did you rely on any  
3 contemporaneous textbooks in forming your  
4 opinion?

5 A. No. My recollection is that was my  
6 opinion derived from reading the specification.

7 Q. But you cite no portion of the  
8 specification for support that matched means a  
9 particular type of correction is predetermined or  
10 assigned to a particular image feature in  
11 paragraph 51, do you?

12 A. Well, I can tell you one for  
13 example.

14 Q. My question -- and I'm happy for you  
15 to look at the specification. I'll give you the  
16 opportunity to ask. My question is in  
17 paragraph 51 of your declaration, you don't cite  
18 to any portion of the specification in support of  
19 your opinion that matched means a particular type  
20 of correction is predetermined or assigned to a  
21 particular image feature, correct?

22 A. Well, in that paragraph there's no  
23 citation, but I can't be sure that there's not a  
24 citation somewhere else in my declaration that  
25 supports that, and I'm quite sure that the patent

1 spec also supports that.

2 Q. Dr. Villasenor, are you okay to keep  
3 going a couple more minutes or do you want to  
4 take a break?

5 A. Sure. I'll keep going.

6 Q. Applying your opinion that matched  
7 means that a particular type of correction is  
8 predetermined or assigned to a particular image  
9 feature, does that mean that in the context of  
10 the '132 patent, only certain corrections are  
11 going to be applied based on the image type  
12 detected?

13 MR. ROBINSON:

14 Objection to form.

15 THE WITNESS:

16 I'm not sure I understand that  
17 question.

18 BY MR. AMON:

19 Q. Well, I mean, as I -- as I  
20 understand your opinion, matched requires some  
21 linking or some correlation between the type of  
22 object detected and the correction that's to --  
23 that's to be applied; is that fair?

24 A. Well, I'd refer to say it how I said  
25 it. And then to the extent that you are

1 providing yet another interpretation of matched,  
2 I -- I'll stick with what I said, in a particular  
3 type of correction is predetermined to a  
4 particular image feature.

5 Q. Or assigned, right, because you used  
6 or assigned?

7 A. Right. I think I'm using that with  
8 predetermined together.

9 Q. So are those conjunctive or are they  
10 disjunctive, the terms predetermined or assigned?

11 MR. ROBINSON:

12 Objection to form.

13 THE WITNESS:

14 I was restating the -- the fact that  
15 it's predetermined, just stating that it's  
16 essentially the same thing.

17 BY MR. AMON:

18 Q. Okay. So you are using  
19 predetermined and assigned interchangeably?

20 A. Well, I think they are -- they  
21 are -- it's predetermined in the sense that  
22 it's -- it's -- and part of that predetermination  
23 is that it is assigned to that particular image  
24 feature.

25 Q. And so, based on that, does that

1 mean that in the context of the '132 patent and  
2 applying the method of the '132 patent that a  
3 correction -- that only a certain type of  
4 correction will apply based on the image feature  
5 detected?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 Again, I am not sure I understand --  
10 I understand that question.

11 BY MR. AMON:

12 Q. So if you have a face that's  
13 detected, as an example, okay, under the method  
14 of the '132 patent, does that mean that only gain  
15 or Dynamic Range Correction or color enhancement  
16 will be applied, depending on what is  
17 predetermined if a face is detected?

18 MR. ROBINSON:

19 Objection, form.

20 THE WITNESS:

21 I'm still not sure I understand the  
22 question. I'm not sure what "the only"  
23 means. I'm -- I'm -- it's a confusing --  
24 confusingly stated question, so I'm not  
25 sure I understand it.

1 BY MR. AMON:

2 Q. What don't you understand about my  
3 question, Dr. Villasenor?

4 A. If I had a realtime, I'd be in a  
5 better position to answer it; but it just seemed  
6 to be a little bit of a word soup, and so I  
7 wasn't sure whether "only" was meant to omit  
8 something, so it's -- it wasn't clear to me.

9 Q. Let me ask a different question.  
10 The specification of the '132 patent, which is  
11 Exhibit 1001, at column 3 -- just find my copy of  
12 it for a second. Sorry. And specifically at  
13 column 3, line 59 through 64 reads, "Note that  
14 the content-based technique introduced here is  
15 not necessarily limited to determining a gain  
16 adjustment" -- excuse me -- "a gain adjustment or  
17 to DRC. For example, other types of corrections  
18 or adjustments may be made based on image content  
19 as described herein; such as, contrast  
20 enhancement, color manipulation, sharpness  
21 adjustment, noise reduction, skin moving" --  
22 "skin smoothing," etc. Did I read that  
23 correctly?

24 A. Well, mostly, yes.

25 Q. Now, the specification of the '132

1 identifies different types of corrections, which  
2 include gain, DRC, contrast enhancement, color  
3 manipulation, sharpness adjustment, noise  
4 reduction, skin smoothing, correct?

5 A. Yes.

6 Q. Under the method of the '132 patent,  
7 is it possible that -- and let's assume that the  
8 predetermined object that the method identifies  
9 is a face, that all of those corrections could be  
10 applied if a face is detected.

11 MR. ROBINSON:

12 Objection, form.

13 THE WITNESS:

14 I guess I'm not sure of -- I mean,  
15 the patent -- the claim certainly  
16 covers -- it doesn't specify a specific  
17 correction, if that's what you're asking.

18 BY MR. AMON:

19 Q. Claim 1 does not, fair?

20 A. Yes. As determining a correction,  
21 and so I -- I don't think claim 1 is limited to  
22 one particular direction. In fact, the text --  
23 the text you just read identifies multiple  
24 corrections.

25 Q. And so under the method of the -- of

1 the '132 patent, claim 1, if a face is detected,  
2 you could apply each of those corrections to a  
3 face, as long as it's been predetermined that  
4 those corrections would apply if a face is  
5 detected, fair?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 Yeah. I'm not -- I'm not sure I  
10 understand -- I understand the question.  
11 The claim is -- I focused on the claim,  
12 which is directed towards one correction,  
13 "a" correction. And certainly it's not  
14 specific in the sense that the claim  
15 doesn't cover -- there are various kinds  
16 of corrections that could -- could be a  
17 correction in that language of -- of  
18 claim 1, and I think that's what that text  
19 that you read in column 3 was -- was  
20 referring to or is the context, so -- but  
21 other than that, I'm not understanding  
22 your question.

23 BY MR. AMON:

24 Q. Dr. Villasenor, you work on patent  
25 cases fairly regularly, don't you?

1           A.     Some. I mean, with some -- some  
2 regularity. It depends on the timing and so on.

3           Q.     You've worked on at least patent  
4 cases relating to the '132 patent, the '861, the  
5 '865 for Qualcomm®, correct?

6           A.     That's correct.

7           Q.     You've also worked on a patent case  
8 for Qualcomm® related to NVIDIA®, correct?

9           A.     Yes, that's right.

10          Q.     You've worked on patent cases for  
11 many other clients, correct?

12          A.     I'm not sure how many, but -- but  
13 certainly for other clients, yes.

14          Q.     You've testified at trial in patent  
15 cases, correct?

16          A.     Yes, I have.

17          Q.     Is it your understanding that when a  
18 patent claim uses the phrase "a," it's limited to  
19 singular?

20          MR. ROBINSON:

21                  Objection, form.

22          THE WITNESS:

23                  It's my understanding that to  
24 satisfy the claim, you have to -- you have  
25 to have -- you have to be able to identify



1 a correction and so that -- you know, so  
2 you can -- I understand you can do more  
3 than what is claimed, but I was focused on  
4 the one, a correction, because that's  
5 the -- the argument that was made by  
6 Dr. Bovik.

7 BY MR. AMON:

8 Q. I -- I understand that. You'll  
9 agree with me that "a" in a patent claim means at  
10 least one, right?

11 MR. ROBINSON:

12 Objection, form.

13 THE WITNESS:

14 I mean, I don't recall the specific  
15 federal circuit precedent or whatever, but  
16 I think "a" -- "a" can be satisfied by  
17 one, and if you satisfy it already and you  
18 add another one, it doesn't mean you no  
19 longer satisfy with one; but that's a --  
20 I'm not totally sure -- yeah, that's --  
21 that's just a general statement about  
22 patents.

23 BY MR. AMON:

24 Q. And so I'll come back to my  
25 question. If the predetermined type that we are

1 dealing with is a face and in the method of the  
2 '132 a face is matched, as you are using that  
3 term in paragraph 51 of your declaration, is  
4 matched to gain, DRC, contrast enhancement, color  
5 manipulation, sharpness adjustment, noise  
6 reduction, skin smoothing, all of those types of  
7 corrections could be performed on a face under  
8 the method of the '132 patent, correct?

9 MR. ROBINSON:

10 Objection to form.

11 THE WITNESS:

12 I guess it depends what you mean by  
13 "all of." And so "any one of," certainly,  
14 but I haven't been directed to -- there  
15 wasn't any validity argument made in light  
16 of suggesting that more than one of  
17 correction was applied and that therefore  
18 it was invalid on those grounds. I  
19 haven't -- haven't seen that argument at  
20 all.

21 BY MR. AMON:

22 Q. And your opinion about matched  
23 meaning that a particular type of correction is  
24 predetermined or assigned to a particular image  
25 feature, you're applying that same meaning in

1 analyzing the Needham prior art, correct?

2 A. Yeah. That -- that was an -- that  
3 was an opinion about matched in the '132 claim at  
4 issue or claim, yeah, claim at issue.

5 Q. Right. And you are applying that  
6 same meaning of matched to mean that a particular  
7 type of correction is predetermined or assigned  
8 to a particular image feature in analyzing the  
9 Needham prior art reference, correct?

10 A. Yes. The sentence appears in -- in  
11 the section describing Needham.

12 Q. And you would apply the same meaning  
13 of matched to the Nonaka prior art reference --

14 A. That's right.

15 Q. -- correct? And you would apply the  
16 same meaning of matched to all of the prior art  
17 that's raised in the '1250 and '1251 petitions,  
18 correct?

19 A. That's right.

20 MR. AMON:

21 Why don't we go ahead and take a  
22 break?

23 (A short recess was taken.)

24 BY MR. AMON:

25 Q. Dr. Villasenor, you ready?

1           A.     Yeah.

2           Q.     Okay. Great. Dr. Villasenor, if I  
3 could ask you to turn in Exhibit 2001, which is  
4 your declaration on the '1250 matter, and  
5 specifically to paragraph 1 of 7.

6           A.     (Complied.)

7           Q.     Tell me when you are there.

8           A.     I'm there.

9           Q.     The second sentence of paragraph 1  
10 of 7 of your declaration, Exhibit 2001, reads,  
11 "The claimed gain refers to an attribute that  
12 relates to brightening or darkening a region of  
13 an image." Did I read that correctly?

14          A.     Yes, you did.

15          Q.     In there, you are defining gain for  
16 purposes of the '132 patent, correct?

17          A.     Again, I -- I -- you know, you've  
18 rephrased what I said. I'm -- I'm just saying  
19 what I think a person of ordinary skill in the  
20 art would understand that term to mean.

21          Q.     So you wouldn't say that "gain" is  
22 defined in the context of the '132 patent to mean  
23 an attribute that relates to brightening or  
24 darkening a region of an image?

25          MR. ROBINSON:

1                   Objection to form.

2                   THE WITNESS:

3                   I didn't write that specific phrase.

4                   I -- I didn't -- didn't intentionally not  
5                   write it. I just wrote what's in the  
6                   record here.

7                   BY MR. AMON:

8                   Q.     Is it your opinion that a definition  
9                   of "gain" for the purpose of the '132 patent is  
10                  an attribute that relates to brightening or  
11                  darkening a region of an image?

12                  A.     I guess I just prefer to -- to -- to  
13                  leave it the way I wrote, which is that a claim  
14                  gain refers to an attribute that relates to  
15                  brightening or darkening of a region of an image.

16                  Q.     Right. I understand you prefer to  
17                  leave it; but my question to you, as a person of  
18                  ordinary skill in the art and an expert in this  
19                  matter, is gain in the context of the '132 patent  
20                  defined to mean an attribute that relates to  
21                  brightening or darkening a region of an image?

22                  MR. ROBINSON:

23                  Objection to form. Asked and  
24                  answered.

25                  THE WITNESS:

1                   Yeah. Again, I -- I -- you know,  
2                   you seem to be phrasing it in a way that  
3                   is intentionally using a different set of  
4                   words than what I wrote in the  
5                   declaration, so I guess I'd have to give  
6                   it some thought, but I'm quite comfortable  
7                   with what I wrote in the -- in the  
8                   declaration.

9       BY MR. AMON:

10           Q.       Well, the only word that I'm adding  
11           to the phrase that you used is "definition", and  
12           that's all I'm trying to figure out is if in your  
13           opinion you've defined the term "gain" for  
14           purposes of the '132 patent at -- at the second  
15           sentence of paragraph 107 of your declaration?

16           MR. ROBINSON:

17                   Objection to the form. Asked and  
18                   answered.

19           THE WITNESS:

20                   I guess when I was writing it, I  
21                   wasn't thinking about -- didn't have the  
22                   word "definition" specifically in my mind.  
23                   I was just explaining what I think a  
24                   person with ordinary skill in the art  
25                   would understand the claim term "gain"

1           referred to.

2       BY MR. AMON:

3           Q.     And that's the same testimony you  
4       provided with respect to the term "matched,"  
5       correct?

6           MR. ROBINSON:

7                   Objection, form.  Mischaracterizes.

8           THE WITNESS:

9                   I -- I'd -- I'd have to review that  
10       testimony because I think I used slightly  
11       different wording there and you worded  
12       your question slightly differently, so  
13       I --

14       BY MR. AMON:

15           Q.     If we look back at paragraph 51 of  
16       your declaration, which is Exhibit 2001, and you  
17       read the second sentence of paragraph 51, it  
18       reads in part, "Matched in this context means a  
19       particular type of correction is predetermined or  
20       assigned to a particular image feature."  Is that  
21       a definition of matched in your opinion?

22           A.     Again, I just think it's what a  
23       person of ordinary skill in the art would  
24       understand.  I didn't -- when I was writing it, I  
25       didn't think -- I don't recall having the word

1 definition specifically in mind, but I was just  
2 writing what I thought a person of ordinary skill  
3 in the art would understand that term to mean.

4 Q. So that's not a definition?

5 MR. ROBINSON:

6 Objection, form. Asked and  
7 answered.

8 THE WITNESS:

9 I didn't say that. I just said I --  
10 I wasn't specifically thinking of that  
11 term in mind.

12 BY MR. AMON:

13 Q. Well, I'm asking right now. Is it a  
14 definition or not?

15 MR. ROBINSON:

16 Objection, form. Asked and  
17 answered.

18 THE WITNESS:

19 Well, I think it's -- I guess I  
20 think it's what a person of ordinary skill  
21 would understand that matched would mean,  
22 but I -- you know, if that's what you mean  
23 by a definition, if you define  
24 "definition" as what would a person of  
25 ordinary skill in the art understand the



1 term to mean, then -- then that's the  
2 case. If you define "definition"  
3 differently, then -- then maybe not.

4 BY MR. AMON:

5 Q. And turning back to paragraph 107,  
6 second sentence where you write, "The claim gain  
7 refers to an attribute that relates to  
8 brightening or darkening a region of an image,"  
9 is that a definition or not?

10 A. Same --

11 MR. ROBINSON:

12 Objection, form. Asked and  
13 answered.

14 THE WITNESS:

15 Same answer.

16 BY MR. AMON:

17 Q. Can I ask you to turn to  
18 Exhibit 1001, which is the '132 patent?

19 A. (Complied.)

20 Q. And specifically, column 6, lines 36  
21 through 41. And sorry. Let me take a step back  
22 and -- and actually, line 30 through 45 -- 40 --  
23 44.

24 A. (Complied.)

25 Q. And let me know when you've read

1       that section to yourself, please.

2               A.       Yes, I've read that section.

3               Q.       And this section, which is column 6,  
4       lines 30 through about 44, is referring to  
5       Figure 6 of the '132 patent, correct?

6               A.       Yes.

7               Q.       And would you agree with me that  
8       that's a preferred embodiment of the '132 patent  
9       that's being discussed?

10              A.       I don't recall.

11              Q.       Do you have any reason to believe  
12       it's not a preferred embodiment of the '132  
13       patent?

14              MR. ROBINSON:

15                      Objection to form.

16              THE WITNESS:

17                      I'd just have to go look at that. I  
18       didn't -- I haven't looked at Figure 6 in  
19       the last five minutes.

20              BY MR. AMON:

21              Q.       So if you read column 6, line --  
22       well, let me -- let me take a step back.

23                      Do you agree that column 6, lines 30  
24       through 44 are referring to an embodiment of the  
25       '132 patent?

1           A.     Well, column 6, line 31 refers to  
2 one embodiment.

3           Q.     Right. So you would agree that it's  
4 an embodiment of the '132 patent, correct?

5           MR. ROBINSON:

6                   Objection, form.

7           THE WITNESS:

8                   It is -- it's -- it's an embodiment,  
9 but I kind of have to get the context of  
10 what it's an embodiment of.

11          MR. AMON:

12                   Go ahead. Take your time.

13          THE WITNESS:

14                   (Complied.) It is an embodiment of  
15 Dynamic Range Correction.

16          BY MR. AMON:

17           Q.     Which is an embodiment of the  
18 '132 -- it's part of an embodiment of the '132  
19 patent, correct?

20          MR. ROBINSON:

21                   Objection to form.

22          THE WITNESS:

23                   Well, I think the '132 patent is not  
24 limited to Dynamic Range Correction.

25          BY MR. AMON:

1           Q.     I understand.  And that's -- hence,  
2     it's "an" embodiment, not the sole embodiment,  
3     but it is "an" embodiment to the '132 patent,  
4     correct?

5           MR. ROBINSON:

6                     Objection, form.

7           THE WITNESS:

8                     Well, it's an embodiment of Dynamic  
9     Range Correction, which is, I think,  
10    covered by the claim.

11   BY MR. AMON:

12           Q.     So, Dr. Villasenor, is the  
13    discussion at column 6, line 30 -- sorry --  
14    line 30 through 44 not an embodiment of the '132  
15    patent?

16           MR. ROBINSON:

17                     Objection, form.  Asked and  
18    answered.

19           MR. AMON:

20                     Different question.

21           THE WITNESS:

22                     I am not saying it's not an  
23    embodiment.  I think it's -- it's  
24    presented as an embodiment of Dynamic --  
25    of the Dynamic Range Correction unit.

1 BY MR. AMON:

2 Q. Do you have an opinion one way or  
3 the other as to whether the discussion at column  
4 6, lines 30 through 44 is an embodiment of the  
5 '132 patent or not?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 I think that I haven't specifically  
10 been asked that specific question before,  
11 but I think that claim -- well, actually,  
12 I'm not even sure.

13 I think it's an embodiment -- I  
14 think the way it works is you can have an  
15 embodiment of an invention. I think this  
16 is an embodiment of a Dynamic Range  
17 Correction unit and a Dynamic Range  
18 Correction unit, provided it satisfies all  
19 the other requirements, can indeed be the  
20 correction that's claimed in claim 1; so  
21 in that sense, yes.

22 BY MR. AMON:

23 Q. Yes, it is an embodiment?

24 A. Well, I prefer my full answer with  
25 the context.

1           Q.     So at column 6, starting around  
2 line 34. At the end of 34, it reads, "At  
3 step 601, the process inputs a pixel intensity  
4 values (See Figure 2) from the input image. At  
5 step 602, the process determines whether the  
6 pixel is part of a group of adjacent pixels that  
7 collectively represent a face." Did I read that  
8 correctly?

9           A.     Yes.

10          Q.     And that is referring to an object  
11 detection portion or an object detection  
12 function, correct?

13          A.     That's an --

14          MR. ROBINSON:

15                 Object to form.

16          THE WITNESS:

17                 -- unclear question because I don't  
18 know what you mean by "that."

19          BY MR. AMON:

20          Q.     Sorry. "At step 602, the  
21 process" -- "At step 602, the process determines  
22 whether the pixel is part of a group of adjacent  
23 pixels that collectively represent a face." That  
24 is referring to detecting whether a face is  
25 present in an image --

1 MR. ROBINSON:  
2 Objection, form.  
3 BY MR. AMON:  
4 Q. -- correct?  
5 A. I -- I don't know if it's limited.  
6 It's just a -- it just raises a question, is the  
7 pixel in a group of adjacent pixels that  
8 represent -- collectively represent a face.  
9 Q. And what would be the purpose of  
10 determining whether a group of adjacent pixels  
11 collectively represent a face in that context?  
12 A. Well, in this context, because you  
13 might process them in one way if they are part of  
14 a face and in a different way if they are not.  
15 Q. If the outcome -- and then that --  
16 that column 6, line 38 continues, "If the outcome  
17 of this determination is negative, then at  
18 step 603, the process selects a normal gain  
19 value, G, open parenthesis, S, closed  
20 parenthesis," correct? I -- did I read that  
21 correctly?  
22 A. Yes.  
23 Q. And so there the correction that's  
24 being applied is gain, correct?  
25 A. I don't know if I would agree with

1       that.

2               Q.       Why not?

3               A.       It depends on the sort of broader  
4 context where you would be -- you are -- you are  
5 sort of jumping from a particular description  
6 of -- of one branch to sort of the correction in  
7 the kind of broader context of the claim, so --  
8 so I -- without more context, it would be hard to  
9 answer that.

10              Q.       Well, in the context of the '132,  
11 you've opined that gain refers to an attribute  
12 that relates to brightening or darkening a region  
13 of an image, correct? That's your statement in  
14 paragraph 107 of your declaration?

15              A.       Right.

16              Q.       And this is a statement that's  
17 contained in the specification of the '132  
18 patent, correct?

19              A.       That's right.

20              Q.       And there, the reference in column 6  
21 at line 39, to gain value, is that using the  
22 definition of gain referring to an attribute that  
23 relates to brightening or darkening a region of  
24 an image?

25              A.       I think, yeah, the -- the gain in



1     that paragraph will result -- will result in  
2     brightening or darkening of a pixel and that  
3     pixel is part of a region in an image.

4             Q.     At line 40 of column 6 of the '132  
5     patent, it continues, "If the outcome is  
6     affirmative, then the process branches to  
7     step 605 where an alternate gain value is  
8     selected." There again, gain is the correction  
9     that's being applied, correct?

10            A.     Well, first of all, I never agreed  
11     necessarily with your characterization the first  
12     time. The reason I'm being careful here is  
13     because that this is -- this is described as part  
14     of a DRC unit. DRC stands for Dynamic Range  
15     Correction. And so this is -- you know, I think  
16     one way to talk about it is this is a particular  
17     form of Dynamic Range Correction that includes  
18     gain, so it depends on what you mean by  
19     "correction."

20            Q.     Well, I'm using the term "gain" as  
21     you've defined it in paragraph 107 of your  
22     declaration to mean an attribute that -- that  
23     relates to brightening or darkening a region of  
24     an image. So with that definition in mind,  
25     column 6, line 41 where it uses the term "gain,"

1 is gain at line 41 of column 6 referring to an  
2 attribute that relates to brightening or  
3 darkening a region of an image?

4 A. Well, certainly, in -- in that case  
5 it will -- it will relate to brightening and  
6 darkening a region of an image, but that's a  
7 different question.

8 Q. So at column 6, line 39, it uses  
9 "gain," and at line 41, it uses "gain;" and in  
10 both those instances, the term "gain" refers to  
11 an attribute that relates to brightening or  
12 darkening a region of an image --

13 A. I think that's a --

14 Q. -- true?

15 A. I think that's a correct statement,  
16 yeah. I mean, to be clear, like I said, it's  
17 really talking about a pixel, but -- but it's  
18 understood that, you know, the pixel will be part  
19 of a region and so it applies to the region as  
20 well.

21 Q. And it applies to a region where  
22 pixels collectively represent a face, correct?

23 A. Or not.

24 Q. Or not. Fair enough. Correct?

25 A. In this -- in this example, this is

1 specific to that particular example.

2 Q. And so in this example at column 6  
3 of the '132 patent, gain, referring to an  
4 attribute that relates to brightening or  
5 darkening a region of an image, is being applied  
6 to an image if a group of pixels collectively  
7 represent a face, correct?

8 MR. ROBINSON:

9 Objection, form.

10 THE WITNESS:

11 I'm not sure I understand the  
12 question.

13 BY MR. AMON:

14 Q. What didn't you understand about my  
15 question, sir?

16 A. The -- the sort of causality in the  
17 phrasing.

18 Q. So in -- at column 6 between really  
19 lines 34 through 44, and specifically I'm reading  
20 at line 36, "At step 602, the process determines  
21 whether the pixel is part of a group of adjacent  
22 pixel" -- "pixels that collectively represent a  
23 face." And if the outcome is negative; that is,  
24 that the group of pixels do not collectively  
25 represent a face; then "gain," referring to an

1 attribute that relates to brightening or  
2 darkening of a region of an image, is applied --

3 MR. ROBINSON:

4 Objection --

5 BY MR. AMON:

6 Q. -- correct?

7 MR. ROBINSON:

8 Objection, form.

9 THE WITNESS:

10 Again, I think it's -- it's best  
11 said how it is in the specification; but  
12 to the extent that you've accurately  
13 represented it, that's correct.

14 BY MR. AMON:

15 Q. And if the outcome is affirmative,  
16 meaning that the group of adjacent pixels does  
17 collectively represent a face, then a different  
18 amount of gain is applied --

19 MR. ROBINSON:

20 Objection to form.

21 BY MR. AMON:

22 Q. -- to that image, correct?

23 MR. ROBINSON:

24 Sorry. Objection to form.

25 THE WITNESS:

1                   Well, again, I'd prefer to use  
2                   the -- the term that they say, "an  
3                   alternate gain value is selected." So it  
4                   depends. That's the -- that's the  
5                   patent's phrasing.

6       BY MR. AMON:

7               Q.     As you understand as a person  
8               skilled in the art, Dr. Villasenor, at column 6  
9               where the '132 patent refers to a normal gain  
10              value and an alternate gain value, are those  
11              referring to different amounts of the same type  
12              of correction?

13             A.     I -- I think, in general, that's --  
14             that's what this is trying to illustrate, that  
15             this is an example; but again, it's important to  
16             contextualize that it's part of a Dynamic Range  
17             Correction unit and there's the other portions of  
18             the specification which explain, you know, the  
19             matching and so on.

20             Q.     Dr. Villasenor, you testified  
21             earlier that you reviewed the '132 patent  
22             yesterday, correct?

23             A.     Yes.

24             Q.     And, in fact, you spent some time  
25             earlier today reviewing the specification of the

1       '132 patent, correct?

2               A.       Yes.

3               Q.       And as a person skilled in the art  
4       and as you understand the '132 patent, is the  
5       method described in the '132 patent, the scope of  
6       that broad enough such that if you have a  
7       predetermined type of object and you have  
8       multiple instances of that predetermined type of  
9       object; that is, for example, you have two faces  
10      in an image, okay, one is up close and large and  
11      the other one is in the background and small --  
12      with me so far?

13              A.       So you have a close -- a close face  
14      and a far away -- far away face?

15              Q.       In the same image.

16              A.       Right.   Okay.

17              Q.       Okay.   Is the scope of the '132  
18      patent broad enough such that you could apply  
19      different amounts of the same type of correction  
20      to the two different objects of the same type?

21              MR. ROBINSON:

22                      Objection, form.

23              THE WITNESS:

24                      I guess I'm not sure I understand  
25      the -- that part you were saying there.

1 BY MR. AMON:

2 Q. So in the context of claim 1 -- and  
3 I'm going to ask you to -- to go with me on a  
4 hypothetical here. Let's assume that gain is the  
5 type of correction that's matched to a  
6 predetermined object type of a face. Understand?

7 A. I understand that. Okay.

8 Q. Okay. And let's say that you have  
9 two faces in an image: One that's up close and  
10 much larger and a second face that's further away  
11 in the image and much smaller in the image. With  
12 me?

13 A. Yes.

14 Q. Okay. And we have already  
15 established that gain is the correction that's  
16 applied or that's matched -- excuse me. It's  
17 matched to the predetermined object type of face,  
18 right, in the hypothetical?

19 A. Well, there's -- I guess you could  
20 have -- I guess I'm a little -- get a little  
21 confused because you mean large face or small  
22 face or just face generically or -- or what's --  
23 I mean, your question is a little unclear in that  
24 respect.

25 Q. Well, in -- in my hypothetical,

1 let's just say that the predetermined object type  
2 of face and that it's matched to a correction  
3 type of gain, okay? Can you accept the  
4 parameters of that hypothetical?

5 A. Well, it's -- it's as you are  
6 constructing. It's not one that I recall  
7 Dr. Bovik opining on, so I haven't heard it  
8 before.

9 Q. Well, I understand, but you are well  
10 experienced in digital image processing arts,  
11 correct?

12 A. Well, yes. But that -- that doesn't  
13 change the fact that I haven't heard this  
14 particular hypothetical --

15 Q. No.

16 A. -- first hand.

17 Q. No. I understand, but I'm asking  
18 you to think about it now, okay?

19 A. I'm happy -- happy to try to think  
20 about it, but if it's clear and -- and if it's --  
21 you know, but I don't know that I'll have enough  
22 information to give you an answer, but I'll be  
23 happy to think about it.

24 Q. Okay. And if it's -- if it's  
25 unclear, please let me know. But, again, trying



1 to build the framework here. You have a method  
2 of the '132 patent claim 1, and you have a  
3 correction type of gain that's matched to a  
4 predetermined object type of face. With me so  
5 far?

6 A. Sure.

7 Q. Okay. And you have a digital image  
8 that contains two faces: One face that's large  
9 and one face that's small. With me?

10 A. Yeah. I'm with you.

11 Q. Under claim 1 of the '132 patent,  
12 could you apply a different amount of correction  
13 to the two different faces and -- and the  
14 correction being gain because that's what's  
15 matched?

16 MR. ROBINSON:

17 Objection, form.

18 THE WITNESS:

19 Again, I haven't -- I haven't heard  
20 that particular hypothetical before, so  
21 I'd have to give it some thought.

22 BY MR. AMON:

23 Q. So you have no opinion as to whether  
24 it could or could not as you sit here right now?

25 A. Yeah. I haven't -- I mean, I

1 can just tell you the patent says, you know,  
2 applying the first amount of the correction to  
3 the first portion, so whatever you define the  
4 first portion has to have the first amount of the  
5 correction.

6 Q. Coming back to your understanding of  
7 what matched means in the context of the '132  
8 patent, and specifically in the context of  
9 claim 1 of the '132 patent. If I could ask you  
10 to turn to claim 1 of Exhibit 1001.

11 A. (Complied.)

12 Q. The second clause of claim 1 reads,  
13 "Determining a correction to apply to the first  
14 portion of the digital image data based on the  
15 determination that the first portion of the  
16 digital image data represents a physical object  
17 of the predetermined type, wherein the determined  
18 correction is matched to the predetermined type."  
19 Did I read that correctly?

20 A. Yes.

21 Q. And, as you understand it as a  
22 person skilled in the art in that context, is it  
23 the type of correction that needs to be matched  
24 to the type of object? Is it the amount of  
25 correction that needs to be matched to the

1 object, or is it either the type or the amount  
2 that needs to be matched to the object?

3 MR. ROBINSON:

4 Objection, form.

5 THE WITNESS:

6 Yeah. It says the determined  
7 correction is matched to the predetermined  
8 type, so it's the correction, the  
9 determined correction.

10 BY MR. AMON:

11 Q. So it's the type of correction?

12 A. Well, again, I get uncomfortable  
13 when you change the word of the claim. It's --  
14 it's a correction and it's -- and it's one that's  
15 determined pursuant to the opening words of -- of  
16 that claim element and that correction once it's  
17 been determined or that is a correction that is  
18 matched to the predetermined type.

19 Q. Right. And later in claim 1, it  
20 talks about applying a second amount of the  
21 correction, right, to a second portion of the  
22 digital image?

23 A. That's right.

24 Q. So reading the whole claim in  
25 context, does that give you any further insight

1 as to whether -- you know, when -- when we are  
2 talking about matched, it's really referring to  
3 the type of correction, not the amount of  
4 correction, fair?

5 A. Well, again, I -- it depends what  
6 you mean by "type of correction." So I -- you  
7 know, that's why I get nervous about just  
8 agreeing with that because then you might have  
9 something else in mind. You might think of two  
10 different amounts and, I mean, I don't know what  
11 you mean by type.

12 Q. Okay.

13 A. So -- so I'm just going to stay  
14 within the words of the claim here.

15 Q. Okay. As the word amount is used in  
16 claim 1 of the '132 patent, matching is not  
17 referring to the amount of correction, fair?

18 A. I mean, it's a different word, if  
19 that's what you are saying. I mean, it's -- in  
20 other words, it's got to be the same correction  
21 because it's "the" correction that's recited in  
22 both the third and fourth -- third and fourth  
23 claim elements; and the antecedent basis is in  
24 the second claim element where it says "a  
25 correction." So you have to have a correction,

1 and you have one amount of it in the first  
2 portion and a different amount in the second  
3 portion.

4 Q. Right. And, therefore, the term  
5 matched as used in claim 1 is not modifying the  
6 amount of correction as the term amount is used  
7 in claim 1, fair?

8 A. Again, I don't know if -- I don't  
9 know that I would necessarily -- I haven't really  
10 opined on that specific issue, but it's -- what I  
11 have opined on is that, you know, you have to  
12 have the same -- the same -- you know, you can't  
13 do, you know, a completely different classic  
14 correction in the first portion than the second  
15 portion and have it satisfy the claim.

16 Q. Do you believe that you could do --  
17 let me start that question over.

18 Do you believe that you could do a  
19 first amount of correction of DRC on a first  
20 portion of a -- of a digital image and do a  
21 second amount of correction of DRC on a second  
22 portion of the image, and assuming that all other  
23 requirements of the -- of claim 1 of the '132  
24 were satisfied, that would not satisfy claim 1 of  
25 the '132?

1 MR. ROBINSON:  
2 Objection, form.  
3 THE WITNESS:  
4 Yeah. I think it depends on -- it  
5 would depend on what you mean by "DRC."  
6 BY MR. AMON:  
7 Q. Do you understand as a person  
8 skilled in the art what DRC refers to in the  
9 digital image processing arts?  
10 A. Yeah. But it still depends on  
11 your -- what that means.  
12 Q. Are there multiple meanings of DRC  
13 in the photographic arts as it relates to the  
14 '132 patent?  
15 A. Yeah. There's -- there's  
16 multiple -- multiple ways that it could be  
17 interpreted.  
18 Q. What are some of the multiple ways  
19 that DRC could be interpreted?  
20 A. Well, I mean, it depends on the  
21 particular kind of processing you are -- you are  
22 doing to -- to implement that -- that sort of  
23 category of compression, or not compression, of  
24 correction.  
25 Q. Well, in the context of the '132

1 patent, are there multiple meanings of DRC?

2 A. Yeah, I think there -- there could  
3 be. I mean, it -- yeah, I think it would depend.

4 Q. And what are some of the  
5 possibilities of what DRC could mean in the  
6 context of the '132 patent?

7 A. I mean, there are just -- there are  
8 just various ways that you could alter -- alter  
9 pixel values, you know, with -- with the goal  
10 of -- of doing DRC.

11 Q. And that would impact whether  
12 application of different amounts of DRC would or  
13 would not meet the limitations of claim 1 of the  
14 '132 patent?

15 A. Well, it could. Again, I'm not even  
16 sure I'd agree that using the word "amount" is  
17 always the only thing you would need to know  
18 about DRC.

19 Q. Dr. Villasenor, turning back to your  
20 opinion regarding what "matched" means in the  
21 context of the '132 patent, which is -- excuse  
22 me -- at paragraph 51 of your declaration,  
23 Exhibit 2001, and specifically that "matched" in  
24 this context means a particular type of -- of  
25 correction is predetermined or assigned to a

1 particular feature. With me?

2 A. Yeah.

3 Q. As you understand claim 1 of the

4 '132 patent, is it possible for a single

5 correction, using a single correction gain as an

6 example, to be matched to more than one

7 predetermined type of object?

8 A. Yeah. I guess --

9 MR. ROBINSON:

10 Objection to form.

11 THE WITNESS:

12 I guess, I'm not really sure -- I'm

13 not really sure I understand your

14 question.

15 BY MR. AMON:

16 Q. Imagine you have a digital image

17 that has both a face and a park, okay? Got it?

18 A. I mean, sure. I can imagine an

19 image that has a face and a park.

20 Q. In fact, let's -- let's use

21 Figure 8C of the '132 patent, okay?

22 A. Okay.

23 Q. And you'll agree with me that

24 Figure 8C has a person standing in it, correct?

25 A. Yes.



1           Q.     And there's a box labeled 801 C  
2 around the face of the person, correct?

3           A.     Generally, yeah.

4           Q.     And then standing behind the person,  
5 there is a snowbank or what appears to be a  
6 snowbank; is that fair?

7           A.     Yeah. I don't know if I could use  
8 the word standing, but yeah, there's a snowbank  
9 behind. Yeah, that's right.

10          Q.     Sure. Did I say standing? Fair --  
11 fair point. Behind the person in the image in  
12 Figure 8C, there is a snowbank?

13          A.     That's right.

14          Q.     Now, is it possible here where the  
15 method of claim 1 identifies two predetermined  
16 types of objects, a face and a snowbank, and that  
17 gain is matched to both of those predetermined  
18 types of objects?

19          A.     I mean, I -- not the -- the claim  
20 recites a predetermined type and a physical  
21 object, so I'm not really sure I understand --  
22 understand the question.

23          Q.     But we agreed that "a" in the -- in  
24 the context of claim language can mean more than  
25 one, correct?

1 MR. ROBINSON:

2 Objection to form.

3 THE WITNESS:

4 Right. But when you are analyzing  
5 claim 1, you just see that -- you see --  
6 you look for "a" in a physical object in a  
7 predetermined type and you see -- yeah,  
8 see if it's matched in the way that's  
9 recited in the claim, that's why you need  
10 to evaluate it.

11 BY MR. AMON:

12 Q. Right. But the -- the claim 1 is  
13 not so narrow that it would be limited to only a  
14 matching of one correction to one predetermined  
15 type of object, fair?

16 MR. ROBINSON:

17 Objection to form.

18 THE WITNESS:

19 Well, yeah. I think there can be  
20 different objects that are the  
21 predetermined types.

22 BY MR. AMON:

23 Q. And those different objects could be  
24 matched to the same type of correction in a  
25 single image?

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MR. ROBINSON:

Objection, form.

THE WITNESS:

That's not what claim 1 specifically  
recites.

BY MR. AMON:

Q. No. But claim 1 is broad enough to  
allow for that, fair?

A. It -- it may be, yeah. I just  
haven't really -- I haven't been directed to none  
of the art that Dr. Bovik -- Dr. Bovik didn't  
make that specific argument.

Q. Dr. Villasenor, if I could ask you  
to turn to paragraph 96 of your declaration.

A. (Complied.)

Q. And so just to be clear, which -- in  
the '1250 matter, which is Exhibit 2001. And in  
the last sentence of paragraph 96, you write that  
"To maintain local contrast requires specific  
consideration of the contrast before the  
processing, as well as affirmative steps to  
ensure a similar output contrast, something that  
is not discussed in DVIR." Did I read that  
correctly?

A. Oh, yeah.

1           Q.     Are you aware of any disclosure in  
2     the '132 patent that maintaining local contrast  
3     requires consideration of the local contrast  
4     before processing as well as affirmative steps to  
5     ensure similar output contrast?

6           MR. ROBINSON:

7                     Objection to form.

8           THE WITNESS:

9                     I don't specifically recall, but I  
10            expect that there is support for that  
11            conclusion.

12   BY MR. AMON:

13           Q.     Okay.  Let's -- let's start with the  
14     easy question.  Do you -- are you aware of any  
15     place in the '132 specification where the literal  
16     words, "to maintain local contrast requires  
17     specific consideration of the contrast before the  
18     process as well as affirmative steps to ensure a  
19     similar output contrast," exists in the '132  
20     specification?

21           A.     I don't recall.

22           Q.     When you reviewed the specification  
23     of the '132 patent earlier this morning, do you  
24     recall reading those words in the '132  
25     specification?

1           A.     I don't. But I was focused on  
2 looking for "matched," so my intention was really  
3 focused more on that than on searching for this  
4 phrase.

5           Q.     Do you recall where in the '132  
6 patent there is a discussion of maintaining local  
7 contrast outside of the claims?

8           A.     I know that there is a discussion.  
9 I don't recall the column and line number.

10          Q.     Okay. Can you see if you can find  
11 it, please?

12          A.     (Complied.)

13          MR. AMON:

14                 And I don't mean to interrupt. You  
15 took your water, correct?

16          THE WITNESS:

17                 Yeah. I got it, yeah.

18          MR. AMON:

19                 Okay. I just want to make sure that  
20 this (indicated) one's mine. That's all.  
21 Thank you.

22          MR. ROBINSON:

23                 There's more over there too, if you  
24 need it.

25          MR. AMON:

1 Thank you.

2 THE WITNESS:

3 Yeah. I mean, I'm sure I could find  
4 it if I read it front to back again, but I  
5 don't know if you want me to do that.

6 MR. AMON:

7 Take your time. Go ahead.

8 THE WITNESS:

9 Okay.

10 MR. AMON:

11 Thank you.

12 BY MR. AMON:

13 Q. Well, let me -- let me pause you for  
14 a second and I'm not trying to -- to trick you in  
15 any way. I'll give you the opportunity to read  
16 it if you want, but let me point you first to  
17 column 3, lines 28 to 32, and if you could read  
18 that section and tell me if you believe that that  
19 section discusses maintaining local contrast?

20 MR. ROBINSON:

21 Objection to form.

22 THE WITNESS:

23 It does discuss local contrast. It  
24 discusses improving it.

25 BY MR. AMON:

1           Q.     So does -- but does that in your --  
2     in your mind, in your opinion, discuss  
3     maintaining local contrast?

4           A.     It does contain information about  
5     maintaining local contrast, yeah, because it  
6     tells you what -- what -- you know, what -- and,  
7     for example, it says when you are improving it,  
8     you're -- it says, for example, "to make object  
9     edge detail more visible; i.e., to improve local  
10    contrast." So one skilled in the art also would  
11    understand that -- that that tells you something  
12    about what is happening in maintaining local  
13    contrast.

14          Q.     Is there any discussion in there  
15    about maintaining or requiring consideration of  
16    local contrast before processing?

17          MR. ROBINSON:

18                 Objection, form.

19          THE WITNESS:

20                 I think it does convey information  
21    about that. So, for example, the -- the  
22    statement about "object edge detail more  
23    visible" relates to that.

24          BY MR. AMON:

25          Q.     That relates to considering the

1 local contrast before the processing steps?

2 A. Yeah, it does.

3 Q. Could I ask you to also now turn to

4 Column 9 and read lines 20 to 42?

5 A. (Complied.)

6 Q. And let me know when you've done

7 that, please.

8 A. Yeah. Okay.

9 Q. Does that section --

10 A. I'm sorry. It was lines 28 to 42?

11 Q. Yes.

12 A. Okay. Yeah.

13 Q. Let me know when you are done.

14 A. Yeah, I've read that.

15 Q. Okay. Does that section also

16 support your opinion regarding maintaining local

17 contrast, requiring specific consideration of the

18 contrast before the processing as well as

19 affirmative steps to ensure local output

20 contrast?

21 A. Well --

22 MR. ROBINSON:

23 Objection, form.

24 THE WITNESS:

25 -- text near that section does.



1 BY MR. AMON:

2 Q. Okay. And specifically what section  
3 are you referring to?

4 A. So lines 44, 45, so -- or 45, 46  
5 talks about measurement of local edges in their  
6 direction; for example, that tells you about  
7 local contrast before you did anything.

8 Q. So lines 44 and 45 in -- in your  
9 mind are discussing consideration of local  
10 contrast before the processing?

11 A. Yeah. I mean, they are -- when you  
12 are measuring an edge, you are -- you're -- I  
13 guess, the local magnitude of -- of, you know,  
14 the -- the magnitude of the output of a high pass  
15 filter will tell you something about the  
16 magnitude the sharpness or the difference of an  
17 edge and that will tell you something about the  
18 local contrast before -- before you've done  
19 anything. Lines 49 through 53 also give you  
20 information about that.

21 Q. Sorry. Could you repeat that?

22 A. Lines 49 through 53 also give you  
23 information about that.

24 Q. So, in your opinion, the sections  
25 that you just identified, which are column 9,

1 lines 44 through 53, generally speaking, support  
2 your opinion that to maintain local contrast  
3 requires specific consideration of the contrast  
4 before the processing as well as affirmative  
5 steps to ensure similar output contrast?

6 MR. ROBINSON:

7 Objection to form.

8 THE WITNESS:

9 Well, they are among -- well, I  
10 would say two things; one is you've  
11 omitted from that citation the prior  
12 lines, which -- which matter as well.

13 So, for example, line 37, 38 talk  
14 about characterizing the image content.  
15 And then you cited that -- that was within  
16 the range that you cited, but the  
17 additional lines I cited were not within  
18 those ranges and I think that's important  
19 to recognize as well.

20 BY MR. AMON:

21 Q. Fair enough. I'm not -- I'm not  
22 trying to trick you, and -- and, as I think you  
23 rightfully said, I originally identified lines 28  
24 through 42, correct?

25 A. That's right.

1           Q.     So is it fair that column 9, lines  
2     28 through about 53 support your opinion that to  
3     maintain local contrast requires specific  
4     consideration of the contrast before the  
5     processing as well as affirmative steps to ensure  
6     similar output contrast?

7           A.     I do believe that that's support for  
8     that, not necessarily the only support, but I do  
9     believe that's support for that.

10          Q.     And those -- those same sections --  
11     and -- and I'll -- and I'll include the reference  
12     before, column 3, lines 28 to 32 and column 9,  
13     lines 28 to about 53 -- do those support the  
14     concept of maintaining local contrast as required  
15     by the claims of the '132 patent?

16          A.     I believe that they do, yes.

17          MR. AMON:

18                 Can we take a two-minute break?

19          MR. ROBINSON:

20                 Yeah.

21          MR. AMON:

22                 Okay. Let's -- let's take a  
23     two-minute break.

24          MR. ROBINSON:

25                 We have got food coming in too --

1 MR. AMON:  
2 Oh, that's --  
3 MR. ROBINSON:  
4 -- so just when you are ready.  
5 MR. AMON:  
6 That's kind of you. I appreciate  
7 that. So it's -- it's about 11:35 now. I  
8 don't know if you have a particular  
9 preference of when you want to take lunch,  
10 Dr. Villasenor.  
11 (A short recess was taken.)  
12 BY MR. AMON:  
13 Q. Dr. Villasenor, are you ready?  
14 A. Yes.  
15 Q. Dr. Villasenor, if you could turn to  
16 column 5 of the '132 patent, which is  
17 Exhibit 1001?  
18 A. (Complied.)  
19 Q. And read line 7 where it starts  
20 "also" through line 14 to yourself and let me  
21 know when you've done that.  
22 A. (Complied.) Okay.  
23 Q. You'll agree with me that Figure 1  
24 is an embodiment of the correction technique  
25 that's introduced by the '132 patent, yes?

1           A.     I don't know if it's -- I mean, it  
2     says that -- in another embodiment, it says about  
3     where it could be implemented, but it doesn't --  
4     it doesn't describe the whole thing, so I'm not  
5     sure if that means it's the embodiment. I'm not  
6     sure what you mean by "embodiment," I guess.

7           Q.     You don't understand what an  
8     embodiment is?

9           A.     I understand what an embodiment is;  
10    but, in other words, it's -- if your question  
11    means is it a full description of, for example,  
12    everything in claim 1, well, no, it's not.

13          Q.     Well, if you look back at Figure 1,  
14    which is on page 3 of Exhibit 1001?

15          A.     Right.

16          Q.     Would you agree that that is an  
17    embodiment of the correction technique disclosed  
18    by the '132 patent?

19          MR. ROBINSON:

20                 Objection, form.

21          THE WITNESS:

22                 Figure 1 is presented as an  
23    embodiment.

24          BY MR. AMON:

25          Q.     And Figure 1 contains block 117,

1 correct?

2 A. That's right.

3 Q. And that's titled DRC in Figure 1?

4 A. That's right.

5 Q. And then if you turn to the Figure

6 2A, for example?

7 A. Yeah.

8 Q. Figure 2A is -- appears to be an

9 expanded version of block 117, which is the DRC;

10 is that fair?

11 MR. ROBINSON:

12 Objection, form.

13 THE WITNESS:

14 Yeah. Block 117 is -- is labeled

15 DRC in Figure 1.

16 BY MR. AMON:

17 Q. And that is also listed as block 117

18 in Figure 2A in the top left-hand corner?

19 A. I think it's an embodiment. I don't

20 know that it's necessarily the only way that the

21 box in Figure 1 could be done.

22 Q. Fair enough. But it's an embodiment

23 of the DRC that's contained in Figure 1, which is

24 an embodiment of the correction technique of the

25 '132 patent, correct?

1 MR. ROBINSON:

2 Objection to form.

3 THE WITNESS:

4 Well, it's an -- it's an  
5 embodiment -- Figure 1 is linked to  
6 Dynamic Range Correction, and Figure 2 are  
7 the detail -- I was reading it, so  
8 Figure 2 is the details of the DRC unit  
9 according to different embodiments, so  
10 there are different -- 2A through 2D have  
11 different embodiments of the Dynamic Range  
12 Correction unit.

13 BY MR. AMON:

14 Q. Which are part of an embodiment of  
15 Figure 1, which is the correction technique of  
16 the '132 patent, fair?

17 MR. ROBINSON:

18 Objection, form.

19 THE WITNESS:

20 Well, I'm -- yeah. Figure 2 is a  
21 more detailed version of Figure 1.  
22 Figure 1 is described as a block diagram  
23 of an imaging system in which the DRC  
24 techniques here can be implemented.

25 BY MR. AMON:

1           Q.     So are you saying that Figure 2 is a  
2 more detailed embodiment or description, and to  
3 be fair, Figures 2A through 2D, as you rightfully  
4 pointed out, they are different embodiments, are  
5 more detailed embodiments of the entirety of  
6 Figure 1?

7           A.     No, I didn't say that. If I did say  
8 that, I -- I didn't intend to convey that.  
9 Figure 2 is a more detailed description of a box,  
10 which is just an empty box of Figure 1.

11          Q.     And Figure 1 is an embodiment of the  
12 correction technique of the '132 patent, correct?

13          A.     Well, it's described as a block  
14 diagram of the imaging system in which the DRC  
15 techniques introduced here can be implemented, so  
16 it's a block diagram of something which can  
17 implement the DRC techniques.

18          Q.     If I were to say that Figure 1 is  
19 not an embodiment of the -- of the correction  
20 technique of the '132 patent, would you agree  
21 with me?

22                 MR. ROBINSON:

23                         Objection, form.

24                 THE WITNESS:

25                         No. I think that would be -- that



1           would be contrary to some of the text in  
2           the patent.

3       BY MR. AMON:

4           Q.     Dr. Villasenor, going to Figure 2A,  
5       by way of example, let me know when you are  
6       there.

7           A.     (Complied.) All right.

8           Q.     In Figure 2A, there is a box labeled  
9       No. 2 of 5. Do you see that?

10          A.     Yes.

11          Q.     And that is in the box that reads  
12       Filtering and Nonlinear Combining, correct?

13          A.     That's right.

14          Q.     And there's also box 207 in Figure  
15       2A, correct?

16          A.     Yes.

17          Q.     And that's labeled Gain Lookup  
18       Table, correct?

19          A.     Yeah.

20          Q.     In the context of Figure 2A, is the  
21       output from block 205 used to select gain values  
22       from the lookup table, 207?

23          A.     I don't recall.

24          Q.     Do you have any reason to believe  
25       that the output from block 205 is not used to

1 select gain values from the gain lookup  
2 table 207?

3 MR. ROBINSON:

4 Objection, form.

5 THE WITNESS:

6 Again, I -- I don't recall. I want  
7 to go review what it says about the figure  
8 and --

9 BY MR. AMON:

10 Q. Fair enough. I'm not -- I'm not  
11 trying to hide the ball. I'm trying to see if  
12 you could answer questions more easily.

13 But let me point you to column 6  
14 starting at around line 45, and I'll ask you to  
15 read from there essentially over to column 8,  
16 line 5; and if you need to read more than that,  
17 please feel free.

18 A. (Complied.) Okay.

19 Q. So I'll ask my question again.  
20 Having read now the specification, column 6,  
21 line 45 through about column 8, line 5 -- and I  
22 don't know if you read more than that. If you  
23 did, please make sure that the record's clear on  
24 that. As you understand it as a person skilled  
25 in the art as it relates to Figure 2A, is the

1 output from block 205 used to select gain values  
2 from the gain lookup table 207?

3 MR. ROBINSON:

4 Objection, form.

5 THE WITNESS:

6 Well, in column 8 near the top, like  
7 around line 6 or 7 says there's a mapping  
8 between F, which I think is the same as F  
9 of S in the lookup table content. So  
10 it's -- it is an input, but it's not the  
11 only input.

12 BY MR. AMON:

13 Q. What are the other inputs for the  
14 lookup table?

15 A. Well, it's also got a box. It has  
16 an input of box 209 as well.

17 Q. Well, what is box 209?

18 A. It's labeled Selection.

19 Q. And what does box 209 do as a  
20 selection?

21 A. I want to review that. I don't  
22 recall specifically.

23 Q. So I believe that box 209,  
24 Selection, is discussed starting at the bottom of  
25 column 5 and on to the top of column 6. So if

1 you could read that to yourself, please let me  
2 know when you've done that.

3 A. (Complied.) Yeah. I've read that.

4 Q. Okay. And so my question is what  
5 does box 209 do, as you understand it, as  
6 disclosed in the '132 patent?

7 A. Well, it says, quote, A selection  
8 unit 209 in the DRC unit 117 selects the  
9 appropriate gain value, G of S, for a different  
10 input pixel from the gain lookup table 207,  
11 according to whether or not a given input pixel  
12 is part of a detected object, as indicated by the  
13 content map 119."

14 Q. So I believe you testified before  
15 that the output from block 205 is used to select  
16 gain values from the gain lookup -- sorry.  
17 Strike that.

18 I believe you testified previously  
19 that in the context of Figure 25, block 205 and  
20 209 are used to select gain values from the gain  
21 lookup table 207; is that fair?

22 A. Box 209 is described as selecting  
23 the gain value and box 207 -- actually, sorry.  
24 Box -- and box 205 involves processing that  
25 produces this F of S, which also is used as a

1 mapping between that and the lookup table  
2 content, so they are both obviously provided as  
3 inputs to 207.

4 Q. What input does box 209 provide to  
5 box 207 in the context of Figure 2A?

6 A. I'd have to look.

7 MR. ROBINSON:

8 Objection, form.

9 THE WITNESS:

10 Well, it says it selects the  
11 appropriate gain value from the gain  
12 lookup table according to whether it's  
13 part of an object according to the content  
14 map, the text I read before at the top of  
15 column 6.

16 BY MR. AMON:

17 Q. Right. Is this providing any actual  
18 input. Let me -- let me make sure my question is  
19 clear because I -- I know you are going to say  
20 "it." Is box 209 selection providing any actual  
21 input to box 207 in the context of Figure 2A of  
22 the '132 patent?

23 A. I guess I'm not sure what you mean.  
24 There's an arrow that's connecting it, so it's  
25 information -- the information is shown going

1 from one to the other.

2 Q. And what information is being  
3 transmitted from box 209 to box 207 of Figure 2A  
4 of the '132 patent, as you understand it?

5 A. Well, just based on a brief review  
6 having not -- having not -- I don't recall this  
7 being a focus of -- of the declaration, either  
8 mine or Dr. Bovik; but just based on a brief  
9 review here, it talks about -- it says it selects  
10 the appropriate gain from a lookup table and then  
11 also according to whether or not the pixel is  
12 part of a detected object.

13 Q. As you understand it in the context  
14 of Figure 2A, is the gain value from the lookup  
15 table 207 then applied to a first portion of the  
16 image in the method of the '132 patent?

17 MR. ROBINSON:

18 Objection, form.

19 THE WITNESS:

20 It depends what you mean by  
21 "applied," but there's a multiplier, 208,  
22 that is used to -- to -- to multiply image  
23 values.

24 BY MR. AMON:

25 Q. And -- and that results in an

1 adjustment or a correction of image values; is  
2 that fair?

3 A. It results in a change of the --  
4 change of the image value, the pixel value.

5 Q. Dr. Villasenor, if I were to ask you  
6 the same series of questions about Figure 2B that  
7 we -- that we just went through with respect  
8 to -- well, let me take a step back because I  
9 think Figure -- Figure 2B is different.

10 With respect to Figure 2B, is the  
11 output from block 205 used to select gain values  
12 from the gain lookup table 207?

13 A. Well, I think it's the same  
14 structure as 2A with regard to that particular  
15 question; so I know there's the block numbers are  
16 the same, so I think it's the same answer.

17 Q. So it would be --

18 A. Well, the block number's wrong, but  
19 it's the same -- I -- I don't recall that it says  
20 any different, but I haven't --

21 Q. Yeah.

22 A. -- I haven't reviewed that.

23 Q. Yeah. So --

24 A. I don't recall.

25 Q. -- to be fair, Figure 2B doesn't

1 have selection 209, correct?

2 A. Right. It has selection 210. I  
3 don't recall how that's different.

4 Q. Right. And -- yeah. Happy to give  
5 you the opportunity to figure out how that's  
6 different because I am trying to get your  
7 knowledge as a -- as a person of skill in the art  
8 here. So if you read column 6 starting at line 5  
9 through about 15, it discusses selection unit  
10 210. Do you see that?

11 A. (Complied.) Yes.

12 Q. And specifically, it reads with  
13 respect to unit 210, this is shown in Figure 2 as  
14 the input of the content map to weight selection  
15 unit 210, which selects the appropriate weight  
16 values, W sub S, and applies it to multiplier  
17 208, correct?

18 A. Yes.

19 Q. So with that understanding, as you  
20 understand Figure 2B, isn't the output from  
21 block -- is the output from block 205 used to  
22 select gain values from the lookup Table 207 in  
23 Figure 2B of the '132 patent?

24 A. I don't recall if there's a separate  
25 description or whether that same description that



1 I looked at before applies.

2 Q. Which description are you referring  
3 to? I'm sorry, Dr. Villasenor.

4 A. There was a description of -- of  
5 box 205 that I was referring to before.

6 Q. Right.

7 A. And I think --

8 Q. And I believe that that essentially  
9 starts at column 6, line 45 and continues on and  
10 I think you said all the way over to column 8,  
11 line 7, I believe, or 8.

12 A. Right. And, in fact, the  
13 description is the same if that's -- if there's  
14 only one description for block 205, then it's the  
15 same in all of -- in Figure 2A and Figure 2B.

16 Q. Except that in Figure 2B selection  
17 unit 209 is not present, correct?

18 A. Well, no. But you were asking about  
19 205, so I was answering about 205.

20 Q. Right. So my question is, in Figure  
21 2B is the output from block 205 used to select  
22 gain values from the gain lookup table 207?

23 A. I think in both Figure 2A and 2B you  
24 have box 205, which -- which then provides  
25 information to the gain lookup table.

1           Q.     And so it's the output from block  
2     205 that's used to select gain values from the  
3     gain lookup table, fair?

4           A.     Well, the output from box 205 is  
5     provided as an input to the gain lookup table, in  
6     which the gain lookup table produces a gain, so I  
7     think the gain lookup table considers the  
8     information from box 205 in producing that gain.

9           Q.     In the context of Figure 2B, is the  
10    gain value from the lookup table then applied --  
11    and -- and I forget what word you used before --  
12    used to change a value of the first portion of  
13    the image --

14          A.     Among --

15          Q.     -- a gain value?

16          A.     Among other things --

17    MR. ROBINSON:

18                 Objection, form.

19    THE WITNESS:

20                 Among a gain is -- is -- is a -- is  
21    a factor, is a piece of information  
22    that's -- that's used in the multiplier  
23    208 in Figure 2B.

24    BY MR. AMON:

25          Q.     And in the multiplier 208 in Figure

1 2B, it's that -- the output of that is then used  
2 to change a gain value of a digital image -- of a  
3 first portion of a digital image to be clear?

4 MR. ROBINSON:

5 Objection, form.

6 THE WITNESS:

7 I don't know if I would agree with  
8 "change a gain value." I know that the  
9 gain value is an input to the multiplier  
10 and that when you multiply the pixel by  
11 the gain value it will generally change  
12 the pixel value, subject to the fact that  
13 it's also multiplied by the output of the  
14 selection box.

15 BY MR. AMON:

16 Q. So in the context of Figure 2B, the  
17 gain value from the lookup table is an input to  
18 the multiplier 208 which is then applied on  
19 pixels in the digital image to change the pixel  
20 value subject to the output of the selection box,  
21 correct?

22 A. I think that's -- yeah. That's --  
23 that's essentially what I just said.

24 Q. And that results in a change in  
25 pixel values in a digital -- in a first portion

1 of a digital image?

2 A. It can --

3 MR. ROBINSON:

4 Objection, form.

5 THE WITNESS:

6 It can depending on what object --  
7 whether the object -- whether the output  
8 of the object checked box.

9 BY MR. AMON:

10 Q. If you recall earlier in the  
11 deposition, Dr. Villasenor, we were discussing at  
12 column 3 of the '132 patent there are other types  
13 of corrections identified besides the gain and  
14 DRC corrections, which are primarily discussed in  
15 the preferred embodiments; do you recall that?

16 A. Yes.

17 Q. And those, just to be specific, were  
18 listed at column 3, lines 59 through 64 and  
19 include contrast enhancement, color manipulation,  
20 sharpness adjustment, noise reduction, skin  
21 smoothing, correct?

22 A. Yes.

23 Q. And those are all types of  
24 correction that can be used to manipulate a  
25 digital image?

1           A.     That's what --

2           MR. ROBINSON:

3                   Objection, form.

4           THE WITNESS:

5                   That's what it says. The patent  
6           says they are types of corrections.

7   BY MR. AMON:

8           Q.     And in the context of claim 1, for  
9   example, of the '132 patent, which requires  
10   that -- and I'm paraphrasing, so feel free to  
11   correct me however you see fit -- requires  
12   applying a first amount of a correction to a  
13   first portion of an image and a second amount of  
14   a correction to a second portion of the image.  
15   Correction in the context of claim 1 -- examples  
16   of corrections are what are listed at claim --  
17   column 3, lines 59 through 64, correct?

18          A.     Well, those are examples, but one  
19   skilled in the art will also know that you have  
20   to look at the specifics of how they were  
21   implemented.

22          Q.     And so in the context of claim 1 of  
23   the '132 patent, if the correction that is  
24   matched to a predetermined type were contrast  
25   enhancement, for example, you -- you would need

1 to apply contrast enhancement in a first amount  
2 to a first portion and then contrast enhancement  
3 in a second amount to a second portion --

4 A. Well, you need --

5 Q. -- correct?

6 A. Well, you need to satisfy all the  
7 claim -- all the claim elements and also, you  
8 have to look at the specific -- and I'll just  
9 take -- for example, I -- I don't believe that  
10 all -- that all noise reduction algorithms are  
11 the same correction, so just the fact that you  
12 are doing noise reduction isn't -- you know,  
13 isn't enough to know that you are necessarily  
14 applying the same correction.

15 So you could, yes. It is possible I  
16 think to practice claim 1 with contrast  
17 enhancement in different amounts, but it does not  
18 follow that all cases where you are doing  
19 contrast enhancement on two different portions of  
20 the image are different amounts of the same  
21 correction.

22 Q. There's no discussion of the concept  
23 you just identified in the specification of the  
24 '132 patent, is there?

25 MR. ROBINSON:

1                   Objection, form.

2           THE WITNESS:

3                   Well, I -- I don't know that I agree  
4           with that. Certainly, if you look at the  
5           claim and the claim language and what's  
6           described here and the knowledge of one  
7           that's ordinarily skilled in the art, I  
8           think that's the understanding you have.

9   BY MR. AMON:

10           Q.     Okay. Can you point me to any  
11   specific section where it says that contrast  
12   enhancement as a correction constitutes two  
13   different types of correction in the context of  
14   claim 1?

15           MR. ROBINSON:

16                   Objection, form.

17           THE WITNESS:

18                   I don't recall text specifically  
19           saying it constitutes two different types  
20           of correction, but that's -- that's not  
21           what I said either.

22   BY MR. AMON:

23           Q.     Turning back to the different types  
24   of correction that are identified by the '132 to  
25   include gain, DRC, contrast enhancement, color

1 manipulation, sharpness adjustment, noise  
2 reduction, skin smoothing, etc., in  
3 December 2009, the person of skill in the art had  
4 understood that if you were applying, for  
5 example, contrast enhancement as a correction,  
6 that the idea of using a lookup table for  
7 contrast enhancement could also be implemented?

8 MR. ROBINSON:

9 Objection, form.

10 THE WITNESS:

11 I guess I'd want some more context  
12 for that. I think people certainly would  
13 understand that they were on lookup  
14 tables.

15 BY MR. AMON:

16 Q. And were there lookup tables for  
17 contrast enhancement?

18 MR. ROBINSON:

19 Objection, form.

20 THE WITNESS:

21 I think there were. In 2009, there  
22 were lookup tables for contrast  
23 enhancement, yes.

24 BY MR. AMON:

25 Q. Were there lookup tables for



1 sharpness adjustment in 2009?

2 MR. ROBINSON:

3 Objection, form.

4 THE WITNESS:

5 I don't specifically recall. I -- I  
6 think sharpness adjustment usually  
7 wouldn't be done with a lookup table.

8 BY MR. AMON:

9 Q. Were there lookup tables for noise  
10 reduction?

11 MR. ROBINSON:

12 Objection, form.

13 THE WITNESS:

14 Again, I mean, you could in theory  
15 use a lookup table for noise reduction,  
16 but most noise reduction algorithms that  
17 I'm primarily familiar with don't  
18 primarily rely on lookup tables.

19 BY MR. AMON:

20 Q. Do you know if there were noise  
21 reduction algorithms in 2009 that did rely on  
22 lookup tables?

23 MR. ROBINSON:

24 Objection, form.

25 THE WITNESS:

1 I don't recall. There -- there --  
2 there may have been, but the primary  
3 mechanisms for identifying noise usually  
4 aren't lookup tables.

5 BY MR. AMON:

6 Q. For skin smoothing back in December  
7 of 2009, would a person skilled in the art have  
8 understood that you could use a lookup table for  
9 skin smoothing as a correction type?

10 A. I mean --

11 MR. ROBINSON:

12 Objection, form.

13 THE WITNESS:

14 Again, it depends on what you mean  
15 by "use a lookup table." You know, if --

16 BY MR. AMON:

17 Q. I'm referring to use a lookup table  
18 in the context of the '132 patent as that term is  
19 used.

20 A. Again, that's not specific enough.

21 Q. Why is that not specific enough,  
22 sir?

23 A. Well, because a lookup table alone  
24 wouldn't generally do smoothing, and so I'm  
25 trying to understand how you would -- how you --

1     how your question envisions using the lookup  
2     table in relation to smoothing. And there's --  
3     there's lots of different implementations, and I  
4     guess some of them might have lookup tables; but  
5     without some more specificity, it's hard to  
6     understand what you are asking.

7             Q.     So I understand, based on our  
8     discussion today that, for example, for  
9     Figure 2 -- Figure 2B, which is a highlight of --  
10    of -- of block 117 of Figure 1, is a DR -- is an  
11    embodiment of a DRC unit, correct?

12            A.     That's right.

13            Q.     Could you apply a similar structure  
14    as described in Figure 2B if you were correcting  
15    for smoothing in a digital image?

16            MR. ROBINSON:

17                    Objection, form.

18            THE WITNESS:

19                    It -- it could be possible. I mean,  
20    I have to think about how you might --  
21    might do that, but I -- I certainly  
22    wouldn't want to rule it out.

23            BY MR. AMON:

24            Q.     Could you use the structure of  
25    Figure 2B if you were correcting for contrast

1 enhancement?

2 MR. ROBINSON:

3 Objection, form.

4 THE WITNESS:

5 Again, I -- I wouldn't want to rule  
6 it out without giving that more thought.

7 BY MR. AMON:

8 Q. Could you use the structure Figure  
9 2B if you were correcting for color manipulation?

10 MR. ROBINSON:

11 Objection, form.

12 THE WITNESS:

13 Same answer. I'd want to give that  
14 work some consideration.

15 BY MR. AMON:

16 Q. But you have no reason to think that  
17 it couldn't be done, correct?

18 MR. ROBINSON:

19 Objection, form.

20 THE WITNESS:

21 I mean, it depends on how the  
22 algorithm is presented. I mean, I can  
23 imagine, you know, if the color  
24 manipulation is -- is presented as being  
25 done, you know, for example, with

1 frequency to main processing, then Box  
2 (sic) 2B would be less relevant.

3 BY MR. AMON:

4 Q. And --

5 A. But it -- it could still be used,  
6 but, again, it wouldn't directly change things  
7 the way it would if you are doing it in a spatial  
8 domain.

9 Q. And with respect to these different  
10 types of corrections in applying for your 2B,  
11 that would have been known to a person of skill  
12 in the art back in December of 2009, correct?

13 MR. ROBINSON:

14 Objection, form.

15 THE WITNESS:

16 Well, I mean, what I -- what I said  
17 is I need more time. And so a person of  
18 ordinary skill in the art would have known  
19 that, you know, they would -- they would  
20 have to do some investigation if someone  
21 said, you know, use Figure 2 -- the  
22 architecture of Figure 2B for smoothing.  
23 You know, they'd -- they would think about  
24 it a bit and may be able to come up with  
25 something, but it depends on the

1 constraints whether they could or not.

2 BY MR. AMON:

3 Q. Dr. Villasenor, could I ask you to  
4 read column 3, lines 9 through 27 of the '132  
5 patent and let me know when you've done that?

6 A. Column 3, lines what?

7 Q. Nine through 27.

8 A. (Complied.) Okay.

9 Q. And could you describe for me what  
10 column 3, line 9 through 27 is describing in the  
11 '132 patent?

12 A. I'd prefer to have it -- you know, I  
13 mean, first of all, I think it said it's best --  
14 it's best described, you know, by just reading  
15 the paragraph or that's right here, but it talks  
16 about --

17 Q. So using the words of -- of itself,  
18 it says, "A digital gain can be obtained or  
19 calculated from a gain lookup table," correct?

20 A. It does say that.

21 Q. And then it goes on to read, "The  
22 output of the lookup table is a gain map by a  
23 two-dimensional map of gain coefficients to be  
24 applied to input pixel intensity values,"  
25 correct?

1           A.     That's what it says, yeah.

2           Q.     And then it goes on to describe an  
3     embodiment of that process, correct?

4           A.     Yes.

5           Q.     Okay.  Would a person in the skill  
6     of the art in December of 2009 understand that  
7     you could set up a similar system, a similar  
8     method as described in column 3, lines 9  
9     through 27 for color manipulation?

10          A.     A person skilled in the art would  
11     certainly --

12          MR. ROBINSON:

13                 Objection, form.

14          THE WITNESS:

15                 -- would certainly understand that  
16     it's possible to manipulate attributes  
17     relating to pixel color as -- as  
18     potentially distinct from -- I mean, color  
19     also often relates to intensity.  It  
20     depends on how you represent it.  But a  
21     person ordinarily skilled in the art would  
22     understand, for example, if you have a  
23     pixel expressed in terms of hue saturation  
24     value, you could use it for the hue in the  
25     saturation, that you could use techniques

1           like this.

2       BY MR. AMON:

3           Q.     And that is -- when you say  
4       "techniques like this," it's, you know, a --  
5       using the output of a lookup table and the use of  
6       a gain map to modify the hue, I believe, is -- is  
7       what you said, correct?

8           A.     I think you could -- a person  
9       skilled in the art would understand that a hue  
10      could be modified by operations on pixels.

11          Q.     Okay. Same question regarding  
12      sharpness adjustment. A person with skill in the  
13      art would understand in December 2009 that you  
14      could use the method described at column 3,  
15      line 9 through 27 to modify, adjust sharpness  
16      adjustment?

17          A.     Well, again, it depends on --

18       MR. ROBINSON:

19               Object to the form.

20       THE WITNESS:

21               It depends what you mean by the  
22      method of -- of -- that's described, but  
23      it's certainly true and the -- the patent  
24      discusses sharpness adjustment later on, I  
25      believe.



1 MR. AMON:  
2 It's in that same column.  
3 THE WITNESS:  
4 Oh, okay. I thought it was later  
5 on. But anyway, well, there's some  
6 discussion later on about improving  
7 contrast. So they would understand that  
8 you could -- you know, you could use --  
9 you know, you could -- I mean, you could  
10 apply various mathematical operations with  
11 respect to improving contrast.  
12 BY MR. AMON:  
13 Q. So is improving contrast a sharpness  
14 adjustment?  
15 A. Well, it depends on how it's done.  
16 Q. And -- and certain --  
17 A. I mean, if it's done --  
18 Q. Go ahead.  
19 A. If it's done --  
20 Q. I didn't mean to cut you off. I'm  
21 sorry.  
22 A. Well, if it's done -- if you improve  
23 the contrast on an edge, which is I think what it  
24 says later on in the patent, then that could be  
25 understood as a proven contrast. I mean, it

1 depends on -- depends on -- it depends on the --  
2 well, it's -- it's very context dependent, but if  
3 you are talking specifically about the visibility  
4 of an edge, then it would -- you know, it  
5 would -- you could say you've improved the  
6 contrast of the edge relative to the pixel next  
7 to it, for example.

8 Q. And that would be an example of  
9 sharpness adjustment?

10 A. Well, sharpness adjustment you  
11 generally would be, you know, changing how -- for  
12 example, changing the -- the very local  
13 attributes of -- of edges, for example.

14 Q. And that -- a way of adjusting  
15 sharpness is by changing contrast?

16 A. Well, again, it depends on what  
17 contrast means, but -- but if contrast is -- is  
18 interpreted in the sense of, you know, between  
19 the edge pixel and the pixel adjacent to it, then  
20 you could use that term. That's not talking  
21 about overall image contrast.

22 Q. And is that adjusting pixel  
23 intensity values, what you've just described?

24 A. It would depend.

25 Q. Depend on what?

1           A.     I -- I don't know. You switched  
2           gears. You were talking about colors, then you  
3           were talking about edges, so it depends. I mean,  
4           it depends what you mean.

5           Q.     Well, I -- I changed to edges when  
6           we started talking about sharpness adjustment, so  
7           that's why I'm asking, in the context of  
8           sharpness adjustment, is -- and what you've just  
9           described about identifying edges and  
10          manipulating edges, is that pixel -- is that an  
11          adjustment of pixel intensity values?

12          A.     Well, generally if you were going to  
13          enhance an edge, for example, you would have to  
14          change the pixel intensity value in order to  
15          achieve that goal. I mean, it depends on the  
16          context, but that would be normally what you  
17          would do.

18          Q.     And then turning back to the section  
19          at column 3, lines 9 through 27, could you use  
20          that same framework method described there for  
21          skin smoothing?

22                 MR. ROBINSON:

23                         Objection, form.

24                 THE WITNESS:

25                         You know, again, it depends on the

1           specific algorithm.  There's multiple  
2           algorithms you could use for skin  
3           smoothing.

4   BY MR. AMON:

5           Q.     Let me -- let me ask a different  
6           question.  At -- would a person of skill in the  
7           art in 2009 understand that you could use the  
8           method described at column 3, lines 9 through 27  
9           for skin smoothing?

10          MR. ROBINSON:

11                 Objection, form.

12          THE WITNESS:

13                 Maybe.  It depends, you know, what  
14           kind of smoothing is involved and what  
15           they meant by skin smoothing.  It would  
16           depend.  Not necessarily.

17   BY MR. AMON:

18           Q.     But that -- but it is possible,  
19           correct?

20          MR. ROBINSON:

21                 Objection, form.

22          THE WITNESS:

23                 And, again, it depends what is meant  
24           by -- by skin smoothing and it depends on  
25           the kind of class of -- it depends.

1 MR. AMON:  
2 Why don't we take a break?  
3 (A lunch recess was taken.)  
4 BY MR. AMON:  
5 Q. Dr. Villasenor, are you ready?  
6 A. Yeah.  
7 MR. AMON:  
8 Okay. I'm going to hand you what  
9 has been previously marked as Exhibit 1004  
10 in the IPR matters.  
11 (Document tendered.)  
12 BY MR. AMON:  
13 Q. If I could ask you to identify what  
14 is Exhibit 1004?  
15 A. This appears to be the Needham  
16 reference.  
17 Q. And just so the record's complete,  
18 that's Needham --  
19 A. I'm not sure what else you meant.  
20 Q. Oh, no, no, no. I -- I was just  
21 going to --  
22 A. Okay.  
23 Q. -- enter it into the record. I  
24 didn't mean for you to do anything. Publication  
25 No. US 2002, forward slash, 0181801 A1.

1                   And, Dr. Villasenor, this is the  
2                   Needham reference that is the subject of the  
3                   '1250 IPR; is that correct?

4                   A.       The Needham reference is one of the  
5                   references cited in -- yes.

6                   Q.       And this is the same Needham  
7                   reference that you reviewed in forming your  
8                   opinions in the '1250 IPR matter?

9                   A.       It appears to be.

10                  Q.       Any reason to believe that this is  
11                  not a true, correct, and complete copy of the  
12                  Needham reference that you reviewed?

13                  A.       No.

14                  Q.       Dr. Villasenor, as it relates to the  
15                  Needham reference, are corrections under the  
16                  method described in Needham applied to digital  
17                  image data?

18                  A.       I am not sure what -- what -- what  
19                  you're -- I'm not sure what you are asking me.  
20                  It's about -- it talks about image -- it talks  
21                  about image processing here.

22                  Q.       Right. And -- and it talks about a  
23                  method for performing certain procedures on image  
24                  processing -- on -- on images, correct?

25                  MR. ROBINSON:

1                   Objection to form.

2                   THE WITNESS:

3                   Well, I think it's better to stand  
4                   on its own here. It talks about -- it  
5                   talks about different -- different  
6                   operations on digital images.

7                   BY MR. AMON:

8                   Q.     Right. So section or paragraph 1 of  
9                   Needham specifically -- specifically reads,  
10                  "Aspects of the present invention relate to  
11                  digital imaging. Other aspects of the present  
12                  invention relate to content-based digital image  
13                  processing," correct?

14                  A.     Yes.

15                  Q.     So, and then if you turn over in  
16                  Needham, for example, paragraph 18, it starts,  
17                  "Feature-based image correction is performed  
18                  based on detected image features," correct?

19                  A.     I'm sorry. Which paragraph?

20                  Q.     Sorry. Eighteen of Needham.

21                  A.     Yes.

22                  Q.     And so my question is the -- the  
23                  feature-based image correction that is being  
24                  described, for example, at paragraph 18, that's  
25                  being applied to a digital image, correct?

1           A.     It's being applied to digital image  
2 data is the way I would put it, yeah.

3           Q.     All right. Needham paragraph 20, if  
4 you could read that to yourself and let me know  
5 when you've done that?

6           A.     (Complied.) Yes.

7           Q.     And you've read paragraph 20 to  
8 yourself?

9           A.     Yeah.

10          Q.     Now, as you understand Needham,  
11 would a person of skill in the art at the  
12 relevant time know that you could adjust pixel  
13 intensity to adjust contrast using Needham?

14          MR. ROBINSON:

15                 Objection, form.

16          THE WITNESS:

17                 I guess I'm not sure I understand  
18 the question. Changing the contrast would  
19 of necessity involve some changes to  
20 the -- the pixel of the content.

21          BY MR. AMON:

22          Q.     And would that change necessarily  
23 require a change in pixel intensity?

24          A.     I can imagine you would -- you could  
25 do it with -- with hue of a pixel, if you wanted



1 to do that. That's not what's described here,  
2 but I haven't really given it much thought.

3 Q. Let me ask a different question.  
4 Would a person of skill in the art at their own  
5 time know that you could use Needham to adjust  
6 pixel intensity and thereby adjust contrast?

7 MR. ROBINSON:

8 Objection, form.

9 THE WITNESS:

10 A person of ordinary skill in the  
11 art would know that there's -- that  
12 Needham does describe enhancing the  
13 contrast in that that would -- and that  
14 would involve changing, generally  
15 speaking, in changing the intensity of --  
16 of the pixel value or more than one.

17 BY MR. AMON:

18 Q. Would a person of skill in the art  
19 know that Needham describes in enhancing the  
20 brightness and that that would involve  
21 changing -- generally changing the intensity of  
22 the pixel value or more than one pixel value?

23 A. Well, I mean, almost -- almost --  
24 most operations, almost any operation involves  
25 changing intensities. It's -- it's -- you know,

1 increasing the brightness would be a different,  
2 you know, correction. It's described as a  
3 different correction operation than enhancing the  
4 contrast, but in both cases you would change  
5 pixel values.

6 Q. And that would include changing  
7 pixel intensity for both brightness and contrast,  
8 fair?

9 A. Well, for brightness it certainly  
10 would, but -- but for contrast, you know, it  
11 would depend on how you did it; but -- but, like  
12 I said, almost any -- any -- any manipulation of  
13 images could involve some change to the pixel  
14 values.

15 Q. So if I could ask you to turn to  
16 your declaration at paragraph 40. I'm sorry.  
17 Your declaration in the '1250 IPR.

18 A. Yeah.

19 Q. In there you are citing -- quoting,  
20 actually, paragraph 22 of Needham, correct, among  
21 other things, but --

22 A. Well, I'm quoting it as quoted with  
23 emphasis in the petition, that's right.

24 Q. And so you looked at paragraph 22 of  
25 Needham in doing your analysis, correct?

1           A.     Yes.

2           Q.     And do you -- if you want to take a  
3 moment to refresh yourself on what paragraph 40  
4 says, let me know when you've done that.

5           A.     When you say paragraph 40, just --

6           Q.     I'm sorry. Paragraph 40 of your  
7 declaration, which includes the reference to  
8 Needham paragraph 22.

9           A.     Okay.

10          Q.     Now, is it your opinion that Needham  
11 is disclosing a system where the same amount of  
12 correction is applied to the entire image based  
13 on the weight of the object detected, the weight  
14 assigned to the object detected?

15          A.     I don't think it's --

16          MR. ROBINSON:

17                 Object to the form.

18          THE WITNESS:

19                 I don't think it specifically  
20 says -- it doesn't specifically say the  
21 same amount of correction.

22          BY MR. AMON:

23          Q.     Well, that's what I'm trying to  
24 figure out, right, because in reading your  
25 declaration, it seems as though you're opining

1     that Needham essentially -- for example, if  
2     you -- given the example in Needham, takes an  
3     image that includes both face and a building and  
4     assigns certain weight to the face and certain  
5     weight to the building, and then based on those  
6     weights will apply a correction to the image.

7             A.     I'm sorry.  Is there a question?

8             Q.     Yeah.  And so my question is --  
9     first of all, did I -- did I somehow  
10    mischaracterize how you understand Needham to  
11    work?

12            A.     You may have.

13            MR. ROBINSON:

14                    Objection, form.

15            THE WITNESS:

16                    You may have, but again, I -- I  
17     don't have a realtime here, so I -- I  
18     don't remember exactly what you said.

19            MR. AMON:

20                    Okay.

21            THE WITNESS:

22                    Show me the realtime, I'll look at  
23     it and tell you.

24            THE REPORTER:

25                    (Complied.)

1 THE WITNESS:

2 Well, I think it -- it says that you  
3 can have different -- different relative  
4 weights and they -- and -- and I -- as,  
5 you know, the quote says, such weights may  
6 be used to control the correction  
7 parameters during the corrections. I  
8 think that's if -- if that's -- if what  
9 you were saying was intentionally  
10 attempting to say the same thing as what  
11 was in paragraph 22, then -- then I would  
12 agree with it.

13 MR. AMON:

14 Okay.

15 THE WITNESS:

16 If you are -- I mean, I agree  
17 with -- I agree that Needham says what's  
18 in paragraph 22.

19 BY MR. AMON:

20 Q. Okay. And then my question is, so  
21 then it can use those weights to apply certain  
22 correction to the image, correct?

23 MR. ROBINSON:

24 Objection, form.

25 THE WITNESS:

1 Well, it says the weights can be  
2 used to control the correction parameters  
3 during the correction and then it -- then  
4 it goes on to say some other things.

5 BY MR. AMON:

6 Q. And -- and so my question is, if you  
7 use the weight of a face versus the weight of a  
8 building, okay, and the example, it's provided in  
9 Needham, and you are applying correction and you  
10 determine that the face has a greater weight and  
11 so you are going to use the face to apply  
12 correction, is it applying in your opinion a  
13 single correction to the entire image?

14 MR. ROBINSON:

15 Objection, form.

16 THE WITNESS:

17 I -- I guess I am not quite  
18 understanding what you're saying. It's --  
19 in this particular example?

20 MR. AMON:

21 In -- yes, in this particular  
22 example.

23 THE WITNESS:

24 Well, as I explain in paragraph --  
25 let's see. I mean, paragraphs 43

1           through 46, I guess, it's -- it's really  
2           this -- this particular paragraph is -- is  
3           unclear for the reasons -- I mean, I --  
4           there's no sense in reading -- reading  
5           while we're on the record, but -- but it's  
6           ambiguous what's actually being said in  
7           this paragraph because it's -- because  
8           it's contradictory.

9       BY MR. AMON:

10           Q.     And is it contradictory because of  
11           your discussion, paragraph 44, regarding  
12           maximizing the intensity of dynamic range?

13           A.     Well, that's one reason it's --  
14           it's -- it's unclear. It's an ambiguous  
15           disclosure.

16           Q.     So let me ask. Paragraph 22  
17           specifically reads -- and paragraph 22 of  
18           Needham, just to be clear. I'm sorry -- "For  
19           instance, if the correction operation of  
20           maximizing intensity dynamic range is applied to  
21           both human faces and buildings and a human  
22           face" -- "and a human face feature has a higher  
23           weight than a building feature, the intensity  
24           dynamic range used for correcting human faces in  
25           an image may be larger corresponding to a higher

1 contrast than that used for correcting buildings  
2 in an image." Did I read that correctly?

3 A. You did.

4 Q. Does that mean that the maximum  
5 intensity dynamic range applied to the image  
6 based on the weight assigned to a face is  
7 different than the maximum intensity dynamic  
8 range applied to the image based on the weight of  
9 a building?

10 MR. ROBINSON:

11 Objection, form.

12 THE WITNESS:

13 Well, I -- I addressed that point  
14 already. That's why I addressed it in  
15 paragraph 45, so --

16 BY MR. AMON:

17 Q. And what is your opinion on that?

18 A. Well, as I wrote it. If -- if the  
19 post maximizing dynamic range is -- is it means,  
20 you know, going, making, exercising the full  
21 dynamic range of the -- of the -- that's  
22 permissible, so -- and so that's incon -- it's a  
23 self inconsistent set of statements in Needham  
24 in -- in that regard.

25 Q. So let me -- let me ask that



1 question. As a person of skill in the art at the  
2 relevant time, would you understand maximize --  
3 maximizing intensity dynamic range to mean that  
4 you are going from 0 to 255? And I -- I'm not  
5 sure what the unit is --

6 A. Well, generally, yeah.

7 Q. -- but I understand that's the  
8 scale.

9 A. Generally, yeah. That -- that's  
10 what maximizing intensity dynamic range means.  
11 It means you want to use the full -- as -- as  
12 much dynamic range as you possibly can, which if  
13 you go from -- if you are talking about intensity  
14 is 0 -- 0 if -- if 0 is black and 255 is white,  
15 you would -- you would use the whole range.

16 Q. And is there a difference between  
17 maximizing intensity dynamic range and adjusting  
18 intensity dynamic range?

19 MR. ROBINSON:

20 Objection, form.

21 THE WITNESS:

22 Well, I think maximizing intensity  
23 dynamic range is -- is more -- is more  
24 specific.

25 BY MR. AMON:

1 Q. How so?

2 A. Well, because maximizing --  
3 adjusting dynamic range -- intensity dynamic  
4 range doesn't tell you anything specific about  
5 what the result of the adjustment is, whereas  
6 maximizing intensity dynamic range does.

7 Q. So let me come back to Needham  
8 paragraph 22, if I could for a moment; and in  
9 relevant part, it reads -- well, let me read the  
10 whole thing that we were just dealing with on  
11 paragraph 22. "For instance, if the correction  
12 operation of maximizing intensity dynamic range  
13 is applied to both human faces and buildings and  
14 a human face feature has a higher weight than a  
15 building feature, the intensity dynamic range  
16 used for correcting human faces in an image may  
17 be larger corresponding to a larger contrast than  
18 that used for correcting buildings in an image."  
19 That's the same section I read before, correct?

20 A. That's right.

21 Q. Now, in that context, would a person  
22 that's skilled in the art such as yourself  
23 understand that the intensity dynamic range  
24 applied to the image based on the weight assigned  
25 to a face would be different than the intensity

1 dynamic range applied to the image based on the  
2 weight of the building?

3 A. I don't know. I think it says  
4 maximizing intensity dynamic range, so I think a  
5 person of ordinary skill in the art would  
6 understand that to mean exactly what it says,  
7 which is maximizing intensity dynamic range.

8 Q. And so that reverts you back to  
9 using the full scale of 0 to 255?

10 A. That's what maximizing intensity  
11 dynamic range is.

12 Q. And so as you --

13 A. Well, if -- if 0 is black and 255 is  
14 white.

15 Q. I -- I understand.

16 A. Right.

17 Q. And -- and for purposes of our  
18 discussion here today, let's assume that 0 is  
19 black and 255 is white.

20 A. Right.

21 Q. Okay. And so as you understand it,  
22 Needham doesn't differentiate between applying a  
23 different intensity dynamic range to a face which  
24 may have a higher weight value than applying --  
25 than the intensity dynamic range applied to a

1 building which may have a lower weight value,  
2 correct?

3 MR. ROBINSON:

4 Objection to form.

5 THE WITNESS:

6 I'm not sure I understood that  
7 question.

8 BY MR. AMON:

9 Q. What didn't you understand about it?

10 THE WITNESS:

11 Guys, got the realtime? I'll take  
12 it.

13 MR. AMON:

14 Sure.

15 THE REPORTER:

16 (Complied.)

17 THE WITNESS:

18 I don't know what you mean by  
19 applying a different intensity dynamic  
20 range.

21 BY MR. AMON:

22 Q. Fair enough. As you understand it,  
23 Needham doesn't differentiate between correcting  
24 the dynamic intensity range applied to a face  
25 that has a higher weight value than correcting

1 the intensity dynamic range applied to a building  
2 which may have a lower weight value, correct?

3 MR. ROBINSON:

4 Objection, form.

5 THE WITNESS:

6 Yeah. I'm sorry. The question is  
7 it doesn't intense -- it doesn't  
8 differentiate?

9 MR. AMON:

10 Yeah.

11 THE WITNESS:

12 Well --

13 MR. AMON:

14 Let's read it, if you are lost.

15 THE WITNESS:

16 Well, it purports to differentiate  
17 in some sense, because later on in  
18 paragraph 22, it says the intensity  
19 dynamic range used for correcting human  
20 faces in an image may be larger than that  
21 used for correcting a building. So it --  
22 it purports to differentiate it, but  
23 it's -- as I mentioned, it's ambiguous and  
24 inconsistent with -- with the earlier  
25 text.

1 BY MR. AMON:

2 Q. Could I ask you to turn to  
3 paragraph 32 of Needham, please?

4 A. (Complied.)

5 Q. And if I could ask you to read that  
6 section to yourself and -- and just so you're  
7 aware. I want to make sure. I don't want to --

8 You -- you discuss paragraph 32 of  
9 Needham at the end of paragraph 51 of your  
10 declaration.

11 A. Okay. Thank you.

12 Q. And can you read paragraph 32 to  
13 yourself? Let me know when you've done that.

14 A. (Complied.) Okay.

15 Q. In paragraph -- and really the  
16 second half of Needham, paragraph 32 starting  
17 "The operational parameters," it's about  
18 two-thirds of the way down. Do you see that? It  
19 starts, "The operational parameters may also  
20 specify that different occurrences of?"

21 A. Yes.

22 Q. Okay. So the discussion that starts  
23 there and goes to the end of paragraph 32 is  
24 describing applying different amounts of  
25 Intensity Dynamic Range Correction to different

1 size faces in -- in that example, correct?

2 A. Well, it says, "The intensity  
3 dynamic range used for correcting a particular  
4 human face may be determined according to the  
5 size of the face." That is written from the  
6 patent or the application.

7 Q. It also reads, "The larger the face;  
8 e.g., the closer to the camera, the larger the  
9 dynamic range that may be used so that the face  
10 can be seen more clearly," correct?

11 A. That's right. It does say that.

12 Q. And so therefore, that's describing  
13 applying different amounts of Intensity Dynamic  
14 Range Correction to different size faces in the  
15 same image, correct?

16 A. Well, it's -- it's --

17 MR. ROBINSON:

18 Objection, form.

19 THE WITNESS:

20 It's describing a different Dynamic  
21 Range Correction. I don't know that I  
22 would agree that it's different amounts of  
23 the correction. It depends on the  
24 specifics.

25 BY MR. AMON:

1           Q.     So it reads, "The operational  
2 parameters may also specify that different  
3 occurrences of the same image feature type; e.g.,  
4 different human faces in an image," right, that's  
5 a single image, "receive a different" -- "a  
6 differing correction operation," correct?

7           A.     A differing correction operation,  
8 that's true. But the correcting operation, it  
9 isn't -- it isn't matched to -- to these -- to  
10 these objects.

11          Q.     No, no. I understand your point  
12 about not matching. What I'm asking here is the  
13 example being discussed is of an image having  
14 different size faces and both of those faces are  
15 receiving different amounts of intensity dynamic  
16 range adjustment?

17          MR. ROBINSON:

18                 Objection, form.

19          THE WITNESS:

20                 Well, again, I agree with what you  
21 said before, which is it was a different  
22 correction operation because it is a  
23 different correction operation, but I  
24 don't agree that it's necessarily  
25 different amounts of the same correction.



1 BY MR. AMON:

2 Q. Both -- in that example, both of the  
3 faces in an image, a single image, are -- are  
4 receiving intensity dynamic range adjustment,  
5 correct?

6 A. They are -- they are having their  
7 dynamic range modified, that's right.

8 MR. AMON:

9 Dr. Villasenor, I'm going to hand  
10 you what's been previously marked as  
11 Exhibit 1005.

12 (Document tendered.)

13 BY MR. AMON:

14 Q. And I'll ask you to identify for the  
15 record, you've seen Exhibit 1005 before?

16 A. I have.

17 Q. And what is Exhibit 1005?

18 A. It's the prior art reference termed  
19 Nonaka, N-O-N-A-K-A, in this matter.

20 MR. AMON:

21 And just, for the record, it's  
22 Publication US 2008, forward slash,  
23 0007634 A1.

24 BY MR. AMON:

25 Q. And this is the same Nonaka

1 reference that you analyzed in forming your  
2 opinions in both the '1250 and '1251 IPR matters?

3 A. It appears to be.

4 Q. Do you have any reason to believe  
5 that this is not a true, complete, and correct  
6 version of the Nonaka prior reference?

7 A. I do not.

8 Q. So if I could ask you to turn to  
9 paragraphs 8 and 9 of Nonaka on page 11 of that  
10 reference.

11 A. (Complied.) Yep.

12 Q. And if you could read those  
13 paragraphs to yourself and let me know when  
14 you've done that.

15 A. (Complied.) Okay.

16 Q. I believe you opined that Nonaka  
17 applies a correction to a monitored image and a  
18 correction to a captured image also or describes  
19 doing that, correct?

20 A. Well, I'd --

21 MR. ROBINSON:

22 Objection, form.

23 THE WITNESS:

24 I'd rather see -- yes. I certainly  
25 agree that there's a monitored image and a

1           captured image --

2           MR. AMON:

3                 Okay.

4           THE WITNESS:

5                 -- but I can't recall exactly the

6           words that I used.

7   BY MR. AMON:

8           Q.     I'm not trying to put words in your

9   mouth. You are welcome to look at your

10   declaration.

11          A.     I'm just trying to see what I said

12   about it.

13          Q.     Paragraph 34, page 10 of your

14   declaration.

15          A.     Great. Okay.

16          Q.     So you'll agree that Nonaka has one

17   differential processing system that uses two

18   different processing approaches: One for the

19   monitored image and the other for the captured

20   image?

21          A.     It has two packs and it -- and it

22   does some different things on those packs,

23   different packs.

24          Q.     And one is for a monitored image and

25   one is for a captured image, correct?

1           A.     I think that's right, yes.

2           Q.     Now, as you understand Nonaka as a  
3 person of skill in the art and having read  
4 paragraphs 8 and 9 as it relates to the monitored  
5 image, is Nonaka manipulating, adjusting --  
6 whatever phrase you want to use -- the monitored  
7 image and is that manipulation to digital image  
8 data?

9           MR. ROBINSON:

10                  Objection, form.

11           THE WITNESS:

12                  Nonaka is operating on -- on digital  
13 data, digital image data, yes.

14           BY MR. AMON:

15           Q.     And is Nonaka operating on digital  
16 image data as it relates to the captured image  
17 path?

18           A.     As it relates to capturing the  
19 image, it is in digit -- my understanding is it's  
20 in digital -- digital form.

21           Q.     And as you understand Nonaka as a  
22 person skilled in the art, does Nonaka describe  
23 using the same type of correction but in  
24 different amounts for a captured image and a  
25 monitored image?

1           A.     First of all, I don't -- I don't  
2 recall that Nonaka's matched to anything. But if  
3 you look at -- it talks about using, for example,  
4 I think it was gain. I have to look here. Yeah.  
5 It's changing brightness for the sake of the  
6 image and it's doing it differently depending on  
7 which image it is.

8           Q.     Right. But I'm not sure that that  
9 answered my question because my question was  
10 really focused on the type of correction that's  
11 being applied. And I'll read from paragraph 8 of  
12 Nonaka, which specifically says -- and I'll read  
13 the whole thing because it's a single, one line  
14 sentence. "In a camera of the present invention,  
15 when an acquired image signal is corrected or  
16 modified so as to raise luminance of a signal or  
17 brightness of the image represented by the signal  
18 in accordance with the luminance of each region,  
19 a correction amount of the image signal for use  
20 as a photographed image is smaller than that of  
21 an image signal for use as a monitored image."  
22 Did I read that correctly?

23          A.     Yes. Those two -- or it's -- we are  
24 talking about two different images here, right,  
25 the -- the monitored image and the -- the

1 photographed image; and yes, it's talking about a  
2 different -- different correction amount in those  
3 two different images.

4 Q. But it's the same correction type in  
5 those two images?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 Well, that -- that paragraph doesn't  
10 specifically say that. It just says  
11 specific correction amount.

12 BY MR. AMON:

13 Q. Would a -- would a person of skill  
14 in the art reading paragraph 8 understand that  
15 that is referring to the same correction type in  
16 different amounts applied to a monitored image  
17 versus a photographed image?

18 MR. ROBINSON:

19 Objection, form.

20 THE WITNESS:

21 Not necessarily. You would have to  
22 read the other parts of Nonaka.

23 BY MR. AMON:

24 Q. So you are saying that a person of  
25 skill in the art reading paragraph 8 would not

1 understand that it's talking about a single  
2 correction applied in different amounts,  
3 depending on whether you were talking about the  
4 photographed image or the monitored image?

5 MR. ROBINSON:

6 Objection, form. Asked and  
7 answered.

8 THE WITNESS:

9 Well, it depends how you raise the  
10 luminance of the signal. That's why I  
11 said there -- I -- I don't recall the  
12 specifics, but there may be other  
13 information -- Nonaka had more information  
14 about that, but just the -- the mere fact  
15 that you are raising luminance doesn't  
16 tell you everything to know -- to know  
17 that it's the same correction.

18 BY MR. AMON:

19 Q. You'll agree with me that  
20 paragraph 8 says, or excuse me, reads, "A  
21 correction amount of the image signal for use as  
22 a photographed image is smaller than that of an  
23 image signal for use as another" -- "as a monitor  
24 image"?

25 A. I -- I agree with that. That's what

1 it says, yes.

2 Q. And smaller is referring to amount?

3 A. Correct. I agree.

4 Q. If I could ask you to turn to your  
5 declaration, paragraph 74, please?

6 A. (Complied.)

7 Q. So in paragraph -- and could you  
8 read paragraph 74 to yourself and let me know  
9 when you've done that, please.

10 A. (Complied.) Okay.

11 Q. In paragraph 74, you write in  
12 relevant part in the middle of the paragraph, "In  
13 fact, these gain values from Nonaka are dependent  
14 on sufficient pre-brightening of the image to  
15 have visible faces." Did I read that correctly?

16 A. Yes.

17 Q. And then towards the end of that  
18 paragraph, it's -- the ultimate sentence reads,  
19 "For example, without the pre-brightening of  
20 Nonaka, faces may not be detected on which to  
21 apply matched corrections." Did I read that  
22 correctly?

23 A. Yes.

24 Q. In your review of Nonaka, did you  
25 identify any place in Nonaka where it uses the



1 term "pre-brightening"?

2 MR. ROBINSON:

3 Objection, form.

4 THE WITNESS:

5 I don't recall.

6 MR. AMON:

7 I'll come back to that question.

8 THE WITNESS:

9 Actually, paragraph 42.

10 BY MR. AMON:

11 Q. Of Nonaka?

12 A. Yeah.

13 Q. Sorry. Can you read me where in

14 paragraph 42 Nonaka uses the term

15 "pre-brightening"?

16 A. Oh, it doesn't use the actual term

17 pre-brightening --

18 Q. Okay.

19 A. -- but it talks about brightening a

20 dark part of the image so that -- so that the

21 face can be detected.

22 Q. Okay. But it doesn't use the term

23 pre-brightening, correct?

24 A. It doesn't use the specific term

25 pre-brightening, no.

1           Q.     Under the method taught by Nonaka,  
2 does that require pre-brightening to use the  
3 Nonaka method?

4           MR. ROBINSON:

5                   Objection, form.

6           THE WITNESS:

7                   Oh, I don't recall.

8 BY MR. AMON:

9           Q.     I ask you to read paragraphs 65 to  
10 68 of Nonaka. Please go ahead and do that, and  
11 let me know when you've done that.

12          A.     (Complied.) Okay. I've read it.

13          Q.     Okay. So as you understand  
14 paragraph -- the disclosure in paragraph 65  
15 through 68 of Nonaka, is the pre-brightening  
16 required in all circumstances in the method  
17 taught by Nonaka?

18          A.     I mean, I -- I -- I just read this  
19 quickly, but as far as I can tell, it  
20 specifically says it's brightening the dark part  
21 to make it visible.

22          Q.     Where are you reading, please?

23          A.     So, for example, the second half of  
24 paragraph 65 and also the bottom of paragraph 67.  
25 Again, I just read this quickly, but I do see two

1 things that appear, at least at first glance, to  
2 be addressing that issue.

3 Q. Okay. But you skipped over  
4 paragraph 66, which reads, "When a face is  
5 detected in this manner, the display section  
6 displays the face visibly as much as possible and  
7 the processing returns to step S2 and the step  
8 S2, the focal control and the exposure control in  
9 which the face part is regarded as important, may  
10 be performed by use of detected facial  
11 information. Moreover, while circulating this  
12 loop, a release operation is weighted, open  
13 parenthesis, step S3, closed parenthesis.  
14 Paragraph 67?

15 A. You took that out of context,  
16 though.

17 Q. Well, but let me finish reading  
18 paragraph 67. "On the other hand when the face  
19 cannot be detected in the step S 11, steps S 11  
20 no, the process is performed so as to realize the  
21 face detection. For example, in the image in  
22 which the face is too dark to be detected as  
23 shown in Figure 2B, the exposure and the  
24 processing of the image are switched to obtain  
25 the image in which the background is whitened to

1 disappear. The dark part is regarded as  
2 important and the face can be detected as shown  
3 in Figure 2C." So that's talking about  
4 pre-brightening when no face is detected on an  
5 initial pass, correct?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 Well, but I think you've -- I mean,  
10 you've -- you've omitted what happened in  
11 paragraph 65.

12 BY MR. AMON:

13 Q. Okay. So are you saying that there  
14 are two brightening or pre-brightening procedures  
15 to try to detect faces in Nonaka?

16 MR. ROBINSON:

17 Objection, form.

18 THE WITNESS:

19 I'm -- I'm saying that Nonaka in  
20 a -- I guess, I haven't focused  
21 specifically on the text that you are  
22 highlighting right now and in the  
23 declaration, but the -- there's multiple  
24 descriptions here that I think refer to  
25 brightening in both paragraph 67 as well

1 as paragraph 65; and -- and just for  
2 context, paragraph 74 in my declaration is  
3 identifying one of multiple reasons I  
4 provide that I don't believe the  
5 combination of -- of modifying Needham in  
6 light of Nonaka would be something that  
7 would be feasible.

8 BY MR. AMON:

9 Q. I understand that. My question is  
10 actually more simple than that. Dr. Villasenor,  
11 as a person of skill in the art, as a person of  
12 extraordinary skill in the art given your  
13 extensive experience in digital image processing,  
14 as you understand Nonaka, does it require  
15 pre-brightening in every single circumstance --

16 MR. ROBINSON:

17 Object --

18 BY MR. AMON:

19 Q. -- as used in the Nonaka?

20 MR. ROBINSON:

21 Object to form. Asked and answered.

22 THE WITNESS:

23 And just to clarify, what --

24 whatever level of skill I have beyond a

25 POSITA, the declaration expresses my views

1           what I believe would be through the eyes  
2           of a person of ordinary skill in the art.  
3           So the question -- you know, the issue  
4           that I might have more than that skill  
5           than that is -- is not, however, in the  
6           declaration, just -- so that's an  
7           important clarification. So through the  
8           eyes with the lens of one ordinarily  
9           skilled in the art, again, you know, I'm  
10          just looking at this quickly having not  
11          specifically focused on this paragraph,  
12          you know -- you know, until -- you know,  
13          in the recent last day or so. I don't,  
14          you know, recall the specifics, but it  
15          seems to me that there's disclosure in  
16          both paragraphs 67 and 65 that's relevant  
17          to your -- to your question.

18       BY MR. AMON:

19           Q.       And my question is very simple.  
20       Does it require pre-brightening in all  
21       circumstances under the method described by  
22       Nonaka?

23           MR. ROBINSON:

24                   Objection, form. Asked and  
25                   answered.

1 THE WITNESS:

2 Again, so you've -- we've  
3 constrained -- I mean, I'm looking at  
4 paragraph 65 and it talks about correction  
5 amount of the dark part to further  
6 emphasize the contrast value, and this --  
7 and that seems to be something that would  
8 involve or could involve brightening and  
9 then it goes on to also talk about it in  
10 67.

11 BY MR. AMON:

12 Q. No. And I appreciate that,  
13 Dr. Villasenor. In paragraph 74 of your  
14 declaration, you talk about Nonaka having this  
15 pre-brightening process. Fair?

16 A. I'm not sure if I called it a  
17 pre-brightening process, but --

18 Q. I will describe it however you want.  
19 It says pre-brightening of the image.

20 A. Right. I'm just -- I was reflecting  
21 the fact that Nonaka does talk about amplifying  
22 the dark parts to make the faces more visible and  
23 the incompatibility that that would create with  
24 respect to Needham.

25 Q. And my question for you, as a person

1 of ordinary skill in the art, Dr. Villasenor, as  
2 you sit here having reviewed Nonaka is does  
3 Nonaka require pre-brightening of the image in  
4 all circumstances?

5 A. Well, I -- I guess I think  
6 paragraph 67 certainly is disclosing that since  
7 the dark part is regarded as important and it's  
8 -- that whole thing is made more brighter, so I  
9 think it is disclosing something which is  
10 describable as pre-brightening in paragraph 67.

11 Q. And it's your opinion that that's  
12 required in every single instance in which the  
13 Nonaka method is employed?

14 A. Well --

15 MR. ROBINSON:

16 Objection, form. Asked and  
17 answered.

18 THE WITNESS:

19 There's two -- there's two issues  
20 here; one is that that's one branch of the  
21 flowchart, but the resulting device has to  
22 be able to traverse that branch of the  
23 flowchart. So even if that branch of the  
24 flowchart wasn't always traversed, the  
25 fact that it was sometimes traversed is a



1           fundamental incapability between Nonaka  
2           and Needham. And so, in that sense, it  
3           doesn't matter whether it's always done.  
4           It's a problem for the combination no  
5           matter what.

6                     And then, secondly, there's a  
7           separate question whether it's always  
8           done. It's -- it at least must be capable  
9           of doing it and that's right from -- from  
10          that step point -- from that point on, we  
11          know there's a problem with the  
12          combination based on that issue.

13                    And then in paragraph 65, I -- just  
14          based on a quick review, it seems like  
15          that might doing it too, and I -- and  
16          without actually going through and looking  
17          at the flowchart and, you know, really  
18          sort of, you know, reading the full  
19          context, I'm hesitant to draw conclusions  
20          about the entirety of Nonaka, but I -- but  
21          it's -- but it's a problem even if it's  
22          only done some of the time. It's a  
23          problem for the combination.

24       BY MR. AMON:

25               Q.     But you'll agree that if it detects

1 a face initially and Nonaka -- and to be very  
2 clear -- if Nonaka detects a face initially, it  
3 doesn't need to perform the pre-brightening,  
4 correct?

5 MR. ROBINSON:

6 Objection, form.

7 THE WITNESS:

8 Again, I'd -- I'd -- I'd want to  
9 look more carefully at -- at Nonaka, and I  
10 don't -- I don't recall that. But in any  
11 case, it -- it does it sometimes at least  
12 and that -- that's enough -- that's  
13 sufficient for -- that's sufficient for my  
14 argument in paragraph 74 to -- to stand.

15 BY MR. AMON:

16 Q. But you have no opinion as to  
17 whether Nonaka requires pre-brightening every  
18 single time, correct?

19 MR. ROBINSON:

20 Objection, form. Asked and  
21 answered.

22 MR. AMON:

23 Different question.

24 THE WITNESS:

25 Well, and I said it at least

1 involves -- it requires the capability to  
2 do it. It does it in paragraph 67. It  
3 may also do it in paragraph 65. I'd have  
4 to go back and look at the flowchart.

5 BY MR. AMON:

6 Q. As you sit here right now, you have  
7 no opinion one way or the other as to whether  
8 Nonaka requires pre-brightening in every single  
9 use of the Nonaka method?

10 MR. ROBINSON:

11 Objection to form. Asked and  
12 answered.

13 THE WITNESS:

14 Yeah. I'll just give you exactly  
15 the same answer. It's the same question.

16 MR. AMON:

17 How long have we been going?

18 MR. ROBINSON:

19 About 45 minutes, I think.

20 MR. AMON:

21 Dr. Villasenor, I'm going to hand  
22 you what has been previously marked as  
23 Exhibit 2003 in the '1251 IPR.

24 (Document tendered.)

25 BY MR. AMON:

1 Q. And I'll ask you if you've seen  
2 Exhibit 2003 before?

3 A. Yes, I have.

4 Q. And what is Exhibit 2003?

5 A. I believe it's the provisional  
6 application that led to the '132 patent.

7 Q. If I could ask you to turn in  
8 Exhibit 2003 to -- just give me a second -- it is  
9 page 10 of 18 in the bottom right-hand corner?  
10 It's otherwise page 7 of 8 of the actual  
11 provision.

12 A. (Complied.) Okay.

13 Q. And -- and I'll ask you to look and  
14 identify figure -- the figure on that page. If  
15 you could read that into the record what is --

16 A. I'm sorry. I don't know what you're  
17 asking me to read.

18 Q. Down here (indicated), it's  
19 referencing the figure above it.

20 A. You are asking me to read the  
21 caption?

22 Q. Yeah.

23 A. It says, "Figure, colon, capital Z,  
24 dash, Light 2D gain map, hyphen, bright areas  
25 represent higher gain, darker areas represent

1 lower gain."

2 Q. And I'll ask you, Dr. Villasenor, if  
3 you would agree that the gain map on page 10 of  
4 18, Exhibit 2003, corresponds to a -- or is a  
5 gain map of Figure 2 on page 6 of 18?

6 MR. ROBINSON:

7 Objection, form.

8 THE WITNESS:

9 So the question is as it corresponds  
10 to --

11 BY MR. AMON:

12 Q. Is it a corresponding gain map for  
13 Figure 2?

14 A. I think it's a gain map that is --  
15 is derived from the same original image, if  
16 that's what the question is.

17 Q. That is what the question is. And  
18 what does the gain map on page 10 of 12, which is  
19 Figure, colon, Z-Light 2D camera, what does that  
20 gain map represent, as you understand as a person  
21 of skill in the art?

22 A. Well, the answer to that is on  
23 page 8, the bottom paragraph says, "The Z-Light  
24 gain map is a 2D map of digital gain coefficients  
25 which will be applied to the image data."

1           Q.     So in the gain map that's on page 7,  
2 the prior page, what do the lighter areas  
3 represent?

4           A.     It said lighter areas -- well, in  
5 the gain map, it says brighter -- bright areas  
6 represent higher gain.

7           Q.     And what does that mean, as a person  
8 of skill in the art, that bright areas represent  
9 higher gain?

10          A.     I believe it represents the --  
11 the -- that there'll be more brightening applied  
12 in a particular pixel than if the gain was lower.

13          Q.     And what do the darker areas  
14 represent?

15          A.     I believe it says they represent  
16 lower gain.

17          Q.     And as a person of skill in the art,  
18 what does it mean that they represent lower gain?

19          A.     Well, it depends on the specifics.  
20 It could be less brightening, it could be being  
21 made darker. It depends.

22          Q.     In the context that's being  
23 disclosed here in the '132, do you know what the  
24 darker -- what it means that darker areas  
25 represent lower gain?

1           A.     I'm not sure I understand the  
2 question.

3           Q.     As a person of skill in the art, you  
4 read, I believe, that the caption reads darker  
5 areas represent lower gain; and I'm asking you to  
6 explain what does that mean in the context of  
7 this professional application?

8           MR. ROBINSON:

9                   Objection, form. Asked and  
10 answered.

11          THE WITNESS:

12                 It just means that you would -- you  
13 would change the pixel value to a lesser  
14 degree than if you were using a higher  
15 gain, but that could make it -- make it  
16 brighter to a lesser extent or it could  
17 make it darker. It depends.

18          BY MR. AMON:

19                 Q.     So in the provisional in the figure  
20 on page 7, based on the gain map that's disclosed  
21 there, it reflects that both the face and the  
22 body are subjected to higher gain values,  
23 correct?

24          MR. ROBINSON:

25                 Objection, form.

1 THE WITNESS:

2 I'm sorry. Higher relative to what?

3 MR. AMON:

4 Well, it just says higher.

5 THE WITNESS:

6 Right. But the face and the body  
7 aren't necessarily all the same here, so  
8 I'm -- I'm not --

9 BY MR. AMON:

10 Q. Well, but the -- the face and the  
11 bodies in the image are all represented by bright  
12 areas, correct?

13 A. Well, no, not -- not all. I mean,  
14 they are different -- there's some variations  
15 within -- within those images.

16 Q. Right. But they are all generally  
17 represented by bright areas, correct?

18 MR. ROBINSON:

19 Objection, form.

20 THE WITNESS:

21 That's what bright means. They are  
22 brighter than some of the background, but  
23 not all of it.

24 BY MR. AMON:

25 Q. Well, I mean, Dr. Villasenor, you're



1 the expert here. You're the one who's being  
2 asked to interpret as an expert, you know, the  
3 provisional disclosure here. You've offered  
4 extensive opinions about what's disclosed in this  
5 provisional application.

6 I'm asking in the figure on page 7,  
7 both face and body are represented by bright  
8 areas in the figure on page 7 of the provisional  
9 application, correct?

10 MR. ROBINSON:

11 Objection, form. Asked and  
12 answered.

13 THE WITNESS:

14 What I'm saying is, you know, that  
15 as a general matter, the face and body are  
16 brighter than some of the background, but  
17 I -- I can see the person on the right  
18 might have regions in that person's face,  
19 which actually may be darker than -- than  
20 some of the background. I mean, I'd --  
21 I'd have to -- I'd have to look at the  
22 digital values. I don't know. I mean, as  
23 a general matter, they are brighter.

24 MR. AMON:

25 You can put that aside. Thank you.

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THE WITNESS:

(Complied.)

MR. AMON:

Dr. Villaseñor, I will hand you what  
has been previously marked as  
Exhibit 1008.

(Document tendered.)

BY MR. AMON:

Q. And I'll ask you if you have seen  
Exhibit 1008 before?

A. Yes.

Q. What is Exhibit 1008?

A. It's the John Zhang, Z-H-A-N-G,  
patent or, I'm sorry, patent publication. Sorry.

Q. And, for the record, that is  
publication number is US 2010, forward slash,  
0266207 A1. Is this the same Zhang prior art  
reference that you analyzed as part of the '1251  
IPR matter?

A. It appears to be.

Q. Any reason to believe it's not a  
true, correct, and complete copy of the Zhang  
prior art reference that you analyzed?

A. No.

Q. Is the method of correcting data

1 disclosed in Zhang applied to digital image data?

2 A. Yes. It's -- the title also talks  
3 about digital image.

4 Q. If I could ask you to turn to Zhang  
5 paragraph 14, please? It's on page 7 of the  
6 document.

7 A. (Complied.)

8 Q. Let me know when you're there.

9 A. Okay.

10 Q. And the -- the first sentence of  
11 that reads in -- in relevant part to my question,  
12 "The method is applied to an electronic device  
13 capable of receiving or reading a digital" --  
14 "digital image and executing a focus enhancing  
15 process with respect to portrait in the digital  
16 image." Did I read that correctly?

17 A. I believe so.

18 Q. As a person of skill in the art  
19 reading Zhang at the relevant time, would you  
20 understand that that disclosure includes  
21 receiving a digital image from a storage device?

22 MR. ROBINSON:

23 Objection to form.

24 THE WITNESS:

25 It has to get the digital image from

1           some -- somewhere. I -- I don't recall --  
2           you know, I don't recall specifically the  
3           architecture here. I'd have to look.

4 BY MR. AMON:

5           Q.     Would it include a storage device,  
6           an external hard drive, thumb drive, something  
7           along those lines?

8           MR. ROBINSON:

9                   Objection, form.

10          THE WITNESS:

11                   Again, I'd have to look. I don't --  
12           I don't -- I don't recall.

13 BY MR. AMON:

14           Q.     Do you have any reason to believe it  
15           wouldn't include a storage device, such as an  
16           external hard drive or a thumb drive?

17          MR. ROBINSON:

18                   Objection, form.

19          THE WITNESS:

20                   Well, I don't see a storage device  
21           showing -- shown in the -- in the  
22           following diagrams here, so I'd -- I think  
23           I'd have to look and see.

24 BY MR. AMON:

25           Q.     But as a person of skill in the art

1 at the time of the invention, would you  
2 understand that you can receive a digital image  
3 from a storage device such as a hard drive?

4 MR. ROBINSON:

5 Objection, form. Asked and  
6 answered.

7 THE WITNESS:

8 Well, I guess as a -- as a general  
9 matter, of course, you can receive an  
10 image from a storage device, just as in  
11 general you can receive an image from  
12 multiple destinations, but I don't recall  
13 that the source of the image as being a  
14 storage device being something that is a  
15 subject of Dr. Bovik's interpretation.

16 BY MR. AMON:

17 Q. But that's something that would be  
18 within the knowledge of a person with skill in  
19 the art at the relevant time, right?

20 MR. ROBINSON:

21 Objection, form.

22 THE WITNESS:

23 Again, I -- you know, like I said,  
24 as a general matter of a fact that an  
25 image can be stored on a storage device

1           and retrieved from a storage device would  
2           certainly be within the realm of knowledge  
3           of a person of ordinary skill in the art.

4       BY MR. AMON:

5           Q.     If I could ask you to turn back  
6       in -- in Zhang 2, page 6, paragraph 2.

7           A.     (Complied.) Okay.

8           Q.     The first sentence of paragraph 2  
9       reads, "In recent" -- "recent years, digital  
10      image technologies advanced rapidly and various  
11      digital image capturing devices such as CCD and  
12      CMOS of electronic imaging devices such as  
13      digital cameras, digital camcorders, notebook  
14      computers, mobile phones and web cams are  
15      introduced to the market." Did I read that  
16      correctly?

17          A.     Yes.

18          Q.     In the context of that sentence, as  
19      a person with skill in the art, is a CCD a  
20      digital capture device?

21          A.     CCD is a Charge Couple Device and  
22      it's used to -- to -- to capture imaging. It's  
23      to capture images.

24          Q.     So is it a digital capturing device?

25          A.     Well, I think it's called a digital

1 imaging capture device in the -- in the Zhang  
2 patent.

3 Q. And so you would agree that it's a  
4 digital image capture device?

5 A. I agree that Zhang calls it a  
6 digital image capturing device. That's what --  
7 that's what it was termed in Zhang and I don't  
8 have an objection to that term.

9 Q. Would a person of skill in the art  
10 at the relevant time understand that a CCD is a  
11 digital image capture device?

12 A. I guess I'm not understanding your  
13 question. I mean, Zhang is describing it as a  
14 digital image capturing device and it's using  
15 "device" in a -- in a -- obviously a very  
16 small -- you know, semi -- semiconductors are  
17 called devices sometimes, and then entire cameras  
18 are called devices, and they are both reasonable  
19 uses of the term "device." So, as Zhang is using  
20 it, Zhang is saying it's a CC -- a CCD is a image  
21 capturing device.

22 Q. With respect to the CMOS, and I'm  
23 sorry if I'm using the wrong acronym there, but  
24 is the CMOS a digital image capture device at the  
25 realm in time that Zhang --

1           A.     I mean, it's exactly the same answer  
2     and -- but that CMOS and CCD are considered --  
3     are presented in Zhang as alternative  
4     technologies to capture -- you know, to capture  
5     light, you know, in a ray of sensor to capture  
6     light.

7           Q.     And would a person of skill in the  
8     art reading Zhang at the realm in time understand  
9     that a CMOS is a digital image capture device?

10          A.     Again, it depends on context, but in  
11     the context of Zhang as -- as described here,  
12     given that Zhang has characterized it as such, I  
13     don't think a person of ordinary skill in the art  
14     would object to that characterization in this --  
15     in this particular context.

16          MR. AMON:

17                 Dr. Villasenor, you can put Zhang  
18     aside. Thank you.

19                 I'm going to hand you what has been  
20     previously marked as Exhibit 1009.

21                 (Document tendered.)

22          BY MR. AMON:

23                 Q.     I'll ask you if you've seen  
24     Exhibit 1009 before?

25                 A.     Yes, I have.



1 Q. What is Exhibit 1009?

2 A. It is the Konoplev, K-O-N-O-P-L-E-V,  
3 patent.

4 MR. AMON:

5 For the record, it's US Patent  
6 No. 8,265,410 B1.

7 BY MR. AMON:

8 Q. And is this the Konoplev prior art  
9 reference that you reviewed as part of your  
10 analysis in the '1251 IPR matter?

11 A. It appears to be.

12 Q. Do you have any reason to believe  
13 that this is not a true, correct, and complete  
14 copy of the Konoplev prior art reference?

15 A. I do not.

16 Q. If I could ask you to turn in  
17 Konoplev, Exhibit 1009, to claim 1?

18 A. (Complied.)

19 Q. And from reading your declaration, I  
20 believe you've reviewed claim 1 of Konoplev,  
21 correct?

22 A. Yes.

23 Q. Go ahead and take a moment to  
24 refresh your memory with that, please.

25 A. (Complied.)

1 MR. ROBINSON:  
2 While he's looking for that, I don't  
3 want to interrupt, do you have a lot more?  
4 Can we take a bathroom break before too  
5 long?  
6 MR. AMON:  
7 No. We can take a bathroom break.  
8 Yeah, this is a good breaking point.  
9 MR. ROBINSON:  
10 All right.  
11 MR. AMON:  
12 We'll come back and pick this up.  
13 We can take a break right now.  
14 (A short recess was taken.)  
15 BY MR. AMON:  
16 Q. Dr. Villasenor, are you ready?  
17 A. Yes. Let me put my phone in  
18 airplane mode.  
19 Q. Sure.  
20 A. Okay.  
21 Q. So before the break -- let me take a  
22 step back. Dr. Villasenor, you understand that  
23 you are still under oath, correct?  
24 A. Correct.  
25 Q. At any time during any of the

1 breaks, have you had discussions with your  
2 counsel about the substance of your testimony  
3 here today?

4 A. Not at all.

5 Q. Okay. And that includes over the  
6 lunch hour?

7 A. That includes everything.

8 Q. Okay. And have you had any  
9 discussions with counsel about any redirect  
10 questions that he might ask?

11 A. I haven't had any -- the only  
12 discussion has been about how many hours we have  
13 been going.

14 Q. Fair enough. Fair enough. So  
15 before the break, we were discussing Konoplev;  
16 and that's Exhibit 1009 to the '2051 IPR, and I  
17 believe you have Konoplev in front of you,  
18 correct?

19 A. Right.

20 Q. And I ask you to turn to claim 1 --

21 A. Right.

22 Q. -- in Konoplev. And I believe you  
23 testified that you had reviewed claim 1 as part  
24 of forming your opinions in the '1251 IPR matter,  
25 correct?

1           A.     That's right.

2           Q.     And I'll -- I'll ask you again to  
3 refresh your memory on what claim 1 reads,  
4 please. Let me know when you are done with that.

5           A.     (Complied.) Okay.

6           Q.     And I want to focus for a moment on  
7 element e of claim 1.

8           A.     Right.

9           Q.     Element e reads, "Processing the  
10 converted image using wrinkle-reducing  
11 parameters" --

12          A.     Right.

13          Q.     -- "comma, wherein an initial  
14 filtering radius and a final filtering radius are  
15 set and repeating steps C through E while the  
16 initial filtering radius is increased until the  
17 initial filtering radius reaches the final  
18 filtering radius." Did I read that correctly?

19          A.     Yes.

20          Q.     And my question is fairly simple.  
21 The wherein clause --

22          A.     Yes.

23          Q.     -- of that limitation modifies the  
24 first part, which is "processing the converted  
25 image using wrinkle-reducing parameters,"

1 correct?

2 A. That's right.

3 Q. And so, therefore, the wherein  
4 clause applies to the first portion of element e,  
5 which is "processing the converted image using  
6 wrinkle-reducing parameters"?

7 MR. ROBINSON:

8 Objection, form.

9 THE WITNESS:

10 It's part of element e, although it  
11 says absolutely nothing about  
12 wrinkle-reducing parameters, but it is  
13 part of element e. That's right.

14 BY MR. AMON:

15 Q. Right. And -- and so -- right. And  
16 it applies to that first portion of element e, as  
17 well as c and d, correct?

18 A. Well, it -- it recites something  
19 about c and d, but it -- but including --  
20 including E, but yes, that's right. But, again,  
21 it says, I think -- just so the record's clear,  
22 it says absolutely nothing about wrinkle-reducing  
23 parameters, which is why I didn't discuss it  
24 specifically in the declaration.

25 Q. If I could ask you to turn to your

1 declaration in the '1251 matter, the -- it's the  
2 other declaration that we really haven't dealt  
3 with very much. It's, I believe, 2005 is it?

4 A. Right.

5 Q. And if I could ask you to turn to  
6 paragraph 84 of that declaration, please?

7 A. (Complied.) Okay.

8 Q. And read paragraph 84 to yourself  
9 and let me know when you've done that, please.

10 A. (Complied.) Okay.

11 Q. The first sentence of paragraph 84  
12 reads, "A POSITA reading Konoplev would  
13 understand the operational" -- "the operations  
14 disclosed in Konoplev are computationally complex  
15 and suited to after-the-fact digital enhancements  
16 that would have been impractical and necessary to  
17 implement the monitor capture." Did I read that  
18 correctly?

19 A. Yes.

20 Q. And -- and my question is, as a  
21 person of skill in the art in July of 2009, was  
22 the method of Konoplev too computationally  
23 complex to be performed by a digital camera or on  
24 a digital camera? I'm not sure which one you  
25 want to use.

1 MR. ROBINSON:

2 Objection, form.

3 THE WITNESS:

4 Well, I think a POSITA would  
5 understand that they are complex and there  
6 wouldn't be generally a motivation to do  
7 it on a -- on a digital camera, given the  
8 nature of the -- the processing. I mean,  
9 given enough time, of course, you could do  
10 it on anything almost.

11 BY MR. AMON:

12 Q. Right. But is it your opinion that  
13 in July 2009 the method of Konoplev was too  
14 computationally complex to be performed on the  
15 digital camera?

16 MR. ROBINSON:

17 Objection, form. Asked and  
18 answered.

19 THE WITNESS:

20 No. Again -- again, it depends on  
21 what too computationally complex means.  
22 If you are willing to wait a long time,  
23 then no. It's -- you could -- you could  
24 simulate complex weather systems on a  
25 smart phone if you wanted to wait a long

1           enough time, but -- but it's just what I  
2           said here is it's directed to and  
3           presented as things that are -- would be  
4           understood generally as after the fact  
5           image enhancements.

6       BY MR. AMON:

7           Q.     And that would not take place on a  
8           digital camera?

9           A.     In the normal scheme of things,  
10          that's something that in reading them, you -- a  
11          person of ordinary skill would conclude that it  
12          wouldn't be the -- the most appropriate venue for  
13          doing that.

14          Q.     And with respect to the term  
15          "computationally complex," I'm using that term  
16          however you mean it in the context of  
17          paragraph 84, so I just want to make sure I'm  
18          using your words here, Dr. Villasenor.

19          A.     Right. But, again, it's just, you  
20          know, that's like -- but it's all done with  
21          context; like, you know, if I say is Dallas too  
22          far to walk, I think we would understand that in  
23          theory you could actually walk to Dallas, but as  
24          a practical matter, it's too far to walk.

25                   And so when you ask is it possible



1 to do Konoplev on a -- you know, on -- on a  
2 camera, well, yeah, it's possible, but in a  
3 practical sense, I think this is a statement  
4 meant -- meant in the sort of a more general  
5 sense, not whether it was literally possible  
6 given, you know, normal constraints.

7 Q. And a person of skill in the art in  
8 July of 2009 would understand that it wouldn't be  
9 practical to do the method of Konoplev on a  
10 digital camera; is that fair?

11 A. I think if you read the entirety of  
12 Konoplev and the types of architecture it  
13 discloses and the type of -- of methods it  
14 discloses and in the entirety in the aggregate  
15 and the message that a person of ordinary skill  
16 in the art would get was that this is -- these  
17 are techniques that are -- that are intended for  
18 and suited for after the fact of processing.

19 Q. And not for use on a digital camera?

20 A. Again, as --

21 MR. ROBINSON:

22 Objection, form.

23 THE WITNESS:

24 Again, as presented, you know, here;  
25 although, like I said, if you are -- if

1           you don't have constraints that you might  
2           normally have, then, of course, you could  
3           do it on a very small platform, but  
4           that's -- that's not practical in a lot of  
5           ways.

6       BY MR. AMON:

7           Q.     If I were to ask you the same  
8           questions as it relates to the method of Konoplev  
9           being too computationally complex to be performed  
10          on a cell phone, would your answers be  
11          essentially the same again in context in  
12          July 2009?

13          A.     I mean, cell phones in July 2009  
14          were still -- I mean, it's relative. They  
15          were -- they were really advanced relative to a  
16          decade earlier, but they were obviously quite  
17          rudimentary relative to what -- to what we have  
18          today.

19                 And -- and, again, given -- given  
20          the disclosures, if you see -- you know, if you  
21          see -- in Konoplev, you see Figure 9, you have,  
22          you know, this exemplary system that's got, you  
23          know, a whole bunch of pretty serious hardware in  
24          it, then, you know, it's not only the -- the  
25          claims, but it's the -- the entirety of the

1 disclosure, which can be conveyed to a person of  
2 skill in the art. This is not something that you  
3 would -- you would necessarily think would be  
4 appropriate for a circa 2008 smart phone, which  
5 is what would be on the market in 2009.

6 Q. So you agree then that the method of  
7 Konoplev in July 2009 was too computationally  
8 complex to be performed on a cell phone?

9 MR. ROBINSON:

10 Objection, form. Asked and  
11 answered.

12 THE WITNESS:

13 Again, same caveats. I mean, you  
14 know -- you know, on a highly advanced  
15 cell phone without concerns about battery  
16 life and time processing, then I suppose  
17 you might be able to do some of these  
18 computations. I haven't been asked to do  
19 that analysis.

20 BY MR. AMON:

21 Q. My colleague pointed out that I  
22 skipped over a fundamental question here.

23 Dr. Villasenor, are Konoplev's  
24 corrections applied to digital image data?

25 A. Yeah.

1 MR. ROBINSON:  
2 Objection, form.  
3 THE WITNESS:  
4 Yes. I believe they are applied  
5 to -- operations in Konoplev are applied  
6 to digital data.  
7 BY MR. AMON:  
8 Q. And that includes digital image  
9 data, correct?  
10 A. I think it specifically is digital  
11 image data, yeah.  
12 Q. Dr. Villasenor, if I could ask you  
13 to turn to your declaration, which is  
14 Exhibit 2005, paragraph 82.  
15 A. (Complied.)  
16 Q. And let me know when you're there.  
17 A. I'm there.  
18 Q. If you could read paragraph 82 to  
19 yourself and let me know when you've done that?  
20 A. Yeah, I've done -- done that.  
21 Q. In the middle of -- or second  
22 sentence -- or excuse me. Sorry. The third  
23 sentence of paragraph 82 reads, "For example, the  
24 first block of Figure 1 of Konoplev is labeled,  
25 quote, receive image from the user of digital

1 capturing device making it clear that the  
2 subsequent processing is performed after the  
3 capturing process." Did I read that correctly?  
4 A. Yes.  
5 Q. If I could ask you to turn back to  
6 Konoplev.  
7 A. (Complied.)  
8 Q. And actually, look at the first  
9 block in Figure 1.  
10 A. Right.  
11 Q. Could you read Figure 1 into the --  
12 or the first block of Figure 1 into the record?  
13 A. "I receive image from the user or  
14 digital capturing device."  
15 Q. So it actually reads "or digital  
16 capturing device." It doesn't read "of digital  
17 capturing device," correct?  
18 A. Yeah, that's correct. That's a typo  
19 and it doesn't -- doesn't change anything at all.  
20 Q. And, in fact, if we were to look at  
21 column 6, lines 13 to 14, that if you read the  
22 sentence that reads, "An image is received from a  
23 user or from an image capture device at  
24 step 110," that confirms that the -- the word  
25 should be "or," not "of," correct?

1           A.     Right. And let me just -- so now  
2     that you've pointed it out, I wasn't aware that  
3     the -- that the F in my declaration should have  
4     been an R, and now that you've pointed that out,  
5     that is a typo. It should have been an R, but it  
6     in no way changes the -- the opinion because  
7     it -- as I write here, making it clear that the  
8     subsequent processing is performed after the  
9     capturing process, not as part of that process.  
10    That is -- is equally true with that typo  
11    corrected.

12           Q.     And my question about Konoplev is  
13    fairly straightforward. Based on the disclosure  
14    in block 1 and column 6 that we just read,  
15    Konoplev discloses that the image could be  
16    received from a digital capture device, right?

17           MR. ROBINSON:

18                   Objection, form. Asked and  
19                   answered.

20           THE WITNESS:

21                   Yeah. It can be received by a  
22                   digital capturing device, and then it --  
23                   and yet then you get into the question of  
24                   what would a person of ordinary skill in  
25                   the art understand a digital capturing

1 device to be, and I don't believe the  
2 person would think it's just a CCD in --  
3 inside a camera and the rest of Konoplev  
4 is also inside that camera.

5 MR. AMON:

6 Okay. If we could take a minute  
7 just to confirm.

8 MR. ROBINSON:

9 Yeah, of course.

10 (A short recess was taken.)

11 MR. AMON:

12 Dr. Villasenor?

13 THE WITNESS:

14 Yeah.

15 MR. AMON:

16 I have no further questions. I pass  
17 the witness.

18 MR. ROBINSON:

19 All right. Can we take a couple  
20 minutes to confer real quick?

21 MR. AMON:

22 Sure.

23 (A short recess was taken.)

24 MR. ROBINSON:

25 I just have a couple quick questions

1           for you.

2       EXAMINATION BY MR. ROBINSON:

3           Q.     Dr. Villaseñor, what is dynamic  
4       range in the context of a digital image?

5           A.     Dynamic range in the context of a  
6       digital image refers to the -- essentially the --  
7       the extent of the difference between the -- the  
8       darkest part of the image and the lightest part,  
9       lightest pixels in the image and how big that  
10      difference is and what those differences are  
11      relative to the darkest -- the darkest thing  
12      that's actually possible and the brightest thing  
13      that's actually possible to -- to represent.

14          Q.     So if I ask you about the dynamic  
15      range of an object within an image, for example,  
16      a face, same answer, just for the pixels that  
17      represent the face?

18          A.     The dynamic range of a face, but  
19      then that would mean looking at the pixels that  
20      are included within the face and looking at the  
21      range of brightness levels to, you know, the  
22      lowest and highest that are represented within  
23      the face.

24          Q.     And if you were to adjust the  
25      dynamic range of the face, what would you need to



1 determine how much the dynamic range has been  
2 adjusted?

3 A. It --

4 MR. AMON:

5 Objection, vague. Go ahead.

6 THE WITNESS:

7 So the -- is the question that if I  
8 have a face that has been subjected to  
9 dynamic range adjustment, how would I know  
10 the extent of what kind of adjustment had  
11 occurred; is that the question?

12 MR. ROBINSON:

13 Yes.

14 THE WITNESS:

15 Well, you would need to look at the  
16 face after, you know, post adjustment and  
17 then you would also need to look at it  
18 pre-adjustment and do comparisons and then  
19 you would be able to figure out the form  
20 of the dynamic range adjustment.

21 BY MR. ROBINSON:

22 Q. Are there different ways to adjust  
23 dynamic range of an image or of part of an image,  
24 like a face?

25 A. Yes, there are.

1           Q.     Can you give me some examples?

2           A.     So one example would be to perform  
3     an adjustment such that after the adjustment, the  
4     region of interest used the full range of  
5     possible values from using the convention agreed  
6     on before from 0 to 255, but there are other ways  
7     as well. You could adjust it by -- by, for  
8     example, leaving the -- the darkest value in the  
9     image, not changing that, but only making -- you  
10    know, doing -- doing an increase in brightness in  
11    proportion to how much brighter a pixel was  
12    relative to the darker pixel.

13                 So, in other words, the darkest  
14    pixels would stay unchanged and the brightest  
15    pixels would get adjusted the most or you could  
16    do the opposite where you would keep the  
17    brightest pixels unchanged and then darken the  
18    darkest pixels, and -- but the ones that are half  
19    way in between you darken less than the ones that  
20    are already as dark.

21                 You could also shift -- just shift  
22    things. So if -- you know, if -- again, using 0  
23    to 255 as the full possible range, if an area had  
24    pixel values from a hundred to 160, you could  
25    just add 20, so it goes from 120 to 180; so

1 there's any number of ways that you could adjust  
2 the dynamic range.

3 Q. And if you've got two different  
4 portions of an image for which the dynamic range  
5 is adjusted, does it follow from your answer that  
6 you would need to know sort of the beginning and  
7 ending dynamic ranges of both portions to be able  
8 to determine whether one has been adjusted  
9 differently than the other?

10 MR. AMON:

11 Objection. Incomplete hypothetical.  
12 Vague.

13 THE WITNESS:

14 Yes. You would -- you would need --  
15 if you were going to compare adjustments,  
16 you would have to first know what the  
17 adjustments were. And to know what the  
18 adjustments were, you would have to look  
19 at the post adjusted portion and then  
20 compare that with the pre-adjusted  
21 portion, and then you would know what the  
22 adjustment was to that portion and then  
23 you would have to do the same thing for  
24 the second portion; and then having  
25 determined the respective adjustments, you

1       could then compare them.

2       MR. ROBINSON:

3               Pass him back.

4       MR. AMON:

5               No further questions. Thank you

6       very much, Dr. Villasenor.

7       (The deposition was concluded at 3:16 p.m.)

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WITNESS'S CERTIFICATE

I, DR. JOHN DAVID VILLASENOR, do hereby  
certify that the foregoing testimony was given by  
me, and the transcription of said testimony, with  
corrections and/or changes, if any, is true and  
correct as given by me on the aforementioned  
date.

\_\_\_\_\_  
DATE SIGNED                      (Witness's Signature)

Signed with corrections as noted.  
  
Signed with no corrections as noted.

DATE TAKEN: July 11, 2019

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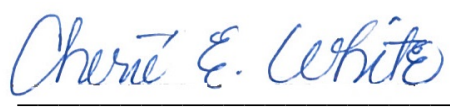
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REPORTER'S PAGE

I, CHÉRIE E. WHITE, Certified Court Reporter, in and for the State of Louisiana, the officer, as defined in Rule 28 of the Federal Rules of Civil Procedure and/or Article 1434(B) of the Louisiana Code of Civil Procedure, before whom this sworn testimony was taken, do hereby state on the record;

That due to the interaction in the spontaneous discourse of this proceeding, dashes (--) have been used to indicate pauses, changes in thought, and/or talkovers; that same is the proper method for the court reporter's transcription of a proceeding, and that dashes (--) do not indicate that words or phrases have been left out of this transcript; also, that any words and/or names which could not be verified through reference material have been denoted with the phrase "(spelled phonetically)."

  
CHÉRIE E. WHITE,  
CCR(LA NO. 96002)  
CSR (MS NO. 1514)  
CSR (TX NO 10720)  
RPR (NATIONAL NO. 839452)

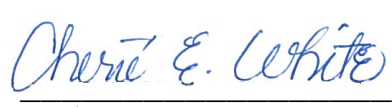


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REPORTER'S CERTIFICATE

This certification is valid only for a transcript accompanied by my original signature and original seal on this page.

I, CHÉRIE E. WHITE, Certified Court Reporter, in and for the State of Louisiana, do hereby certify that Dr. John David Villasenor, to whom the oath was administered, after having been duly sworn by me upon authority of R.S. 37:2554, did testify as hereinbefore set forth in the foregoing 207 pages; that this testimony was reported by me in the stenotype reporting method, was prepared and transcribed by me or under my personal direction and supervision, and is a true and correct transcript to the best of my ability and understanding; that I am not related to counsel or the parties herein, nor am I otherwise interested in the outcome of this matter.

  
CHÉRIE E. WHITE,  
CCR (LA NO. 96002)  
CSR (MS NO. 1514)  
CSR (TX NO. 10720)  
RPR (NATIONAL NO. 839452)

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