1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3
4
5 APPLE INC.,
6 Petitioner
7 v.
8 GEOSCOPE TECHNOLOGIES PTE. LTD,
9 Patent Owner.
10 _____
11 IPR2024-00031
12 IPR2024-00032
13 IPR2024-00255
14 _____
15 REMOTELY CONDUCTED DEPOSITION OF
16 KARTHIKEYAN SUNDARESAN, PHD
17 TUESDAY, AUGUST 13, 2024
18 8:01 A.M. CST
19
20
21
22
23
24 REPORTED BY: KARISA EKENSEAIR, CCR RPR RMR
25

1 DEPOSITION OF KARTHIKEYAN SUNDARESAN, PHD,
2 CONDUCTED VIA ZOOM VIDEOCONFERENCE.
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10 Pursuant to notice, before Karisa J.
11 Ekenseair, Certified Shorthand Reporter in and for
12 the States of Arkansas, Oklahoma, Missouri,
13 Illinois, Tennessee, Georgia, New Mexico,
14 Washington, and California; National Registered
15 Professional Reporter; National Registered Merit
16 Reporter; Notary Public.
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EXHIBITS

(RETAINED BY COUNSEL)

NUMBER	DESCRIPTION	PAGE
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EXHIBITS (continued)

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1 P R O C E E D I N G S
2 KARTHIKEYAN SUNDARESAN
3 of lawful age, being first duly sworn, deposes and
4 says in reply to the questions propounded as
5 follows:
6 MR. McBRIDE: Before we get started, I
7 just wanted to state for the record how we are
8 breaking up these depositions.
9 We have four IPRs at issue:
10 IPR2024-00031, IPR2024-0032, IPR2024-00255, and
11 IPR2024-00259. We're doing two depositions over
12 the course of today and tomorrow. The first
13 deposition transcript will include IPR2024-0031,
14 IPR2024-00032 and IPR2024-00255. The second IPR
15 will cover IPR2024-00259.
16 And we will be using both transcripts in
17 all matters so we don't have to repeat common
18 topics between the two. With that being said.
19 EXAMINATION
20 By MR. McBRIDE:
21 Q Good morning, Dr. Sundaresan. Am I
22 pronouncing your name correctly?
23 A That's perfectly fine.
24 If I can also state for the record, I
25 think in the declaration there was one statement

1 that got left off. It's a typographical error
2 where we say that we did not rely on anticipation
3 but we do have one of the grounds where we use
4 anticipation. So that statement should have not
5 been there in the declaration.
6 Q Okay. Let's -- let's address that.
7 A Yeah.
8 Q Dr. Sundaresan, which declaration is that?
9 A I think it corresponds to the first trio
10 of patents. I refer to them as the '358, the
11 '494, and the '104 in my declarations. So it's
12 in -- I'll tell you the page. Give me a second.
13 Q Can you give me a -- let me know whichever
14 one of the declarations you're referring to since
15 they are --
16 A Yeah.
17 Q -- slightly different.
18 A Yeah. The '358 declaration, paragraph 12.
19 Q Okay.
20 A I say I did not rely on anticipation but
21 we have one of the grounds. So that statement
22 should have not been there. And it's the same in
23 the other two, in the trio of patents that are
24 kind of related to each other.
25 Q Okay. So you're relying on the '358

1 declaration. I believe that's the 0031 IPR?
2 A Yes. And that same statement is there in
3 the other two as well, but not in the final one
4 which is the '753 one, but in the '494 and the
5 '104 as well, the statement got left behind as
6 well. It shouldn't have been there.
7 Q Okay. I'll go ahead and put in -- bear
8 with me a second.
9 A No worries.
10 Q I'm figuring out how to share documents
11 for the record.
12 Okay. I've just put in the group chat
13 there so everybody has it your declarations in the
14 0031, 0032, and 00255.
15 A So I just access this for the purpose of
16 this testimony right from here from the chat,
17 Steve?
18 Q Yes. You can access it from the chat.
19 And I did want to -- probably before you get into
20 that, I did want to check, do you have anything
21 open on your -- your desktop other than the
22 teleconference software?
23 A I just had these patents that were open,
24 my declarations basically. But if you want me to
25 access these, I could close the other ones.

1 Q Are there any markings or any -- any other
2 kind of notes on the -- on the documents you have
3 open in front of you?
4 A No. Not that I see now. I have a
5 separate set of notes, but I don't have that here.
6 Q Do you have any other materials in front
7 of you, hard copies anything like that?
8 A No.
9 Q Okay. So as long as you only have -- are
10 using clean copies, I don't mind what you have
11 open in front of you. But I do think it is
12 probably the best to use the documents that I
13 share in the chat as we go along because -- in
14 case there are some sort of minor differences or
15 we have different -- different sets of documents,
16 we should be talking about the same things. So I
17 would ask you to have these ready to open at least
18 when we --
19 A Okay.
20 Q -- talk about them.
21 A So let me open these you have just posted.
22 All right. Yeah. I have them open, Steve.
23 Q Okay. Bear with me one second.
24 A No worries, Steve.
25 (Exhibit IPR-31/1003 marked for

1 identification.)
2 (Exhibit IPR-32/1003 marked for
3 identification.)
4 (Exhibit IPR-255/1003 marked for
5 identification.)
6 BY MR. McBRIDE:
7 Q Okay. So thank you for that correction.
8 It looks as though in the 00031 IPR and 00032 IPR,
9 well, let's -- let's back that up a second.
10 So in the 00031 IPR, ground 1A is an
11 anticipation ground, correct?
12 A Ground 1A, yes.
13 Q Okay. So that statement in paragraph 12
14 is incorrect as to ground 1A because you are
15 relying on it?
16 A Yeah. And it's the same in the other two.
17 Q In the 00032 IPR declaration --
18 A Similar ground 1A.
19 Q -- ground 1A is also anticipation?
20 A Yes.
21 Q And you're saying that paragraph 12 has
22 that mistake where you say you do not rely on
23 anticipation?
24 A Yeah.
25 Q So that's an error?

1 A Yeah.
2 Q And in the 000 -- 00255 declaration --
3 A There, I -- let me just --
4 Q It looks like everything is an --
5 everything is obviousness?
6 A Yeah.
7 Q Both grounds are obviousness there?
8 A Yeah.
9 Q So in -- with respect -- with respect to
10 least the 0255, that statement, you're not --
11 you're not alleging that statement is in error; is
12 that correct --
13 A Yeah.
14 Q -- for purposes of the 255?
15 A Yeah.
16 Q And then we haven't gotten to it yet, but
17 in the 259, do you make a similar statement there
18 or is it --
19 A I don't think we have any anticipation,
20 like, there.
21 Q Okay.
22 A So be good.
23 Q Okay. Doctor, thank you for that
24 correction.
25 We'll start back up at the top. My name

1 is Steve McBride and I'll be taking your
2 deposition today.
3 Could you please state your full name for
4 the record?
5 A My name is Karthikeyan Sundaresan.
6 Q Have you ever been deposed before?
7 A Yes.
8 Q How many times?
9 A Two times.
10 Q Were those depositions in inter partes
11 review proceedings?
12 A Yes.
13 Q Have you ever been deposed as part of a
14 district court proceeding?
15 A Not yet.
16 Q Who were you representing or -- what were
17 the matters you were deposed in?
18 A So one of them was related to video
19 streaming over a network and I was representing
20 the side of Broadcom. And the other one was also
21 on the side of Broadcom, and that was related --
22 closely allied to the video streaming but in terms
23 of storage.
24 Q So those depositions were not related to
25 these -- the Apple versus Geoscope matters?

1 A No.
2 Q Are you aware of the litigation between
3 Apple and Geoscope in district court?
4 A Yes, to some extent.
5 Q Have you been -- have you been working on
6 that as well?
7 A No.
8 Q So you've submitted no declarations or
9 anything like that in the -- in the litigation?
10 A No.
11 Q Okay. Let's go over a few ground rules.
12 We need verbal answers because the stenographer,
13 so --
14 A Got it.
15 Q -- shaking your head or yes, nos --
16 A Yeah.
17 Q -- yeah, we need verbal answers. If you
18 need a break, please let me know. But I would ask
19 that you answer any pending questions before
20 requesting -- before going on break.
21 Does that -- that sound fair?
22 A Sounds good.
23 Q If you don't hear or understand a
24 question, please let me know. Otherwise, if you
25 answer, I'll assume you understand the question;

1 is that fair?
2 A Go it. Yeah.
3 Q And you understand you're under oath
4 today?
5 A Yes.
6 Q Is there any reason you cannot give
7 complete, truthful, and accurate testimony to the
8 best of your ability today?
9 A No.
10 Q Pardon me.
11 A I said no.
12 Q I appear to have a cough this morning.
13 No, I heard. I've got a bit of a cough this
14 morning. So it's allergies or something. Maybe
15 jump at a break to get some cough drops or
16 something.
17 A Sure.
18 Q Okay. Please let me know if you do not
19 understand any question and I will try to rephrase
20 it.
21 A Thank you.
22 Q From time to time, your attorney may
23 object. Unless your attorney asserts a privilege
24 and instructs you not to answer the question, you
25 still have to answer the question even with the

1 objection pending.
2 A Got it.
3 Q Okay. So. I had added in the chat box
4 and we were discussing previously your
5 declarations in the three IPRs at issue today,
6 being the 00031, 00032, and 00255.
7 And you have these declarations open,
8 correct?
9 A Correct.
10 Q These are your declarations in those
11 representative IPRs, correct?
12 A Yes.
13 Q And you're representing Apple in these
14 IPRs?
15 A Yes.
16 Q I put this on the record earlier but I
17 want to make sure you understand that this
18 deposition involves IPR2024-0031, IPR2024-0032,
19 and IPR2024-00255.
20 You understand that, correct?
21 A Yes.
22 Q And you understand we will have a second
23 deposition for IPR2024-00259?
24 A Yes.
25 Q Great. IPR2024-0031 involves U.S. Patent

1 Number 8,400,358, correct?
2 A Correct.
3 Q And when I refer to the '358 patent, you
4 understand that I will be referring to U.S. Patent
5 Number 8,400,358, correct?
6 A Yes.
7 Q IPR2024-00032 involves U.S. Patent Number
8 8,786,494, correct?
9 A Correct.
10 Q So when I refer to the '494 patent, do you
11 understand I'm referring to U.S. Patent Number
12 8,786,494?
13 A Yes.
14 Q IPR2024-00255 involves U.S. Patent Number
15 7,561,104, correct?
16 A Correct.
17 Q And when I refer to the '104 patent, do
18 you understand that I'm referring to U.S. Patent
19 Number 7,561,104, correct?
20 A Correct.
21 Q I'll go ahead and drop those patents in
22 the chat box so we have a frame of reference.
23 (Exhibit IPR-31/1001 marked for identification.)
24 (Exhibit IPR-32/1001 marked for identification.)
25 (Exhibit IPR-255/1001 marked for identification.)

1 BY MR. McBRIDE:
2 Q Is it your understanding that these
3 patents -- and the patents are loading in the chat
4 box now.
5 Is it your understanding that the patents
6 are all related to one another?
7 A Let me just open them to make sure. The
8 '494 --
9 MR. CHOWDHURY: Objection, vague.
10 THE WITNESS: I've downloaded and just
11 opened them. So they correspond to the patents
12 '494, the '358, and then the '104. Yes. Yeah.
13 Now can you pose the question again, please.
14 BY MR. McBRIDE:
15 Q Yeah. Are these patents related to each
16 other?
17 MR. CHOWDHURY: Same objection.
18 THE WITNESS: Yeah, in some sense.
19 BY MR. McBRIDE:
20 Q What sense is that?
21 A They're related to locating a mobile unit
22 and they're related in that respect.
23 Q Are they part of the same patent family?
24 A I'm not sure of the legal term, what it
25 means to say a patent family. I -- I see them

1 related with respect to the technology that
2 they're trying to refer to.
3 Q Turn to the -- the '494 patent which is
4 marked Exhibit 1001 in the 0032 IPR.
5 A Yeah. So this is the patent, right?
6 '494.
7 Q Right. The '494 patent.
8 A Uh-huh.
9 Q And if you go down to -- halfway down the
10 page on the right where it says related U.S.
11 application data, do you see where it says:
12 Continuation of application number 12/424320 --
13 A Yes.
14 Q -- now Patent Number 8,400,358, and a
15 continuation of application number 12/026333,
16 skipping ahead a bit, now Patent Number 7,561,104?
17 A Yes.
18 Q So the '494 says these three patents are
19 all -- is a continuation of the '358, correct?
20 A Correct.
21 Q And the '358 is a continuation of the
22 '104, correct?
23 A Correct.
24 Q Do you understand what a continuation
25 application is?

1 A Yeah. You're adding more to the
2 specification or to the claim.
3 Q And do you know whether the '104, '358,
4 and '494 patents share the same specification?
5 A Yes. I think -- I think they do.
6 Q Are you aware of any substantive
7 differences in the specifications of the '104,
8 '358, and '494 patent?
9 A Not that I'm aware of.
10 Q What did you do to prepare for these
11 depositions?
12 A I read the patents then I analyzed the
13 claims. I looked at the prior art and of course
14 my own background and experience in this space.
15 And then I tried to analyze the claims as to how a
16 POSITA would understand them.
17 Q Thank you, Doctor. But my question was
18 more specifically about preparing for the
19 depositions today.
20 It sounds like your answer was talking
21 about work in general on the IPR in preparing your
22 declarations, but what specifically did you do to
23 preparation for the declaration today -- your
24 depositions today?
25 A Well, I've given the declarations and so I

1 analyzed my declarations again to see what the
2 arguments were in terms of respect to the patents,
3 in terms of the arguments, in terms of what would
4 be understood by a POSITA based on the claim
5 language. That's how I prepared for it.
6 Q Did you meet with anybody to prepare for
7 these depositions?
8 A I just briefly synced up with my attorney
9 to understand the logistics.
10 Q With your -- I'm sorry, you briefly synced
11 up with your attorney to understand the logistics?
12 A Yeah, of the deposition. Whether we're
13 going to do it on the same day, different days.
14 Q How long did that -- did that sync-up
15 take?
16 A That sync-up -- we talked for an hour
17 maybe.
18 Q And when was that?
19 A It was sometime last week.
20 Q And was that attorney Mr. Chowdhury?
21 A Yes.
22 Q Was there anybody else, any -- did you
23 meet with any other people to prepare for this?
24 A I did sync up with another attorney,
25 David, for the other patent.

1 Q And how long --
2 A How long? Similar time frame, about an
3 hour.
4 Q And was that sometime last week as well?
5 A Yes.
6 Q And how long -- how long would you
7 estimate that you -- you spent preparing for this
8 deposition?
9 A For the deposition, I would say I went
10 back because it's been a while since the
11 declaration, so I went back to, again, appraise
12 myself of the patent itself, the patent material,
13 all the four patents, the declarations, the prior
14 art that we used. So it would be ten hours,
15 around the ballpark.
16 Q And how long did you spend preparing for
17 the second deposition on the 00259 IPR?
18 A I prepared for both of them together. So
19 roughly it would be, like, both of them together.
20 It would still be somewhere in the ballpark, 10 to
21 12 or 15. I'm not quite sure of the exact number.
22 Q Got it. Thank you. Changing gears a bit
23 from the deposition, how long -- how many hours
24 did you work on preparing your reports in these
25 IPRs?

1 A So I would have to recollect my memory
2 because these reports date way back to last year.
3 So I'm not quite sure I have the numbers at the
4 top of my head. But we did analyze quite a few
5 prior art. So it varied between the two sets of
6 cases to understand the prior art, to see what a
7 POSITA would have understand. So we went through
8 quite a few prior art before arriving at the prior
9 arts we thought were reasonably explaining things
10 well. So I'm not quite sure of the exact number
11 to answer your question.
12 I would say it should be over 20 hours for
13 sure, but at the top of my head I don't recall the
14 total number of hours between those four patents.
15 Q And that estimate you gave -- and I
16 understand it's an estimate of over 20 hours, is
17 that for all four IPRs?
18 A It varies. In some cases, because we had
19 to do a lot of upfront work for some of them so it
20 varied. Some of them were 20, some of them were
21 10 or under 10. So I would say overall, we would
22 have hit close to 40, 50 hours.
23 Q So for all four IPRs combined, you would
24 estimate 40, 50 hours of preparation in preparing
25 your -- your declarations?

1 A I would think so. I would still need to
2 check my logs if I want to be precise. I could be
3 off a little bit here and there but I'm guessing
4 somewhere in that ballpark.
5 Q Okay. Thank you. Where do you currently
6 work at?
7 A I'm a professor at Georgia Tech.
8 Q Do you have -- do you work in any
9 other -- any other companies outside of Georgia
10 Tech?
11 A I also cofounded a start-up when I came
12 from industry, so I'm not completely part of that.
13 I kind of do technical advising for that start-up.
14 Q Where did you work before you were a
15 professor at Georgia Tech?
16 A I worked at NEC Laboratories in Princeton,
17 New Jersey. So NEC is a Japanese company whose
18 R&D outfit was in Princeton, New Jersey and had a
19 small team of PhD researchers that I was leading
20 there.
21 Q Let's shift to your declaration in the
22 00255.
23 A 255, that's --
24 Q For the '358 declaration, Exhibit 1003 in
25 the 0255 IPR.

1 A Sorry, Steve, so you're talking about the
2 '104 patent's declaration?
3 Q Yes. I'm sorry, yes, the '104 patent.
4 A Sorry I missed that. Could you say that
5 again? Was it the '104?
6 Q Yes. The '104 patent.
7 A Okay.
8 Q 0255.
9 A Yeah.
10 Q We'll start here and I'll probably -- you
11 know, when I talk about your declaration for this
12 IPR, I'll generally be referring to this one.
13 A Okay. Got it.
14 Q So, as this is the original base patent.
15 But if there are -- are differences that you're
16 aware of as I ask questions, let me know.
17 A Okay.
18 Q We can explore that in the other -- in the
19 other declarations.
20 A Okay.
21 Q So please turn to paragraph 5 of the
22 declaration. You see it says: I'm a professor in
23 the school of ECE --
24 A Yeah.
25 Q -- Georgia Tech. Then it goes on to say:

1 Prior to that, I spent 15 years in wireless and
2 telecom research at NEC Labs America, Princeton.
3 A Correct.
4 Q Do you consider yourself an expert in the
5 fields of wireless and telecom technology?
6 A Yes.
7 Q We talked a bit ago about your deposition
8 experience. And I believe you said you had -- had
9 two depositions other than this one?
10 A Yes.
11 Q Have you served as a non-testifying expert
12 on patent matters before?
13 A No. Not prior to those two depositions.
14 Q Okay.
15 A I should add though, not in terms of
16 patent litigation matters, when I was in industry
17 I was involved in working with the patent counsel
18 in terms of IP generation internally for the
19 company. So I have sort of consulted with them
20 when there were office actions or if they were
21 involved, but not in any official capacity in
22 terms of a patent litigation case.
23 Q Were these in the context of patents that
24 you were an inventor on?
25 A Yes.

1 Q Okay. Let's turn to page 113, PDF
2 page 113 of your declaration in the 00255. And
3 it's -- at this point, it's talking about -- it's
4 part of your CV.
5 A Yes. Okay. Got it. Yes.
6 Q And there's a -- there's kind of a section
7 there called Patents, Appendix A.
8 Do you see that?
9 A Yes.
10 Q So the first section is Expert Reviewer.
11 And there, you're talking about the two Broadcom
12 matters you discussed earlier.
13 A Yeah.
14 Q The Apple versus Geo Tech matter, this
15 one?
16 A Yeah.
17 Q It says for Apple versus Geo Tech, it
18 says -- it says three patents. Should that be
19 four patents or --
20 A Yeah. That should be four.
21 Q So all four patents that we are --
22 A Yes.
23 Q -- having a deposition today on
24 you've -- you're serving as the expert?
25 A Yes.

1 Q Okay. And then there's Daingean versus
2 AT&T matter. Are you testifying expert in that as
3 well?
4 A Yes.
5 Q But -- go ahead.
6 A No. That's ongoing so I can't speak too
7 much to that.
8 Q Yeah. Makes sense. And then when it says
9 good -- the next section down says Awarded, it
10 looks like there are 62 different patents that
11 you've listed here.
12 Are you an inventor on all of these?
13 A Yes, I am.
14 Q Have any of these been involved in any
15 kind of litigation or disputes?
16 A I can't quite speak to that because some
17 of them have been part of licensing negotiations
18 and whatnot. It's handled by the company's legal
19 team. I haven't been privy to that so I don't
20 know the answer to that, quite frankly.
21 Q Are you aware of whether any of your
22 patents have been invalidated?
23 A Not that I know of either.
24 Q Were these patents part of your work at
25 NEC?

1 A Yes. Most of them are. And then there's
2 some of them that are -- it's probably not as part
3 of the CV that was submitted a while back. Since
4 moving to Georgia Tech, I have a few under
5 application as well.
6 Q Okay. Let's move up to paragraph 26 of
7 your declaration, and this is the 00255
8 declaration.
9 A Yes.
10 Q If you look at the second-to-last sentence
11 in that paragraph --
12 A Yes.
13 Q -- I was informed by counsel at Fish &
14 Richardson to use the critical date (2/5/2007) of
15 the '104 patent as the point in time for claim
16 interpretation purposes.
17 Do you see that?
18 A Yes.
19 Q Okay. What's your understanding of what a
20 critical date is?
21 A That's the date with which the subject
22 matter was first disclosed with respect to filing
23 or provisional.
24 Q Okay. And then you say: My opinion does
25 not change if the invention date is earlier.

1 A Uh-huh.
2 Q Would your -- and again, I'm reading from
3 paragraph 26. That's the last sentence.
4 Would your opinion change if the invention
5 date of the '104 patent were earlier than the
6 references asserted in the declaration?
7 A Repeat that question, Steve.
8 Q Would your opinion change if the invention
9 date of the '104 patent were earlier than the
10 references asserted in your declaration?
11 A Not significantly, since at that time
12 there were enough prior art that was talking about
13 it, some even predating the references I've used
14 in my declaration. So I would have to go back and
15 analyze with respect to then the appropriate date
16 in that case.
17 Q So you're saying there are -- you think
18 that there are other prior art references that
19 would be even earlier that would render
20 unpatentable the claims of the '104 patent?
21 A Yes. Potentially, yes.
22 Q Are those prior art references part of the
23 grounds in this declaration?
24 A No.
25 Q Okay. Okay. So I'm dropping in the chat

1 Exhibit 1005 in the 00255 IPR and Exhibit 1007 in
2 the 00255 IPR. Let me know when you're able to
3 download those.
4 (Exhibit IPR-255/1005 marked for
5 identification.)
6 (Exhibit IPR-255/1007 marked for
7 identification.)
8 THE WITNESS: Yes. I've been able to
9 download them. Is this the -- Bhattacharya prior
10 art and the Spain prior art?
11 BY MR. McBRIDE:
12 Q I believe so. But if you can confirm on
13 the record so we're on the same page, that would
14 be appreciated.
15 A So the two documents I just opened are --
16 a Tarun Kumar Bhattacharya is the lead inventor
17 one of the patents. It's the '376 patent. And
18 then the other one is the '843 patent where the
19 lead inventor is David Stevenson Spain.
20 Q Okay. And the 1005 exhibit, that's the
21 Bhattacharya reference, this is the same
22 Bhattacharya reference used across all four IPRs,
23 correct?
24 A Yes. Correct.
25 Q And the 1007, Exhibit 1007, this is the

1 Spain reference. This is the same Spain reference
2 used in the 00031, 00032, and 00255 IPR, correct?
3 A Correct.
4 Q And Spain, just for the record, Spain is
5 not used as a reference in the 00259 IPR, correct?
6 A Correct.
7 Q Okay. So I'll refer to Exhibit 1005 as
8 Bhattacharya and Exhibit 1007 as Spain if that's
9 okay with you.
10 A Yes.
11 Q Okay. So for Bhattacharya, what date from
12 Bhattacharya are you using for your analysis?
13 A So I'm going with the date that's on the
14 file, March 15, 2005.
15 Q And for Spain, what date are you using for
16 your analysis?
17 A I'll be using its file date which it reads
18 as May 22, 2006.
19 Q And is your answer for Spain the same
20 across all three IPRs you're using it as a
21 reference for?
22 A Yes.
23 Q And back to Bhattacharya, is your answer
24 of the filing date, May [sic] 15th, 2005, the same
25 across all four Geoscope IPRs you've submitted a

1 declaration in?
2 A Yes.
3 Q Thank you. Let's turn back to your
4 declaration for the '104 patent?
5 A The '104?
6 Q Yeah, that's the -- the 00255.
7 A Okay.
8 Q Take a look at paragraphs 27 and 28 and
9 let me know when you're -- you're there.
10 A Yeah. I'm just getting there. Yes. I'm
11 here.
12 Q Okay. So you were discussing in these
13 paragraphs the district court's constructions,
14 correct?
15 A Yes.
16 Q And at paragraph 27 when you talk about
17 Apple, the Exhibit Apple-1054, that's the district
18 court claim construction order, correct?
19 A Yes.
20 Q And you reviewed that claim construction
21 order, correct?
22 A Yes. With respect to the terms, whether I
23 needed to interpret the claims.
24 Q So you're saying there are certain terms
25 that maybe weren't applicable to these particular

1 patents in the order that you did not analyze?
2 A I did not thoroughly analyze the -- the
3 district court's orders, but to the extent that it
4 was relevant to my declaration and the claim
5 language and the claim terms, I did get the
6 material I needed for the analysis.
7 Q Sorry, when you said I did get the
8 material I needed for the analysis, you mean you
9 reviewed the parts of the claim construction order
10 with the claim terms listed here at paragraph 27
11 and 28?
12 A Yes.
13 Q And just to be clear, on paragraph 28,
14 you're referencing Apple Exhibit 1052.
15 Do you see that?
16 A Yes.
17 Q And that's -- that's a joint stipulation
18 of jointly stipulated claim terms between the
19 parties, correct?
20 A Yes.
21 Q So that's -- that's a little bit different
22 than the claim construction order but it's
23 still --
24 A Yes.
25 Q -- applying? Okay.

1 If we go down to paragraph 29, you say the
2 applied prior art references disclose and/or
3 render obvious all of the elements of the
4 challenged claims under any of the above-noted
5 constructions as discussed in sections 10 and 11.
6 Do you see that?
7 A Yes.
8 Q Are you applying the district court's
9 constructions in your analysis?
10 A Yes.
11 Q And just to be clear, at paragraph 27,
12 those claim constructions are for calibration
13 data, observed network measurement data, and grid
14 point, correct?
15 A Correct.
16 Q And you're applying all three of those
17 constructions in your analysis?
18 A Yes.
19 Q And then at paragraph 28, you discuss the
20 joint stipulation about collecting having to occur
21 before modifying?
22 A Yes.
23 Q And I guess the "circuitry for"
24 limitations, correct?
25 A Yes.

1 Q And you're applying these constructions or
2 stipulations in your analysis in your
3 declarations?
4 A Correct.
5 Q And just to be clear, that's -- that's for
6 all four declarations you've submitted?
7 A Right.
8 Q Do you agree with the district court's
9 constructions?
10 A Yes. I do.
11 Q At the chart on paragraph 27, do you see
12 the construction for calibration data?
13 A Yes.
14 Q The court's construction was modified or
15 unmodified network measurement data associated
16 with a geographic location.
17 Did I read that correctly?
18 A Yes.
19 Q What do you understand network measurement
20 data to be?
21 A It's a measurement data reported by the
22 mobile terminal to the network and it's some
23 characteristic of the network that's reported by
24 the mobile terminal.
25 Q When you say some characteristic, what are

1 some examples of characteristics?
2 A Signal strengths. That's one of the most
3 popular characteristics.
4 Q Any others?
5 A It could also be other things. It could
6 be related to other things: Time of arrival of
7 signals, hand-over state of the terminal, number
8 of neighboring cells it sees. There could be
9 numerous parameters that could be reported.
10 Q Okay. I'm loading the Exhibit 1054 from
11 the 00255 IPR into the -- into the chat. Let me
12 know when you're able to open that.
13 A Let me just grab that. Yes. I just
14 opened it.
15 (Exhibit IPR-255/1054 marked for
16 identification.)
17 BY MR. McBRIDE:
18 Q Okay. This is the claim construction
19 order, correct?
20 A Yes.
21 Q And just for the record, the same -- the
22 same construction order was entered in all four
23 IPRs, correct?
24 A Yes.
25 Q I think it's Exhibit 1054 in all of them,

1 but I'm not sure. Have to go back and
2 double-check.
3 A Yeah. I need to double-check as well but
4 I would think so.
5 Q Yeah. So a bit ago, you mentioned that
6 you had reviewed the district court claim
7 construction order, correct?
8 A Yes. I reviewed it to the extent I needed
9 to understand these terms that was eventually
10 dictated by the court.
11 Q So which -- which portions did you review?
12 A So I've gone over it but I haven't
13 analyzed it deeply, so my main focus was on what
14 the final construction was that the district court
15 stipulated. And so that was my key takeaway from
16 this district court order.
17 Q So if I understand correctly, for example,
18 if we turn to page 6 --
19 A Six?
20 Q -- yeah. Yes, page 6. And that page
21 starts the section for the term calibration data,
22 correct?
23 A Yes.
24 Q And that runs through -- that section on
25 calibration data runs through page 8, correct?

1 A Runs through to -- yes.
2 Q So if I understand what you're saying
3 correctly, you reviewed mainly the final
4 construction on page 8; is that correct?
5 A I read some of the arguments but my main
6 focus is to see what the final construction that
7 has been purposed by the court and how that
8 impacts the claim analysis.
9 Q So when you say you read some of the
10 arguments, does that mean you read the entire
11 section for calibration data?
12 A Yes. A while back though.
13 Q Do you agree with the district court's
14 reasoning for the calibration data section?
15 A I don't have an opinion on that since I
16 haven't analyzed it completely. My analysis is
17 the construction, for -- for example, if you take
18 calibration data, it says the construction is
19 modified around modified network measurement data
20 associated with the geographic location.
21 So -- so my interpretation is it is
22 associated with a geographic location and it could
23 be modified around modified and there could be
24 characteristics for the network measurement data.
25 Q So you agree with the court's final

1 construction?
2 A Yes.
3 Q But you don't have an opinion on whether
4 the court's analysis is correct?
5 A Yeah. I don't have an opinion at this
6 point on the court's analysis.
7 Q Okay. If we go to page 9 through 10 of
8 Exhibit 1054, do you see that?
9 A Yes.
10 Q So on page 10, there's -- the court gives
11 its final construction of measurement data from a
12 network measurement report, (i.e., a report used
13 in cellular networks which provides the results of
14 a measurement from a mobile device on one or more
15 cells.)
16 Do you see that?
17 A Yes.
18 Q So you agree with the final construction
19 there?
20 A Yes. I do.
21 Q With respect to the court's analysis, is
22 it fair to say you've reviewed the analysis but
23 you haven't formed an opinion on whether it's
24 correct?
25 A Yeah. I've reviewed it but I haven't

1 analyzed it deeply to form an opinion, so I'm
2 still using the construction that they proposed.
3 To me, it's reasonable and to a POSITA it could be
4 reasonable and so I've employed it.
5 Q Okay. So if we go down to page 11 through
6 16 of the claim construction order, let me know
7 when you're at page 11.
8 A Yeah. I'm at 11.
9 Q So this is -- the term being discussed
10 here is position -- positioning determining
11 equipment, correct?
12 A Determining equipment, yes.
13 Q Right. And this is not -- this is not
14 something that has -- you've provided an opinion
15 in your declaration on, correct?
16 A I don't think so. Although we do discuss
17 processor as part of the claims in some of
18 declarations and so we provided -- or I provided
19 an opinion on that --
20 Q Okay.
21 A -- processor.
22 Q Did you -- did you review this section of
23 the claim construction order?
24 A As I -- similar to before, I haven't
25 really analyzed it deeply to form an opinion.

1 Q And similarly on the final construction on
2 page 16, you -- well, let's back that up.
3 For the final construction, have you
4 formed an opinion on whether the final
5 construction is correct?
6 A I'm not sure I've used this in my
7 analysis. If you go back to my declarations, so
8 this is the one you're talking about in 16, right,
9 in the box?
10 Q Yeah. Yeah. I think that --
11 A Yeah. Go back to my declaration which is
12 the 255, I'm -- yeah, my analysis and opinions are
13 with respect to those three claims terms that I've
14 used on page 18 of my declaration.
15 Q So it's fair to say for other -- other
16 sections of this claim construction order, other
17 than those three terms, you don't have -- you
18 haven't formed an opinion?
19 A Yes.
20 Q Okay. So the three terms are -- in your
21 report art calibration data, observed network
22 measurement data, and grid point, correct?
23 A Correct.
24 Q We just talked about calibration data and
25 observed measurement data, correct?

1 A Correct.
2 Q The section for grid point starts at
3 page 18.
4 A Uh-huh, referring to my declaration is it?
5 Q No, no, no. This is the claim
6 construction order.
7 A Claim construction order.
8 Q Yeah. Go back to the claim construction
9 order, page 18 to 20. That's the section on grid
10 point.
11 A 18, okay.
12 Q And if we go down to page 20, the final
13 construction is a point associated with
14 representative calibration data for an area,
15 correct?
16 A Correct.
17 Q And I think we discussed this before, but
18 you agree with this construction, correct?
19 A Yes.
20 Q Now, at pages 18 through 20, prior to the
21 final construction, the claim construction order
22 provides its rationale for why it adopts that
23 construction, correct?
24 A Yes. I would think so. Yes.
25 Q And for that, it's fair to say that you've

1 reviewed the section but you don't have an opinion
2 about whether the court's rationale is,
3 correct -- am I -- is my characterization
4 accurate?
5 A Yeah. I'm not opining either way because
6 I haven't analyzed it deeply. But I do agree with
7 the final construction, that it's a point
8 associated with representative calibration data
9 for an area.
10 Q Okay. So to be clear, if we go to
11 page 19, second paragraph, the court provides a
12 block quote from the abstract of the '753 patent.
13 Do you see that?
14 A Yes.
15 Q And the block quote says: The calibration
16 data for these locations is gathered and analyzed
17 so that particular grid points within the
18 geographic region can be determined and associated
19 with a particular set or sets of calibration data
20 from, for example, one or more NMRS.
21 Do you see that?
22 A I see the statement. Yes.
23 Q And I read that correctly, right?
24 A Yeah.
25 Q And if we go down into the paragraph below

1 that, the first full sentence says: But the
2 italicized language from which Plaintiff's
3 construction is drawn is directed more toward what
4 must be done to arrive at a grid point or set of
5 grid points rather than what a grid point is.
6 A Steve, so this is immediately following
7 that paragraph, is it?
8 Q Yes. The first sentence immediately
9 following.
10 A Go ahead.
11 Q There's a citation of Exhibit -- Exhibit E
12 at abstract, and then it starts with the first
13 full sentence that states, quote: But the
14 italicized language from which Plaintiff's
15 construction is drawn is directed more toward what
16 must be done to arrive at a grid point or set of
17 grid points rather than what a grid point is.
18 A Yeah. I see that.
19 Q So you have no -- no opinion on whether
20 this is -- that sentence is correct or not?
21 A Well, as it reads, it sounds correct.
22 We're talking about what a grid point is, right.
23 And what this sentence is saying is, it's
24 the -- the statement above it in that paragraph is
25 directed more towards what must be done to arrive

1 at a grid point rather than what a grid point
2 itself is.
3 Q So do you agree that the italicized
4 portion of the block quote describe what must be
5 done to arrive at a grid point or set of grid
6 points?
7 A In that particular sentence in that
8 particular embodiment, but that doesn't have to be
9 generic, and that doesn't define a grid point
10 generically.
11 Q Okay. So your opinion is that the
12 italicized language of the quote doesn't define a
13 grid point generically; is that correct?
14 A In this particular sentence, it says that
15 it must be gathered and analyzed. But with
16 respect to the claim construction, a grid point
17 has been defined as a point associated with the
18 representative calibration data for an area.
19 Q Sorry, I'm asking whether in your opinion
20 that that sentence is correct, you know, in the
21 extent the italicized language from which
22 Plaintiff's construction is drawn is directed more
23 toward what must be done to arrive at a grid point
24 or set of grid points. I'm asking whether in your
25 opinion that sentence is correct. I think you

1 told me that you hadn't formed an opinion on this.
2 A So I'm saying --
3 Q Then you -- then you kind of did provide
4 an opinion on saying -- in some of your testimony.
5 So I'm trying to kind of clarify. Is your --
6 A So this --
7 Q -- that this sentence is correct or not,
8 or have you not formed an opinion?
9 A My opinion comes from my declaration where
10 I've used the claim construction for what a grid
11 point is. And since it touches upon the same
12 point here, so I'm bringing in my opinion from the
13 declaration, right, as to what a grid point is.
14 So a grid point, as I said as what the
15 final construction says, it's a point associated
16 with representative calibration data for an area,
17 and that's what my analysis uses with respect to
18 the claims that are being contested.
19 Now, in this particular case, you're
20 pointing to an instance where it says the
21 calibration data for these locations is gathered
22 and analyzed. That could be one embodiment. But
23 to me, a grid point is just a point associated
24 with representative calibration data for an area
25 and that's an opinion I formed based on analysis

1 as well as the claim construction order.
2 Q So again, I want to be clear that your
3 opinion is that when this says the italicized
4 language from which -- when the -- when the claim
5 construction order says the italicized language
6 from which Plaintiff's construction is drawn is
7 directed more towards what must be done to arrive
8 at a grid point or set of grid points, you don't
9 necessarily agree that that italicized language is
10 directed towards what must be done to arrive at a
11 grid point or set of grid points; is that correct?
12 A No. The sentence says that the
13 plaintiff's construction is drawn towards what
14 must be done to arrive at a grid point. And that
15 seems fair enough looking at what the sentence
16 says. It says you should gather and analyze to --
17 and associate with the particular sets of
18 calibration data.
19 So what the -- part of the code is saying
20 the plaintiff's construction is drawing us and
21 directing more towards must be done to arrive at a
22 grid point rather than what the grid point itself
23 is. That seems fairly reasonable and accurate to
24 me based on what the previous sentence is saying.
25 Q Thank you, Doctor, but that's not my

1 question. My question, and I think you understand
2 this, is do you think that the italicized language
3 there is directed towards what must be done to
4 arrive at a grid point or set of grid points?
5 A The directed language?
6 Q The italicized --
7 A Yes. And this --
8 Q I'll read it one more time. The statement
9 is: The italicized language from which
10 Plaintiff's construction is drawn is directed more
11 toward what must be done to arrive at a grid point
12 or set of grid points, that statement -- forget
13 about rather than what a grid point is, is that
14 statement correct in your opinion?
15 A That is correct with respect to the
16 statement proceeding that, that italicized
17 statement.
18 Q Okay. Let's go to page 20. And starting
19 at the top of the page, go five lines down. It's
20 the sentence that starts, but Defendant's use of.
21 Do you see that?
22 A Yes.
23 Q And I'll read it for the record, quote:
24 But Defendant's use of, quote, representative
25 calibration data, end quote, is intended to

1 reflect that the defining characteristic of a NUG
2 region as explained in the specification of the
3 '753 patent, '104 patent, and '748 patent is that
4 the data points within an area are all, quote,
5 statistically very similar, end quote, such that
6 each of the grid points within the NUG region can
7 represent the overall NUG.
8 Did I read that correctly?
9 A Yes.
10 Q Do you agree with this statement, that the
11 defining characteristic of a NUG region is that
12 the data points within an area are all
13 statistically very similar, such that each of the
14 grid points within the NUG region can represent
15 the overall NUG?
16 A So in this particular instance, we're
17 using the term representative calibration data,
18 but representative could mean a lot of things. So
19 in one particular embodiment, the patent could be
20 referring to statistically very similar but you'll
21 have to define that to see what that really means.
22 And I think what this is saying is basically
23 restating what the patent is intending to do, '104
24 in some particular instances.
25 Q So I'm sorry, again, I'm just -- I'm

1 just -- I'm not focusing on the entire sentence
2 here. I'm just asking whether the -- in your
3 opinion, is the defining characteristic of a NUG
4 region that the data points within an area are all
5 statistically very similar such that each of the
6 grid points within the NUG region can represent
7 the overall NUG?
8 A So is this with respect to the '104
9 patent?
10 Q Yeah. Let's start with the '104 patent.
11 A Okay. So in one embodiment, it could be
12 but it doesn't have to be the defining
13 characteristic because even in several of these
14 patents, there are other embodiments where it
15 could be defined based on other metrics.
16 Q So you disagree with the district court's
17 statement that the defining characteristic of a
18 NUG region as explained in the specifications of
19 the '753 patent, '104 patent, and '748 patent is
20 that the data points within an area are all
21 statistically very similar, such that each of the
22 grid points within the NUG region can represent
23 the overall NUG?
24 A My opinion is that they could be in some
25 instances. They don't have to be in some

1 instances, right. And it also goes broader to the
2 question how you define statistical similarity,
3 what are the thresholds. What is statistically
4 similar to one might not be sufficiently
5 statistically similar to another. So that's where
6 it's quite vague in saying what that statistical
7 similarity is unless those thresholds are
8 established.
9 Q So it sounds like, you know, the short
10 of -- the short of it is you don't necessarily
11 agree with the statement that the defining
12 characteristic of a NUG region is that the data
13 points within an area are all statistically very
14 similar such that each of the grid points within
15 the NUG region can represent the overall NUG; is
16 that correct?
17 MR. CHOWDHURY: Objection,
18 mischaracterizes testimony.
19 THE WITNESS: I'm saying that in some
20 scenarios it could be and some scenarios it
21 doesn't have to be. And that depends, again, on
22 how we define statistical similarity and what the
23 thresholds of statistical similarity are.
24 So it's quite broad and vague that it's
25 hard to opine one way or the other. You can

1 always find scenarios for both.
2 BY MR. McBRIDE:
3 Q Okay. So now you've said it's hard to
4 opine one way -- one way or the other. So would
5 it be more accurate to say you don't have an
6 opinion on whether this --
7 A I have an opinion.
8 Q -- statement is correct?
9 A No. I do have an opinion, and that would
10 be that it doesn't always have to be statistically
11 very similar. This "very" is a quite indefinite
12 and vague term that I don't understand what it
13 means. So -- so I could say yes, they're
14 statistically similar; I could also say no,
15 they're not statistically similar. But it still
16 is useful from a location standpoint.
17 Q So when you say it's a quite indefinite
18 and vague term, what term are you talking about?
19 A Statistically very similar. What does
20 "very" mean? What is a threshold? It's unclear.
21 Q And you're unable to, after having
22 reviewed the patents, determine --
23 A Yeah. Yeah.
24 Q Is it clear to you what a NUG is?
25 A Yeah. It is.

1 Q Are the data points -- do the data points
2 within a NUG region have to be statistically very
3 similar?
4 A As I said, it goes back to the same
5 question. They could be. They don't have to be.
6 It depends on what measures you're using to define
7 the NUG.
8 Q So sitting here today, you are unable to
9 provide an opinion on what statistically very
10 similar means; is that correct?
11 A If I define it, I would define it in
12 different ways. But I think we are talking about
13 what the patent defines and the patent is quite
14 vague in its definition of this, that the
15 definition of the NUG could have data based on
16 some thresholds that are statistically similar,
17 but based on some other thresholds they may not be
18 statistically very similar.
19 Q So setting aside the patents, do you
20 understand what the term, statistically similar,
21 means?
22 A Yes, as a general term.
23 Q So setting aside the patents, what does
24 statistically similar mean?
25 A You need to define a measure or a metric

1 and thresholds that establish what you mean by
2 very similar.
3 Q In reviewing the patents, what about the
4 intrinsic record --
5 A Could you repeat that?
6 Q -- creates uncertainty -- in reviewing the
7 patents, in reviewing the intrinsic record, what
8 creates uncertainty on the definition you're able
9 to provide?
10 A The uncertainty is the lack of thresholds.
11 There could be measures like different metrics,
12 but what thresholds do you hold them up to defines
13 the level of similarity you're talking about. In
14 the absence of those, it's hard to say -- like,
15 what could be statistically very similar becomes
16 quite vague in that respect.
17 Q Thank you, Doctor. So I guess the
18 takeaway is that you believe that the term
19 statistically very similar is vague and
20 indefinite; is that correct?
21 A It is vague until it's defined properly.
22 Q We're talking about the context of these
23 patents, right?
24 A Yes.
25 Q So in the context of the intrinsic record,

1 you believe the term statistically similar is
2 vague and indefinite; is that correct?
3 A Yeah. I did not know the language or the
4 interpretation of indefinite. It is, to me, vague
5 unless some thresholds are put on it that say this
6 is the level of similarity we are looking for.
7 Q And because of that vagueness, you are
8 unable to provide a definition of what
9 statistically very similar means; is that correct?
10 A Yes.
11 Q And because you are unable to provide a
12 definition of what statistically very similar
13 means, you are unable to tell me whether you agree
14 with the statement from page 20 of the claim
15 construction order?
16 A No. I do agree with it. All it says is
17 it's a point associated with representative
18 calibration data for an area. Now what that
19 representative is, it's -- it's quite generic.
20 Q I'm sorry, Doctor.
21 MR. McBRIDE: Strike that as
22 nonresponsive. I'm asking a different question.
23 Let me finish the question. Okay.
24 BY MR. McBRIDE:
25 Q Because you're unable to provide a

1 definition of what statistically very similar
2 means in the context of the intrinsic record,
3 you're unable to tell me whether you agree with
4 the statement from page 20 of the claim
5 construction order that the defining
6 characteristic of a NUG region is that the data
7 points within an area are all statistically very
8 similar such that each of the grid points within
9 the NUG region can represent the overall NUG; is
10 that correct?
11 A With respect to that statement.
12 MR. CHOWDHURY: Objection, vague.
13 BY MR. McBRIDE:
14 Q Let's turn back quickly to your
15 declaration in the 0255 --
16 A Yeah.
17 Q -- IPR. So just to be clear, if we go to
18 paragraph 26 --
19 A 26. Yes.
20 Q Paragraph 26 through 29, that section's
21 titled Interpretation of the '104 Patent Claims,
22 correct?
23 A Correct.
24 Q And there's similar sections in each of
25 the four declarations you've drafted, right?

1 A Correct.
2 Q And this is your -- this is your section
3 analyzing claim construction, correct?
4 A Yes.
5 Q So your opinions regarding claim
6 construction are within paragraphs 26 through 29,
7 correct?
8 A Yes. So 26 to 29 talks about the
9 interpretation. And then as we go through the
10 declaration, subsequently, we expand and provide
11 analysis on the usage of these claim constructions
12 with respect to the prior art.
13 Q So later on, you apply these
14 constructions --
15 A Correct.
16 Q -- to the prior art in the context of the
17 claims; is that correct?
18 A Correct.
19 MR. McBRIDE: Okay. Now might be a good
20 time for a short break if everybody is good.
21 Doctor, can we take a break?
22 THE WITNESS: Sure.
23 MR. McBRIDE: Let's be back at 10:30.
24 (Whereupon a break was had.)
25 BY MR. McBRIDE:

1 Q Dr. Sundaresan, can you turn to the '104
2 patent? This is Exhibit 1001 in the IPR.
3 A Yes. Yeah. I have it pulled up.
4 Q On the first page here of the patent under
5 the related U.S. application data, it states
6 Provisional Application Number 60-899,379 filed on
7 February 5th, 2007.
8 Do you see that?
9 A I see that.
10 Q Have you reviewed the '379 provisional?
11 A I did review it as part of the analysis
12 but I did not go deep -- a deep dive as I did for
13 the '104, but I did review it because it was the
14 provisional based on which this was filed.
15 Q When did you review it?
16 A I reviewed it -- I'm not sure if I used it
17 as part of the declaration but I came to review it
18 later.
19 Q So you reviewed it after you submitted
20 your declaration?
21 A My declaration was informed -- I need
22 to -- if you can give me a second, I can
23 double-check. Is it listed as one of the patents?
24 Because I was doing four of these and it started
25 last year so I'm missing the timeline. So you're

1 talking about the '104, correct?
2 Q This is the '104, yes.
3 A The 255 one.
4 Q Uh-huh.
5 A Let me make sure I have my bearings right.
6 I'm trying to see -- yeah. I'm not seeing it as
7 part of my declaration, so I would assume that it
8 wasn't part of the analysis then. But I did have
9 prosecution history so I might have briefly gone
10 over it, but I didn't do a deep dive as I did on
11 the '104, for sure, at the time of the
12 declaration.
13 Q Okay. So let me break that down. It's
14 not part of the materials you reviewed -- your
15 materials reviewed section, correct?
16 A Yes.
17 Q So that -- that indicates that you
18 probably reviewed it after you drafted the
19 declarations?
20 A Correct.
21 Q All right. And then you mentioned that
22 you did -- you did review the prosecution history,
23 correct?
24 A Briefly as part of the analysis and the
25 provisional potentially came in later. I might

1 have not done a deep dive then but I thought it's
2 worthwhile reviewing it.
3 Q So if -- so if the '379 provisional is
4 part of the prosecution history --
5 A Yeah.
6 Q -- you --
7 A Yeah.
8 Q -- would have reviewed it then --
9 A If -- yeah, because part of it would have
10 taken a brief look at it, but I don't remember
11 analyzing it deeply at that point in time for the
12 arguments in the declaration.
13 Q Okay. And just based on your -- your, you
14 know, your personal recollection, you don't
15 remember whether you reviewed it before or after
16 the declaration?
17 A Yeah. I -- I think I might have briefly
18 reviewed it but not, like, sat with it for, like,
19 a period of time to analyze it deeply. I was
20 working with the '104 and the prior art's quite a
21 bit at that point in time.
22 Q Right. So -- so you're just not sure one
23 way or another from your -- from your personal
24 recollection?
25 A Yeah. Yeah. I'm not sure one way or

1 another whether I -- I don't think I did a deep
2 dive. That much is clear. But I think I might
3 have done a passthrough, just to get the context
4 for the basis for the '104.
5 Q And when did that passthrough occur?
6 A I think this started sometime in fall of
7 last year, if I'm not mistaken. So I have to
8 check back on that. I don't remember the exact
9 dates or even before summer, from summer onwards.
10 I need to go back and check when we started this
11 process. So it depends when we started working on
12 these patents. It was sometime last year, mid to
13 fall.
14 Q And I just want to be clear for the other
15 patents, I mean, you can pull them up on a break
16 and correct me if I'm wrong here, but I'll
17 represent to you that they're all based on this
18 '379 provisional.
19 Is your answer the same for the other
20 three patents, that is the '358 patent, the '494
21 patent, and the '753 patent that we'll -- we'll
22 cover in the later deposition, is your answer
23 regarding the '379 provisional the same for all
24 three of those patents as well?
25 A Let me just double-check. I would think

1 so, but I could just double-check and tell you
2 based on the material I considered. That seems to
3 be right. I haven't checked the other one,
4 the -- I don't have it up here so I'm not able to
5 check that.
6 But for these three, I don't see it as
7 part of the materials I analyzed, per se. Yeah.
8 Not deeply for -- otherwise, I would have included
9 it. Yes, for these three, I think. And the other
10 one I can confirm once I look at it.
11 Q Okay. We'll table that for the second
12 deposition.
13 A Sure.
14 Q Actually, do you have a copy of the
15 declaration there in front of you?
16 A For the '753?
17 Q Yes.
18 A I would have a local copy. You want me to
19 pull up my local copy to check and tell you?
20 Q Yeah. Yeah. That's fine. I don't think
21 necessarily we'll put it in this --
22 A Yeah. I have a local copy I can check.
23 Q I don't necessarily want to put the
24 exhibit in this IPR, but I also don't want to have
25 to come back to this later.

1 A Okay. Yes. Yeah. It's the same for that
2 one as well.
3 Q Okay. Bear with me a second here as I
4 organize my exhibits.
5 A Yeah. I have many on my end.
6 Q Yeah. I apologize. With all four of
7 these IPRs, it's kind of -- takes me a minute to
8 make sure I've got the right document from the
9 right IPR.
10 Okay. I've just put in the chat
11 Exhibit 2017 from the 00255 IPR, Patent Number
12 9,097,784.
13 (Exhibit IPR255-2017 marked for
14 identification.)
15 BY MR. McBRIDE:
16 Q Dr. Sundaresan, do you see that?
17 A '784. Yes. I'm seeing that in the chat.
18 Let me try to open it. Yes. I see it. I see it.
19 Q I'll represent this is Exhibit 2017 in all
20 four of the Apple v Geoscope IPRs. But you know,
21 you can take a look at that off -- offline and
22 correct me if you have anything to add.
23 Did you consider Exhibit 2017 in preparing
24 your declaration for the '104 patent?
25 A I don't recall considering '784.

1 Q Did you consider Exhibit 2017 in preparing
2 your declaration for the '358 patent?
3 A This is the same '784 patent, correct?
4 Q Yes. Yes.
5 A Yeah. I don't recall considering or
6 incorporating this in my analysis in either of
7 these patents.
8 Q Did you consider Exhibit 2017 in preparing
9 your declaration for the '494 patent?
10 A No. I don't remember incorporating this
11 prior art.
12 Q Did you consider Exhibit 2017 in preparing
13 your declaration for the '753 patent?
14 A I don't recall including this in the
15 analysis.
16 Q Thank you. And now I'm uploading
17 Exhibit 2016 in the IPR2024-00255, which should be
18 the '753 patent.
19 (Exhibit IPR255-2016 marked for
20 identification.)
21 A '753.
22 Q Let me know when you are able to open
23 that.
24 A I think I have too many PDFs open.
25 Q Yeah.

1 A I'm trying to see --
2 Q Going to have to juggle here.
3 A Yeah. I'm just making sure -- yes.
4 Actually, yep. I have it. Yes.
5 Q Okay. So just for the record, this is the
6 '753 patent. I'm sorry, Exhibit 2016 is the '753
7 patent, correct?
8 A Yes.
9 Q And the '753 patent is the subject
10 of -- that's the patent challenged in
11 IPR2024-00259, correct?
12 Did you hear my question, Dr. Sundaresan?
13 Can you hear me?
14 A Yeah. I can hear you. But I missed -- I
15 think after the '753 I missed something you said.
16 Q Yes. This is the '753 patent, correct?
17 A Yeah. Correct.
18 Q And just for the record, the '753 patent
19 is the subject -- strike that.
20 The '753 patent is the patent challenged
21 in IPR2024-00259, correct? That is the other IPR
22 that we'll discuss in the next -- in the next
23 deposition.
24 A Correct.
25 Q Did you consider the '753 patent in

1 preparing your declaration for the '104 patent?
2 A I -- I might have used some common prior
3 art, but I'm not aware of using the '753. It's
4 not in the list of references I used for the
5 analysis.
6 Q Did you consider the '753 patent in
7 preparing your declaration for the '358 patent?
8 A Probably not. The same for the other
9 three, the '358 and the '494.
10 Q All right. So just to be clear, you did
11 not consider Exhibit 7 -- you did not clear --
12 strike that.
13 Just to be clear, you did not consider the
14 '753 patent in preparing your declaration for the
15 '494 patent, correct?
16 A Yeah. I did not analyze it with respect
17 to the patents under question, namely the '358,
18 '104, and the '494. We did that separately when
19 we did the analysis of the '753 patent.
20 Q Okay. Let's shift back to the
21 Bhattacharya reference which I had dumped in the
22 chat earlier.
23 A Yeah.
24 Q This is Exhibit 1005.
25 A Yeah. Let me get to that. I think I have

1 it. The '376 one, correct?
2 Q 376. That's right.
3 A Okay.
4 Q Okay. So have you found it?
5 A Yes.
6 Q Okay. So let's start at the cover page
7 for the '376 Bhattacharya reference. The title
8 here is, Estimating the location of a wireless
9 terminal based on calibrated signal strength
10 measurements, correct?
11 A Correct.
12 Q And on the front page, we have -- the
13 figure on the front page is a reproduction of
14 Figure 2 in the patent, correct?
15 A Correct.
16 Q If we turn to Figure 1 of Bhattacharya,
17 it's one page down, yeah, second page?
18 A Yes.
19 Q It's labeled prior art, right?
20 A Yes.
21 Q And this is exactly -- this is essentially
22 the same figure as Figure 2 without the location
23 system, correct?
24 A Let me just look at it. It's upside down.
25 Center, yeah. Seems to be. Yes.

1 Q And what we're looking at in Figure 1,
2 it's just basically a random sample of, like, a
3 cellular network, right?
4 A Correct.
5 Q As would be existing at the time? So what
6 Figure 2 is adding that differentiates it over the
7 prior art according to Bhattacharya is location
8 system 212, correct?
9 A Correct.
10 Q Location system 212 estimates the location
11 of the wireless terminal 201, correct?
12 A Correct.
13 Q If we go to Bhattacharya Figure 3, that's
14 essentially a block diagram of the components
15 of -- at a high level of location system 212,
16 correct?
17 A Correct.
18 Q Now, let's look at Bhattacharya Figure 4.
19 And Figure 4 is -- is breaking out the process of
20 estimating location of the wireless terminal,
21 correct?
22 A Correct.
23 Q Figure 4 is performed by the user programs
24 in memory 302 of location system 212, correct?
25 A Correct.

1 Q Does Bhattacharya discuss configuring
2 hand-off functionality?
3 A Bhattacharya talks about hand-off as part
4 of signal strength measurements.
5 THE REPORTER: I'm sorry, what
6 measurement?
7 THE WITNESS: Signal strength
8 measurements, network measurements that are coming
9 from the mobile.
10 BY MR. McBRIDE:
11 Q Where is that discussion?
12 A You'll have to give me some time to pull
13 it up.
14 Q Sure.
15 A Let me just go to Bhattacharya. I'll have
16 to look it up, where it is. It indicates in one
17 of the places where you can share this across
18 different sharing centers through hand-off
19 messages.
20 Q Are you looking for paragraph 54?
21 A Yes. That is one place. That is one of
22 the places. I think there could be another place
23 as well. Some of the search is not working in
24 this.
25 Q Are you looking for paragraph 95?

A Yes. Okay. 95 you said?
Q Yes.
A Yeah. Mobile-assisted hand-off process. Yes, that's one of the other embodiments. Yes.
Q Okay. So let's go back to paragraph 54. Was there anywhere else, by the way, that --
A I'll have to go back and check, but these are two of the instances that you have highlighted.
Q So sitting here right now, you're not -- you're not aware of any other places in Bhattacharya that used the term hand-off, correct?
A Yeah. I'm trying to search for it, but my search is not working in the PDF document. If you can give me a couple of minutes, maybe I can do a skim through.
Q Sure.
A Yes. I'm not sure I'll be able to analyze it well enough to identify locations, but let's go with these two. 54 is it that you said?
Q Yes. But just -- just to be clear, you know, sitting here right now, you're not able to identify any other areas other than paragraphs 54 and 95?
A Yeah. I'll have to do a re-read to

1 definitively say that there are no other
2 instances. But the two instances you pointed out
3 are, of course, there so we could consider and
4 analyze them.
5 Q Okay. So at paragraph 54 --
6 A Yes.
7 Q -- I'll read the sentence. It's at the
8 bottom of page 27 starting with, When two or more.
9 Do you see that?
10 A Yes.
11 Q And it says: When two or more systems are
12 used to obtain signal strength measurements, one
13 wireless switching center can use the IS54
14 protocol messages hand-off measurement request and
15 hand-off measurement request 2 to elicit signal
16 strength measurements from another.
17 Did I read that correctly?
18 A Yes.
19 Q I'm sorry?
20 A Yes.
21 Q Yes. Okay. I see it now. So the
22 wireless switching center is using these messages,
23 correct?
24 A Yes.
25 Q And it's using these messages to obtain

signal strength measurements from essentially nodes in a -- in a different network, correct?

A Yes. Potentially connected to another switching center.

Q Would -- so you could get these signal strength measurements without performing a hand-over, correct?

A Yeah. You don't have to execute a hand-over, but these messages facilitate a hand-over process.

Q But the wirelessly switching center in this case isn't concerned about the hand-over for purposes of the Bhattacharya. It's concerned with getting the signal strength measurements, correct?

A Correct.

Q If we go to paragraph 95, the first sentence, I'll -- I'll read it: To facilitate this -- well, let me -- let me back up and read just a second to make sure the record is clear.

Okay. So going back to paragraph 95, it states -- the first sentence states: To facilitate this, and just to stop right there.

"This" means receiving signal strength measurement reports, right?

A Yes.

1 Q Okay. So: To facilitate receiving these
2 signal strength measurement reports, wireless
3 terminal 201 provides a temporal series, and I'll
4 skip over the parentheses, of signal strength
5 measurement reports, to wireless switching center
6 211 in well-known fashion as part of the GSM
7 protocol and the mobile-assisted hand-off process.
8 Did I read that correctly?
9 A Yes.
10 Q So again it's through wireless switching
11 center 211 is -- is receiving the signal strength
12 measurement reports, correct?
13 A Yes.
14 Q All right. And just because it's received
15 a signal strength measurement report doesn't
16 necessarily mean it's going to perform a
17 hand-over, correct?
18 A Yeah. It may or may not perform a
19 hand-over.
20 Q For what -- for Bhattacharya, what it
21 wants with these signal strength measurement
22 reports is the signal strength of surrounding
23 nodes, correct?
24 A Yeah.
25 Q So to put it more plainly, you've got the

1 wireless terminal, its measuring the signal
2 strength of the surrounding base stations and it
3 puts these -- let's stop there.
4 That's correct, right?
5 A Yes.
6 Q And it puts these -- these signal strength
7 measurements into a report that is transmitted to
8 the wireless switching center 211, correct?
9 A Correct.
10 Q And then Bhattacharya -- well, the
11 wireless switching center 211 forwards the signal
12 strength measurement reports to the location
13 system 212, correct?
14 A Correct.
15 Q And location system 212 uses the signal
16 strengths to try to figure out where exactly the
17 wireless terminal is; is that correct?
18 A Correct.
19 Q So the mobile-assisted hand-off process
20 they're talking about isn't really something that
21 is -- to say Bhattacharya doesn't really care
22 whether a hand-off occurs or not; it just wants
23 that measurement report that's -- that's generated
24 as part of the GSM protocol, right?
25 A Any cellular system should care for the

1 hand-off process because it's an integral part of
2 the cellular system. And for that reason, it --
3 you don't need to have these measurements to make
4 decisions on the hand-off. So for that reason,
5 Bhattacharya's patent, at least, aims at the
6 location aspect of it. But if you look at it as
7 an underlying cellular system, these messages will
8 be used for hand-off as well.
9 Q Right. Right. The GSM protocol needs to
10 have handoffs, right?
11 A Yeah.
12 Q But in determining the location of the
13 mobile, Bhattacharya doesn't really care whether
14 handoffs -- whether the handoffs occur, right?
15 A Yeah.
16 Q It's not -- it doesn't care whether --
17 what -- what the serving base station is, correct?
18 A It would care because the hand-off
19 influences the serving base station, because if
20 you have a hand-off, your serving base station
21 changes. So for that reason, you would have to
22 care about who the serving base station is, who is
23 going to be sending you for the appropriate region
24 all the measurements that it collects. So it does
25 get incorporated as part of the system.

1 Q Right. But in terms of determining
2 location, Bhattacharya doesn't care what handoffs
3 are made, right?
4 A So the specifics of how the hand-off is
5 made, there are different algorithms that prior
6 art teaches in terms of how you would analyze the
7 signal strength measurements to figure out if and
8 when and how a hand-off should be executed. But
9 the outcome of the hand-off does influence the way
10 in which the measurements are collected. Right.
11 Eventually, the process of Bhattacharya
12 looks at how to use the signal strength
13 measurements. But if a hand-off occurs in the
14 process of the system, so that does influence the
15 set of measurements you make for a mobile terminal
16 based on who your serving base station is.
17 Q But the hand-off is part of the GSM
18 protocol, correct?
19 A Yes. Hand-off -- the mechanics of the
20 hand-off, like the protocol messages are part of
21 the GSM system, but the algorithms used to
22 implement the handoffs are proprietary or
23 different Windows could implement different
24 algorithms.
25 Q Is Bhattacharya indifferent to those

1 algorithms for purposes of determining location?
2 A It is influenced by them, but its core
3 patentability is focused on how the location
4 determination is happening. But it is impacted by
5 what the hand-off process does.
6 Q Paragraph 95, when it says the signal
7 strength, I'm paraphrasing a little bit here, but
8 it says the signal strength measurement reports
9 are sent to the wireless switching center in
10 well-known fashion as part of the GSM protocol,
11 one would have to understand the GSM protocol in
12 order for those to understand the signal strength
13 measurement reports, right?
14 A To some extent I would think, but signal
15 strength measurement reports are common. All
16 network measurement reports are quite common to
17 multiple wireless technologies.
18 Q Okay. So -- so the -- what you're -- the
19 point you're making is that there are other
20 wireless technologies other than the GSM protocol
21 and they each have their own methods for sending
22 these signal strength message reports?
23 A Correct.
24 Q And if you understand how these -- these
25 protocols operate, you would understand the signal

1 strength messaging reports; is that fair?
2 A Yeah. Different protocols have different
3 demarcation of how a packet looks like, like what
4 formattings need to be -- data needs to be put in.
5 So yeah, if you want to decode, you would need to
6 know how the protocols frame that particular
7 measurement report.
8 MR. McBRIDE: Okay. I think that's all
9 the questions I have.
10 Ryan, do you want to take a few minutes?
11 MR. CHOWDHURY: No questions for me.
12 MR. McBRIDE: Okay. Then we can go off
13 the record.
14 THE REPORTER: I do have orders for you,
15 Mr. McBride. But Mr. Chowdhury, I need orders for
16 you.
17 MR. CHOWDHURY: We can just go ahead with
18 the same -- same timing as the other side.
19 (Whereupon the proceedings were concluded at
20 10:14 a.m. CST)
21
22
23
24
25

1 ERRATA SHEET
2 Witness Name: KARTHIKEYAN SUNDARESAN
3 Case Name: APPLE v. GEOSCOPE TECHNOLOGIES
4 Date Taken: August 13, 2024
5 Page #_____ Line #_____
6 Should read: _____
7 Reason for change: _____
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25 Witness Signature: _____

1 ACKNOWLEDGMENT OF DEPONENT
2 I, KARTHIKEYAN SUNDARESAN, PHD, do hereby
3 acknowledge that I have read and examined the
4 foregoing testimony and the same is a true,
5 correct, and complete transcription of the
6 testimony given by me and any corrections appear
7 on the attached errata sheet signed by me.
8
9 _____ _____
10 (SIGNATURE) (DATE)
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1 CERTIFICATE OF SHORTHAND REPORTER-NOTARY PUBLIC
2 I, Karisa Ekenseair, Certified Reporter and
3 Notary Public within and for the State of Arkansas
4 do hereby certify: That KARTHIKEYAN SUNDARESAN,
5 the witness whose deposition is hereinbefore set
6 forth, was duly sworn by me before the
7 commencement of such deposition and that such
8 deposition was taken before me and is a true
9 record of the testimony given by such witness.
10 I further certify that the adverse party,
11 Petitioner, was represented by counsel at
12 the deposition.
13 I further certify that the deposition of
14 KARTHIKEYAN SUNDARESAN, occurred virtually on
15 August 13, 2024, commencing at 8:01 a.m. to 10:14
16 a.m.
17 I further certify the inspection, reading and
18 signing of said deposition was not waived.
19 I further certify that I am not related to any
20 of the parties to this action by blood
21 or marriage, I am not employed by or an attorney
22 to any of the parties to this action, and that I
23 am in no way interested, financially or otherwise,
24 in the outcome of this matter.
25

1 IN WITNESS WHEREOF, I have hereunto set my hand
2 and affixed my seal this 15th day of August, 2024.
3
4 My commission expires: 6-18-2028
5
6
7 Karisa Ekenseair, CCR, RPR RMR LS #802
8 Notary Public in and for
9 Pulaski County, Arkansas
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