

EXHIBIT 2005

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

TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED
TCT MOBILE INTERNATIONAL LIMITED
TCT MOBILE, INC.
TCT MOBILE (US) INC.
TCT MOBILE (US) HOLDINGS, INC.,

Petitioner(s),

VS.

MITSUBISHI ELECTRIC CORPORATION,

Patent Owner(s).

CASE NO.: IPR2023-00957
U.S. PATENT NO. 9,635,656

ORAL DEPOSITION OF
MARK R. LANNING
FEBRUARY 14, 2024
(Reported Remotely)

ORAL DEPOSITION of MARK R. LANNING, produced as a witness at the instance of the Patent Owner, and duly sworn, was taken in the above-styled and numbered cause on the 14th day of February, 2024, from 9:01 a.m. to 11:23 a.m., via Zoom video conference, before Dicie Lee Eytcheson, CSR in and for the State of Texas, reported by machine shorthand, at the offices of TELECOM ARCHITECTS, INC., 4 Eagles Nest, Greenville, Texas 75402, pursuant to the Federal Rules



1 of Civil Procedure and the provisions stated on the
2 record or attached hereto.

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1 (All exhibits have been previously
2 marked by counsel and may not be
3 introduced in numerical order.)

4 COURT REPORTER: We are on the record.
5 Today's date is February 14th, 2024. The time is 9:01
6 a.m.

7 MR. WEINSTEIN: Okay.

8 Good morning. This is the deposition of
9 Mark R. Lanning in the matter of IPR2023-00957 involving
10 U.S. Patent No. 9,635,656. My name is Marc Weinstein
11 from XSensus, L.L.P. and I represent the Patent Owner
12 Mitsubishi Electric.

13 Will counsel for Petitioner please
14 introduce himself.

15 MR. SNODGRASS: Yes. This is Jacob
16 Snodgrass with PV Law for Petitioners and the Witness.

17 MARK R. LANNING,
18 having been first duly sworn on his oath to state the
19 truth, the whole truth and nothing but the truth,
20 testifies as follows:

21 EXAMINATION

22 BY MR. WEINSTEIN:

23 Q. Okay. Good morning, Mr. Lanning.

24 A. Good morning.

25 Q. As I just mentioned, my name is Marc Weinstein



1 and I represent the patent owner Mitsubishi Electric. I
2 understand from reviewing your CV that you have lots --
3 quite a bit of deposition experience, so I'm guessing I
4 don't need to spend much time giving you a detailed
5 explanation of how it works and what's expected of you.

6 A. Okay.

7 Q. I do just want to remind you of a few things
8 for the deposition -- and I -- I apologize my picture is
9 not quite as bright I'll try to sit forward so you can
10 see me a little better.

11 Just remind you to listen carefully to my
12 questions. I will try to speak clearly and slowly. If
13 at any point, you don't hear correctly or understand
14 correctly the question being asked feel free to ask me
15 to repeat it or to clarify.

16 Please answer every question I ask of you
17 unless you're instructed otherwise by your attorney, and
18 if you need a break, please just let us know, and we can
19 stop for a break at any time. Is that all clear?

20 A. Yes.

21 Q. And I just want to apologize ahead of time for
22 two things. That background noise you're hearing from
23 outside I apologize, they're -- they're doing some yard
24 work of some kind. I also have my dog with me --

25 COURT REPORTER: Counsel?



1 MR. WEINSTEIN: Yes.

2 COURT REPORTER: I'm sorry for
3 interrupting. You're breaking up on my end. Is he
4 breaking up for anyone else.

5 THE WITNESS: Mine -- mine also.

6 MR. SNODGRASS: It was just that -- that
7 segment for me. Otherwise, so I'm -- I'm optimistic we
8 can plow through.

9 MR. WEINSTEIN: Okay.

10 COURT REPORTER: Okay.

11 Q. (BY MR. WEINSTEIN) Yeah. Please just if at
12 any time it's not coming across clearly, please just
13 let me know.

14 A. Okay.

15 Q. So I was just mentioning, I want to apologize
16 ahead of time for two things: One, the -- the noise
17 from outside because they're doing some yard work; and
18 two, that I have my dog with me, so if there's an
19 occasional bark, I apologize for that as well; but he's
20 usually pretty quiet when I'm on any Zoom call of any
21 kind, so hopefully that will not be any disruption.

22 So, Mr. Manning (sic), can you tell me
23 what you did to prep for today's deposition?

24 A. Well, I read through my declaration and the
25 exhibits to my declaration which is the patent and --



1 and the other pieces of prior art. I also had a call
2 with counsel.

3 Q. When did you have your call with counsel?

4 A. Yesterday.

5 Q. Yesterday. And how long was the call for?

6 A. Probably a couple hours, give or take. I
7 didn't time it.

8 Q. And was that just with Mr. Snodgrass or were
9 there other attorneys as well?

10 A. Just with Mr. Snodgrass.

11 Q. And outside of the -- the prior art documents,
12 the patent and your own declaration were there any other
13 documents that you reviewed?

14 A. No other documents, other than the documents
15 that are associated with my declaration.

16 Q. All right. And about how long did you prepare
17 yourself including the time you did reviewing those
18 documents?

19 A. Oh, probably five to seven hours or so --

20 Q. Okay.

21 A. -- total.

22 Q. And -- and just to confirm, there -- there's
23 nothing this morning, there's no medication or illness
24 you have or anything otherwise, that would prevent you
25 from testifying truthfully and accurately today?



1 A. No, there's not.

2 Q. Okay. Very good. So, first, I'm going to
3 introduce Exhibit 1004, from the IPR record, that is
4 Mr. Lanning's CV.

5 I understand you have hard copies of those
6 documents?

7 A. Most of them, yes, and I do have Exhibit 1004.

8 Q. Okay. So I -- according to your CV, at least,
9 since 2016, you've been an expert in about 45 cases,
10 almost all of them litigations, mostly at the district
11 court level, but also at the ITC; is that correct?

12 A. I haven't counted them. If -- if you're
13 representing to me that you've counted them and it's an
14 accurate count, I'll accept that.

15 Q. Okay.

16 A. Unless you want me to go through and count them
17 all now.

18 Q. That's not necessary. Thank you.

19 And in those matters, do you have an
20 approximate number of depositions that you have been a
21 part of since 2016?

22 And it doesn't need to be a specific
23 number.

24 A. I --

25 Q. More than 20? More than 50?



1 A. I -- I would safely say more than 25. I was
2 just trying to think back. You gave me a period of, it
3 sounded like, about eight years so I was just trying to
4 think back. So definitely more than 25, I think.

5 Q. Okay. And you've also given testimony at
6 trials as well?

7 A. Yes.

8 Q. Okay. And you've been deposed for both
9 district court litigations, as well as deposed for IPRs
10 or PGRs; is that correct?

11 A. Yes.

12 Q. I am going to share something from the -- from
13 your CV, so just bear with me a moment. And let me know
14 when you're able to -- to see on screen what -- what I'm
15 sharing.

16 A. All I'm seeing is a line that says you've
17 started screen sharing, but --

18 MR. SNODGRASS: Yeah.

19 A. -- I'm not seeing anything.

20 Oh, now I'm seeing it, yes.

21 Q. (BY MR. WEINSTEIN) Okay. So on -- at the --
22 above page 8 of the CV here -- and when I refer to the
23 page number I'm referring to the page of the
24 exhibit not the -- the page within the CV.

25 So you can see it says page 6 of 9 above,



1 page 7 of 10, when I say page 8, I mean page 8 of 10; is
2 that clear?

3 A. Okay.

4 Q. And -- and that -- for all of the other
5 exhibits and papers that are part of the record, I'll be
6 doing the same anything where I'm referring to the --
7 the page of the exhibit number not necessarily the page
8 numbering within the exhibit.

9 So in this -- this Maxell case it says
10 that this case was before the Eastern District of Texas
11 and that you represented Huawei, and then it makes
12 reference to IPRs three -- for three different patents.
13 In those cases, and there are other listings like this,
14 does this mean that you served as the expert both for
15 the district court case and for the IPRs?

16 A. I -- I can't say for every case that I have
17 listed, but if -- if I have listed a case like I have
18 here --

19 Q. Uh-huh.

20 A. -- that would typically mean that I -- I worked
21 on the IPRs as well as the district case litigation.

22 Q. Okay. Understood. And just to confirm, you
23 have a -- a Bachelor's degree but no advance degrees; is
24 that correct?

25 A. That's correct.



1 Q. I'll stop sharing.

2 I'm now going to introduce exhibit 001 --
3 excuse me -- 1001, which is U.S. Patent No. 9,635,656.
4 Let me know when you've gotten there.

5 A. I have it in front of me.

6 Q. Very good. All right. So I am going to share
7 that now as well. Just bear with me while I do that.
8 And let me know when the share screen is -- you can see
9 that.

10 A. I can see it.

11 Q. Okay. So I want to focus on -- I'm going to
12 make it large enough so, hopefully, it's legible to
13 read -- Claim 3. Claim 3 is the claim that's being
14 challenged in the IPR; correct?

15 A. Yes.

16 Q. And you've reviewed this claim in preparation
17 for today's deposition?

18 A. Yes.

19 Q. And so I just want to kind of walk through the
20 terminology here. So I'm just going to -- to read the
21 claim, and as I'm going through I may ask questions. So
22 it's "a mobile terminal and it's configured to transmit
23 a quality notification signal for notifying downlink
24 communication quality to a base station and transmit a
25 scheduling request signal with which to make a request



1 for allocation of radio resources to said base station
2 before transmitting transmission data to said base
3 station."

4 So first thing is, I want to focus on a
5 couple terms. One is the -- the scheduling request
6 signal and second is the transmission data.

7 On the -- in Claim 3 is scheduling request
8 (audio interruption) step.

9 A. Sorry. You --

10 Q. Do you see that?

11 A. Sorry.

12 Q. Yep.

13 A. I'll interrupt. You just broke up so I missed
14 the first part of your question.

15 Q. So the -- a scheduling request signal is first
16 introduced in the second transmit step where it says
17 "transmit a scheduling request signal"; do you see that?

18 A. Yes.

19 Q. And then the scheduling request signal was
20 referenced multiple times later in the claim. So in the
21 transmitter's limitation it says "a transmitter
22 configured to transmit said quality notification signal
23 to said base station"; do you see that?

24 A. Yes.

25 Q. What is your understanding when the claim says



1 "said qual- -- quality notification signal," what is
2 your understanding of what "said" means?

3 A. It -- it -- it's referring to the first time
4 the quality notification signal was stated, which would
5 be up above.

6 Q. Okay. And when it says to transmit said
7 scheduling -- and this is for the transmitter stuff the
8 transmitter configure 2, and then it says "transmit said
9 scheduling request signal," when it says said scheduling
10 request signal that's referencing a scheduling request
11 signal in the trans- -- the second transmit step; is
12 that correct?

13 A. I think I -- I can answer it. It -- it would
14 be the -- the first instance where the scheduling
15 request signal was stated.

16 Q. Okay. So I -- I -- do you see the
17 highlighting?

18 A. Yes. I see it. And that's the place I was
19 referring to, yes.

20 Q. Okay. And so in that transmitter step the
21 said -- the said scheduling request here that I've
22 highlighted that's referencing a scheduling request
23 signal; correct?

24 A. Yes.

25 Q. And then in the controller limitation it says



1 that it "performs a first control process that includes
2 when the mobile terminal has not been allocated or radio
3 resourced for transmitting said transmission data
4 transmitting said scheduling request signal to said base
5 station." So here you see it says "said scheduling
6 request signal"?

7 A. Yes. I see that.

8 Q. And that's ref- -- again, referring to the same
9 "a scheduling request signal" in the transmit step;
10 correct?

11 A. Yes.

12 Q. Then in the second control process it says that
13 "includes when a transmission of said quality
14 notification signal coincides with that of said
15 scheduling request signal in said transmitter stopping
16 transmitting said quality -- quality notification signal
17 during a time interval during which said transmitter
18 transmits said scheduling request signal." So in the
19 second control process there's two different references
20 to said scheduling request signal: The first one is
21 here and the second one is here; do you see that?

22 A. Yes.

23 Q. And is it correct that the said scheduling
24 request signal that's referenced in the second control
25 process is the same scheduling request signal referred



1 to elsewhere in the claim?

2 A. Yes. It's at the same location we referred to
3 earlier which would be "transmit a scheduling request
4 signal."

5 Q. Okay. In the -- the first control process it
6 says that "when the mobile terminal has not been
7 allocated a radio resource for transmitting said
8 transmission data it transmits the scheduling request
9 signal to the base station"; do you see that?

10 A. Yes.

11 Q. And it says here that it has not been allocated
12 a radio resource for transmitting said transmission
13 data. Do you see that highlighting here the "said
14 transmission data"?

15 A. Yes.

16 Q. Okay. And transmission data is first
17 introduced here early in the second transmit step, where
18 it says "transmit a scheduling request signal," it's to
19 request allocation of radio resources to said base
20 station before transmitting transmission data to said
21 base station; do you see that?

22 A. Yes.

23 Q. So the transmission data that is being
24 transmitted to the base station referred to in this --
25 the -- the second transmit step that is the same



1 transmission data referred to in the first control
2 process here; is that correct?

3 A. Yes.

4 Q. And so since the transmission data is being
5 transmitted from the mobile terminal to the base station
6 that means it's an uplink transmission; is that correct?

7 A. Yes.

8 Q. So going back to the first control process:
9 When the mobile terminal has not been allocated a radio
10 resource for transmitting said transmission data and
11 said transmission data is the uplink transmission data
12 from the mobile terminal to the base station, when the
13 mobile terminal has not been allocated a radio resource
14 for that, that means there is no uplink data
15 transmission resource allocated yet; correct?

16 A. In general I would agree with you.

17 But I'm -- I want to be careful that I've
18 spent quite a bit of time in and text in my declaration
19 explaining what that means. But the -- the words say
20 what they say and that means that -- that -- it means
21 what it says there and I've provided interpretation in
22 my declaration for that.

23 Q. Okay. Would it be correct to say that in the
24 first control process the scheduling request signal was
25 sent when the mobile terminal has not been allocated



1 radio resources for uplink data transmission?

2 A. That's not what it says. You've -- you've
3 changed the meaning to plural. The terminal has not
4 been allocated a radio resource is what the claim says.

5 Q. Okay. Let -- let -- let me restate it then.

6 Is it correct in the first control process
7 that the scheduling request signal is sent when the
8 mobile -- mobile terminal has not been allocated any
9 radio resource for uplink data transmission?

10 A. Again, you're changing the claim language.

11 If we're reading the claim it says "the
12 mobile terminal has not been allocated a radio resource
13 for transmitting said transmission data," and I --

14 Q. It --

15 A. If you said "a" I apologize.

16 Q. Okay.

17 A. I think I heard you say "any," the word
18 "any" and --

19 Q. Okay. Well, let me ask it one more time then
20 and I'll be more in -- in line with the -- the claim
21 language.

22 Is it correct that in the first control
23 process the scheduling request signal is sent when the
24 mobile terminal has not been allocated a radio resource
25 for uplink data transmission?



1 A. Again, you've paraphrased the claim, but I
2 would agree with your -- your characterization.

3 Q. Okay. And just to confirm that, part of the
4 characterization is that a -- a radio resource for
5 transmitting said transmission data is a uplink data
6 transmission resource; correct?

7 A. It would be a radio resource for transmitting
8 said transmission data on the uplink.

9 Q. Okay. So at -- we were discussing before how
10 the scheduling request signal, when it refers to said
11 scheduling request signal throughout the claim that it's
12 all referring to the same scheduling request signal;
13 correct?

14 A. Yes.

15 Q. And in the -- in the second control process,
16 the -- the -- the transmission of -- it set -- it sets a
17 condition, the second control process, and that
18 condition is that the transmission of the quality
19 notification signal coincides with the transmission of
20 the scheduling request signal; correct?

21 A. Yes.

22 Q. And since the scheduling request signal is the
23 same throughout the claim and the first control process
24 says that the scheduling request signal is sent when the
25 mobile terminal has not been allocated a radio resource



1 for transmitting the transmission data, it means that
 2 the scheduling request signal that coincides with the
 3 quality notification signal is the scheduling request
 4 signal that's sent when the mobile terminal has not been
 5 allocated a radio resource for transmitting the
 6 transmission data; is that correct?

7 A. I would agree with that, yes.

8 Q. Okay. I am now going to introduce
 9 Exhibit 1003, and this is Mr. Lanning's declaration and
 10 I'm going to stop sharing to do that first.

11 While I'm setting up, is -- am I speaking
 12 clearly enough and at a good pace for you, Mr. Lanning,
 13 or is there -- I -- I just want to make sure that you're
 14 understanding everything that I'm asking properly.

15 A. Yes. Yes, it's good.

16 Q. Very good. Okay. You can see the exhibit now?

17 A. Yes.

18 Q. Okay. Because you're -- this exhibit here uses
 19 paragraph numbering, I'm -- I'm going to reference
 20 paragraph numbers. And do you have the hard copy in
 21 front of you or do you just want to look at what's on
 22 the screen?

23 A. I have a hard copy in front of me.

24 Q. Okay. So in paragraphs 40 to 43, and that's --
 25 starts at page 22 of 95 in the declaration, you make



1 reference to "Tdocs" and "discussion documents" and I'm
2 just going to highlight that here; do you see that?

3 A. Yes.

4 Q. What -- what is the difference between a Tdoc
5 and a discussion document?

6 A. The Tdocs typically are -- are more formal.
7 But I'm aware that sometimes the two can be
8 interchanged, so that's why I was hesitating, but that's
9 why I said they're called temporary documents or Tdocs.
10 "Tdocs" to me would be the equivalent of a temporary
11 document.

12 Q. Okay. And in your declaration you make
13 reference to documents that are labeled with TS.
14 What -- what does "TS" stand for?

15 A. That -- that's 3GPP's terminology for a
16 technical specification.

17 Q. And there are also documents from 3GPP that
18 start with the letter R and usually a -- a number after
19 it, so like one or two. What -- what are those
20 documents, the ones that starts with the letter R; and
21 here's an example, this one here, which is
22 Exhibit 2012 -- or 1012?

23 A. This is not --

24 Q. What -- what is it?

25 A. Sorry.



1 Q. I'm just asking, what -- what is it a Tdoc as
2 in contrast to a TS document? You said a TS document's
3 a technical specification, what is an R document?

4 A. This is a document, as it says -- I'm just
5 looking at the actual Exhibit 1012, and as the doc --

6 Q. Uh-huh.

7 A. -- says this is a document that is being
8 submitted that has -- was submitted to the 3GPP
9 standards group -- and the specific group is on the top
10 of the document -- and this is a document for discussion
11 and decision, meaning it's a numbering scheme used for
12 the standard setting group so they can refer to this
13 document on a formal basis and, later on, in the minutes
14 and -- and any type of changes. So this is a reference
15 for this document.

16 Q. What's the -- the difference between a TS
17 document and an R document?

18 A. The TS document is a specification as -- for a
19 specific -- there -- there's many specifications in --
20 in a 3GPP cellular network.

21 Q. Uh-huh.

22 A. For instance, 3G UMTS has many technical
23 specifications, and those are TS numbers, and those are
24 the requirements, and they have different version
25 numbers as they're updated. This is an R1 document that



1 hasn't been accepted or rolled in yet to a technical
2 specification and that's why it's being submitted for
3 consideration and discussion to the standards group; and
4 if the standards group determines that they want to
5 incorporate all or part of this document that text will
6 then ultimately end up into a future version of a
7 specification, or one or more specifications it could
8 end up in as well.

9 Q. Okay. Thank you. And what is -- and for the
10 TS documents is there meaning to the numbers that follow
11 the TS documents like TS 25 or TS 36?

12 A. Yes. Definitely there is. And the 3GPP
13 publishes the numbering scheme that they use, but the --
14 the first set of digits after the TS are for the
15 technical area of the specification; then the version
16 number of the TS is exactly that, it's a three-level
17 version number for the specification; a release for a
18 specific release has many specifications and it's tied
19 to specific version numbers of those specifications.

20 Q. Okay. So I'm now showing you -- in
21 paragraph 39 of Exhibit 1003 in your declaration it
22 shows Generations and Releases and End Dates; do you see
23 that?

24 A. Yes.

25 Q. So you're -- with respect to the -- the TS



1 documents (the technical specification documents) when
 2 it refers to, for example, TS 25 does that correspond to
 3 a specific generation and does it correspond to a
 4 specific release?

5 Well, let me back -- let me rephrase that.

6 When -- with a TS document with the
 7 number, for example, 25, does TS 25 refer to a specific
 8 generation?

9 A. TS 25 typically, if you're referring to a
 10 generation like I have in the left column --

11 Q. Yes.

12 A. -- TS 25 would typically refer to the 3G or
 13 UMTS generation.

14 Q. Are there different TS document numbers that
 15 would refer to some -- would -- that would also refer to
 16 3G or are they just all 25?

17 A. The majority of the specifications start with
 18 TS 25 for 3G, but I want to be careful because I don't
 19 want to say that includes all of them. I -- I'm vaguely
 20 recalling there is other numbers that would -- other
 21 than TS 25 that would apply to the 3G generation as
 22 well.

23 Q. And for 4G is it generally TS 36 that refers to
 24 4G; is that correct?

25 A. In general, yes. The -- the specifications



1 that have a TS 36 typically are for the 4G or the LTE
2 generation.

3 Q. And the -- in those TS documents it's typically
4 either, for example, for a 3G TS 25, point, and then a
5 three-digit number. What is that? And just to give an
6 example, I -- I think in -- let me see if I can find
7 a -- an example of a TS document that's referred to in
8 here.

9 Well, I -- I -- I know, for example,
10 25.309, which is another one of the exhibits,
11 Exhibit 1011, in the IPR proceeding, what does that
12 three-digit number that follows the 25, point, what does
13 that refer to?

14 A. That's referring to a specific technical
15 subject area or a technical area for the overall
16 release. And that's what I was explaining earlier,
17 there's many different specification numbers for all of
18 the different aspects of the overall standard or the
19 release of the standard.

20 Q. And then those documents also typically have --
21 following, for example, 25.309 there will be a -- a V
22 then a number, dot, number, dot, number. That V -- does
23 the first number after the V does that refer to the
24 release number?

25 A. No. That is just a three-layer or three-level



1 version numbering scheme. So it would be -- the first
2 digit, if -- if you will, the X, dot, Y, dot, Z, the X
3 would be a major release, the Y would be a minor, and
4 then the Z, the -- the third digit, would be just a
5 small change. So the version numbering is just
6 designating where in the specific specification version
7 the document that you're reading resides in the overall
8 list of updates.

9 Q. Okay. And so you -- you said before, you know,
10 I -- I asked the question about, for example, TS 25,
11 dot, 309, if there were any three-digit number that
12 follows the 25, dot, that that number refers to its
13 technical area. When you're talking about the -- the
14 TS, the tech specs for, let's just say, 3G how do those
15 tech specs work with each other? Are they --

16 Well, let me just ask that question first.
17 How do those technical specifications work with each
18 other?

19 A. Well, the technical specifications, if they --
20 and they -- most of them do fit into an area and then
21 they interface with other areas. So the technical
22 specifications lists all of the different versions of
23 the specifications that are applicable with it. And
24 typically when a release is rolled out by the 3GPP --
25 and I'll refer to it as a -- a needle and thread is



1 pulled through all the different technical specification
2 versions that begin or start with that release so that a
3 person would understand all the initial technical
4 specification versions, that would -- would be started
5 with a release, but then those versions can then
6 independently be updated and still be part of a release.

7 Q. Okay. And all of those technical
8 specifications for a particular release for a -- to --
9 to comply with that generation and that particular
10 release, is it correct that you have to meet the
11 requirements of all of the technical specifications that
12 apply to that release and generation?

13 A. No. That -- it -- it wouldn't be all the
14 technical specifications. Or another way to say it,
15 it -- it may not be all of a -- a technical -- of each
16 technical specification. There is requirements that may
17 be listed as mandatory, but there's other requirements
18 that may be optional as far as implementing by the
19 suppliers.

20 Q. How do -- how does a -- let's just say, a
21 carrier determine whether something is mandatory versus
22 optional?

23 A. Well, a carrier -- there's -- there's two
24 levels here. You have a carrier which you're referring
25 to as the -- the internet company or, sorry, the



1 cellular company --

2 Q. Yeah.

3 A. -- and -- and then you have the suppliers.

4 And so there's typically conversations and
5 exchange of documentation that happens when the carrier
6 is asking the suppliers what version, what release their
7 equipment is compliant with, and then it goes down to
8 the version numbers of each specification typically.
9 And then within each version number of the specification
10 the supplier states which of the functionality
11 requirements that are stated the supplier complies to;
12 and then the cellular carrier then determines if that's
13 acceptable for their network and also if it's compatible
14 with the other components in their network.

15 All of these components need to be -- play
16 together, and so, for instance, a base station needs to
17 be compatible with the versions that the mobile phones
18 are compatible with as well to make sure that the
19 network operates properly.

20 Q. Okay. And to make overall compliance between
21 the -- the carrier and the -- the suppliers they have to
22 make sure that they're meeting, at a minimum, all the
23 mandatory requirements from each of the different
24 technical specifications in that particular release; is
25 that correct?



1 A. There's a lot of exchange of documentation and
2 detailed requirements between the carrier and the
3 suppliers. And -- and then, in some cases, the carriers
4 decide that they don't want to implement specific
5 functions or options and then they'll require or request
6 that the suppliers disable that functionality, or not
7 enable it is another way to say it.

8 Q. Okay. Let me ask more generally. Are -- so
9 there can be -- just to throw out a number and I'm not
10 saying that this is accurate, but, say, there are 30
11 technical specifications for a particular release.
12 And -- and I -- I'm -- I believe that there's actually
13 quite a bit more, but let's just say, for example, that
14 there are 30 technical specifications for a release, do
15 all of those technical specifications have to be
16 addressed or are there certain technical specifications
17 that can effectively be ignored?

18 A. I think that the -- the most accurate answer is
19 yes and no. And again, as I explained it, it's a -- it
20 goes both ways, two -- two directions between the
21 cellular carrier and the suppliers. And now you have
22 many suppliers: You have suppliers that network core
23 work equipment, you have suppliers of mobile phones and
24 you have many suppliers of mobile phones typically, and
25 then you have suppliers of base stations and there's



1 multiple suppliers.

2 Q. Uh-huh.

3 A. So the initial conversation starts between the
4 carrier and the suppliers of the specific release that
5 they're referring to, and it goes top down from there.
6 And then once the release is defined, for instance, if
7 the -- if the cellular network provider wants to
8 understand how the suppliers are aligned with release 7
9 of UMTS that would be release 7, and then the next level
10 of the detailed matrixes that are put together,
11 typically on large spreadsheets, would be for each
12 technical specification that is relevant for release 7.

13 And then as you go to each specification
14 then the version number of the specification would be
15 specified and the carrier then would want to know what
16 would be the lowest or the highest number -- really, the
17 highest number of the version of each specification the
18 supplier's compatible with, and I use "compatible" to
19 mean at the -- at the highest level of -- of mandatory
20 requirements.

21 Then the -- a lot more detail is then
22 required for each paragraph number or section and
23 subsection number of that specification. The matrix
24 includes all of those requirements that are listed in
25 each section of a specific version of a specification.



1 So there's -- really to boil it down --

2 Q. Okay.

3 A. -- there's hundreds of specifications so an
4 Excel matrix, based on my experience, has thousands of
5 rows for requirements, and the columns --

6 Q. Yeah.

7 A. -- then are for each supplier to then respond
8 if they provide that option or not. And, as I said, in
9 the other direction, in some cases the cellular network
10 decides not to offer that feature and so they'll --
11 they'll specify that that feature is not to be enabled
12 as they go down into all the detail.

13 Q. Okay. So -- so in general, in establishing or
14 setting up (audio interruption) between the carrier and
15 suppliers they're working with all of the relevant
16 technical specifications for that particular release?

17 A. Yes. And "relevant" would be typically, again,
18 based on my experience, every specification that's
19 listed by the 3GPP that is relevant for a release is
20 listed by the network carrier in these matrixes that I
21 referred to just to make sure that there's full
22 communication between the carrier and all the suppliers.

23 Then the trick is to make sure that
24 everything is align -- all the requirements are aligned
25 between the suppliers --



1 Q. Okay.

2 A. -- as I explained earlier, so that all of the
3 phones and all of the different network components will
4 be compatible and work properly together.

5 Q. Okay. In paragraph 44 you make a reference in
6 this first statement, you say that the -- and I'm just
7 going to highlight it so you can see it well -- "the
8 3GPP LTE (4G) cellular standard was not based on a
9 greenfield model." What is a greenfield model?

10 A. To me, in -- in other words, it's -- sometimes
11 the expression is used as starting with a blank sheet of
12 paper. The 4G cellular network requirements did not
13 start with just -- no requirements are a blank sheet of
14 paper. They evolved from the 3G requirements, which
15 then evolved from the 2G GSM cellular network.

16 So the networks evolved and many of the
17 features and functions that were proven in 2G are
18 carried forward. There may be some tweaks that are
19 required, but many of the concepts that are in a 4G LTE
20 network were initially defined in a 2G GSM network.

21 Q. Okay. Thanks for the explanation. Of personal
22 interest, that's interesting.

23 You also indicate in that paragraph that
24 UMTS networks -- and when you say "UMTS networks" you
25 mean 3G; correct?



1 A. That's correct.

2 Q. And you say that they're still in operation
3 today in the United States. Is that correct? Are --
4 are 3G systems still being used today?

5 A. They still are. As time goes on the network --
6 the cellular network providers are evolving/moving a lot
7 of their base stations to 4G LTE, and then as 5g rolls
8 out they move into 5g. So it takes many years to phase
9 out a generation and there's still many UMTS networks or
10 base stations that are in operation today.

11 Q. Going back to -- in paragraph 12 of your
12 declaration, that's Exhibit 1003, you make reference to
13 that you've consulted on 2G and 3G networks; is that
14 correct?

15 A. Yes.

16 Q. Is it also correct then that you have not
17 consulted for 4G or 5G?

18 A. I have not participated in the specific
19 architecture design, but I've consulted and -- and had
20 many discussions with the suppliers on 4G and 5G.

21 I was just being careful that I didn't
22 overstep my experience here, that I actually was the
23 architect responsible for the architecture of these
24 earlier networks, but I have not actually been in doing
25 the actual architecture plans for 4G and 5G.



1 Q. All right. In your career, have you ever
2 attended a 3GPP discussion?

3 A. When you say "discussion" are you referring to
4 the specific standards meeting that -- I -- I'm trying
5 to understand the word "discussion."

6 Q. Yeah. Yeah. Have you ever attended a 3GPP
7 standards meeting?

8 A. No. I have not. The -- the --

9 Typically, the 3GPP standards meetings
10 are -- there's only a representative, one or two
11 representatives from each company that attend those, and
12 then those representatives are responsible for
13 communicating with all of their internal engineers,
14 consultants and then getting feedback from their --
15 their groups to take back to the standards meeting.

16 Just as a side note, if you look at the
17 different places these meetings occur, they occur all
18 over the world, and there's a lot of expense to the
19 travel of going to these meetings each month. Plus
20 there's a lot of desire for senior engineers to travel
21 to many of these different places, so they keep the
22 number of people down to a minimum. Typically, a
23 company will have no more than two in each of the
24 standards groups. And then as I explained, they
25 communicate with, in my mind and in my experience, with,



1 at least, a hundred people back in -- in their companies
2 and other suppliers that they have.

3 Q. Okay. Just going back to the -- the question
4 about Tdocs and the Rdoc, is the R documents are they
5 a -- an example of a Tdoc or a discussion document?

6 A. Yes.

7 Q. Have you ever made a contribution to a Tdoc or
8 R document?

9 A. No. Again, the contributions are typically
10 submitted by the members, but I've participated in the
11 substance of these contributions and discussions in the
12 background.

13 And then as the contributions move forward
14 the standards member typically is the one that
15 represents in case there's any discussion. Typically
16 the paper is presented and then the person presenting
17 the paper summarizes and describes it for the group.

18 Q. Okay. One more general question on this
19 technology area. Is there a difference between a
20 scheduling request and scheduling information?

21 A. Now, we're getting into the specific
22 terminology. I could take you to my -- I've explained
23 that, I think, in detail in my declaration. And so I
24 would refer to my declaration and, if you'd like, I can
25 go to that and -- and show you the sections where I have



1 described the two.

2 Q. Do you want to just take a minute to do that?

3 MR. WEINSTEIN: And, Jacob and
4 Mr. Lanning, I -- once we address this I think maybe it
5 would be a good time for a short break if that works
6 for --

7 THE WITNESS: Okay.

8 MR. WEINSTEIN: -- everyone.

9 MR. SNODGRASS: Sounds good.

10 THE WITNESS: Okay.

11 Q. (BY MR. WEINSTEIN) Let's just address this
12 question first.

13 A. Okay. I -- I'm recalling multiple places that
14 I've -- I -- I've covered that, but I -- I believe I can
15 answer your question on -- now it's para- -- starting at
16 paragraph 156 of my declaration which would be
17 page 77 --

18 Q. Yes.

19 A. -- of the exhibit, I believe.

20 Q. Okay. I am going to just share it again so we
21 can all look at the same thing.

22 A. Okay. And just to recap, I believe your
23 question was the -- between a scheduling request signal
24 and a scheduling information signal; is that correct?

25 Q. Yes. Is -- is there a difference between a



1 scheduling request signal and a scheduling information
2 signal?

3 A. And starting at paragraph 156 this is where I
4 explain they're essentially the same thing, and then
5 I've -- in one -- paragraph 157 I've stated what the
6 '656 patent describes as a scheduling request. And
7 right below that, starting at paragraph 158, I've
8 described what the Umesh reference describes as a rate
9 request scheduling information and provided the text for
10 those.

11 So, in my mind, for the claim limitation,
12 these -- these two the terminology is essentially the
13 same.

14 Q. Okay.

15 MR. WEINSTEIN: I have the time as 9:53
16 Central time. Why don't we take a ten-minute break and
17 try to get back --

18 MR. SNODGRASS: Okay.

19 MR. WEINSTEIN: -- before 1003 -- 10:03?

20 THE WITNESS: Okay.

21 MR. SNODGRASS: Okay.

22 COURT REPORTER: Off the record 9:53 a.m.

23 (Break 9:53 a.m. to 10:04 a.m.)

24 COURT REPORTER: The time is 10:04 a.m.

25 Central. We are back on the record.



1 Q. (BY MR. WEINSTEIN) Mr. Lanning, how did you go
2 about preparing your declaration?

3 A. Well, my -- my normal process is: First, I was
4 asked to prepare it by counsel; and then I -- I start
5 working on the declaration by reading and -- and
6 understanding the patent and the claims that are to be
7 challenged, and then locating the prior art and deciding
8 which prior art applied or -- or I would use; and then
9 started writing the -- the declaration and filling it
10 all in.

11 Q. Did you draft the declaration yourself?

12 A. I typed in the majority of the declaration.
13 There are parts of the declaration that I typically
14 supply and then I'll ask counsel to review, and it would
15 have been the legal sections typically. I have legal
16 sections that I've used in the past with text, but
17 things change and so I asked counsel to look at any of
18 the legal definitions and made sure that was all up to
19 date.

20 Q. Makes sense.

21 I'm going to share from your declaration
22 again. Can you see it now?

23 A. Yes. I see paragraph 91 on the screen.

24 Q. And so you see I highlighted that first
25 sent- -- sentence, Figure 4 from Umesh is shown below



1 with two different colors of highlighting that I added?

2 A. Yeah.

3 Q. And I'm going to stop sharing. I'm going to
4 introduce Paper No. 2, which is the petition. Do you
5 have that in front of you, Mr. Lanning?

6 A. Yes, I do. I'm seeing the front page of it.

7 Q. Okay. So on page 20 of the petition I -- I
8 note that that statement that I just read from
9 paragraph 91 of the declaration that that exact same
10 statement is made here; do you see that?

11 A. Yes.

12 Q. So and it -- and it says even though this is
13 the petition, "it's shown below with two different
14 colors of highlighting that I added." So the -- the --
15 and then the -- the rest of this paragraph, while not
16 word for word, is essentially identical to the same
17 paragraph 91 in the declaration. So what -- what I'm
18 trying to understand is just the -- the extent that you
19 drafted stuff in the declaration versus the petition and
20 vice-versa.

21 A. I -- I can tell you without a doubt that this
22 text and colors that I highlighted I did. I can even
23 explain the process the way I did it. I split it out in
24 a PDF, and I highlighted with different colors. So, to
25 me, it's pretty obvious, to me, that the petition has



1 lifted a paragraph and referenced my declaration, as you
2 can see, at the bottom of that paragraph of the
3 petition, and they've simply used all the text of my
4 paragraph, or most -- most of it, as you've stated. I
5 haven't compared word for word --

6 Q. Okay.

7 A. -- but it looks very similar.

8 Q. Okay. And would it be fair then that in other
9 cases where the language in your petition is -- is the
10 same as or virtually identical to the text in the
11 petition that it took the language that you drafted from
12 the -- the declaration and put it in the petition?

13 A. For the technical parts I would say that would
14 be correct. Again, I'm careful that there might be some
15 legal parts that --

16 Q. Right.

17 A. -- or definitions that I might have received
18 from counsel, and so they would be the same and be
19 the -- in the other direction from the petition to my
20 declaration.

21 Q. That makes sense. Okay. Thank you for
22 clarifying.

23 All right. Now, I'm going to introduce
24 Exhibit 1010, the Umesh reference, and while I work to
25 share that, please let me know when you have that in



1 front of you, Mr. Manning (sic).

2 A. I see it now.

3 Q. I said Manning. Mr. Lanning. I apologize.

4 A. That's fine. I see it now.

5 Q. Okay. So in the Umesh reference it makes -- it
6 describes lots of different types of channels and I'm
7 going to be asking some questions about those.

8 First, can you tell me what --

9 MR. WEINSTEIN: And for the -- the court
10 reporter, I will try to be very clear with the lettering
11 because the -- there's -- it's -- they're generally all
12 five-letter things and they need to be set out.

13 Q. (BY MR. WEINSTEIN) So the -- the first one
14 I'm -- I'm asking, Mr. Lanning, is what is "DPDCH"?

15 A. You broke up a little bit. If you could
16 repeat. I don't know if the reporter --

17 Q. Yeah.

18 A. -- heard it as well, but --

19 Q. So the question is: What is "DPDCH"?

20 A. That's an acronym that is -- started with
21 3G UMTS networks, it stands for dedicated physical data
22 channel.

23 Q. And what is the purpose of the DPDCH?

24 A. The DPDCH and -- and I -- because Umesh refers
25 to high-speed channels and non-high-speed channels, I'll



1 refer to the non-high-speed channels as just low speed,
2 so I can provide a contrast or a difference between the
3 high speed.

4 Q. Okay.

5 A. So the DPD -- the DPDCH is a channel used for
6 data transfer in both, it has an uplink channel and a
7 downlink channel for the low-speed channels.

8 The word "dedicated" is sometimes
9 misunderstood. It is not always allocated to a mobile.
10 "Dedicated" means that while this channel is allocated
11 to the mobile terminal, the mobile terminal does not
12 have to share the channel with other mobile terminals.
13 But that's the dedicated part.

14 And the "DPDCH" is what is referred to in
15 the specifications as a dynamically allocated channel
16 which means it's only allocated when it's requested by
17 the mobile for the uplink portion. The mobile terminal
18 would request an allocation; the base station would then
19 pro- -- provide a grant back to the mobile and then that
20 channel would be active and dedicated for use just by
21 that mobile only for the period of time that it was
22 allocated.

23 So what I'm trying to say is that even
24 though that's drawn on the drawing of Umesh that channel
25 is, for the most part, not there. It's only there and



1 available when it's necessary for the mobile to send
2 data to the base station. Typically it's only allocated
3 one packet at a time and then the channel is dropped,
4 and then another request needs to come in from the
5 mobile terminal before it's activated again.

6 Q. Okay. And what is "E-DPDCH"?

7 A. The "E dash" is -- is the specification. "E"
8 stands for enhanced, and that's what Umesh is specifying
9 to, again, differentiate the high-speed data channel
10 from the low-speed data channel, as I just described.

11 Q. Okay. So the -- when you transmit data from
12 the mobile terminal to a base station -- let me just
13 bring up some -- refer to some paragraphs in here.

14 Let me go on to the -- so in paragraph 34
15 here it says "the uplink is a dedicated physical channel
16 that transmits user data"; do you see that?

17 A. Yes, I do.

18 Q. And then in paragraph 35 is: "The E-DPDCH is a
19 dedicated physical channel that performs enhanced
20 transmission of user data"; do you see that?

21 A. Yes.

22 Q. So what is the difference between transmitting
23 user data on DPDCH as compared to enhanced transmission
24 of user data on E-DPDCH?

25 A. I think I need to provide an explanation of



1 what's happening and what a person of ordinary skill
2 would know; but I don't want to go into a long
3 description or tutorial, if that's all right, but I just
4 need to provide a little bit of background here.

5 Q. Well, but -- but --

6 A. Long --

7 Q. -- before you do -- before you do that -- I'm
8 sorry to interrupt. I -- I just want to emphasize, so
9 in -- in paragraph 34 it says that it transmits user
10 data and in paragraph 35 it says enhanced transmission
11 of user data. So I'm just trying to understand the
12 distinction between transmitting user data and enhanced
13 transmission of user data.

14 A. Okay. I'll -- and I'll make my answer as short
15 as possible.

16 In UMTS they in 19 -- in -- in around the
17 2000 time frame only the DPDCH channel was defined, and
18 that's what I've referred to as the low-speed channel
19 just to differentiate from the high-speed channel.

20 Q. Uh-huh.

21 A. Now -- and then later on, it was determined by
22 the standards group that they needed to provide the
23 mobile terminals with higher speed data transmission
24 links. The functionality is called high-speed downlink
25 packet access and high-speed uplink packet access, and



1 those were in later releases, releases that -- after
2 release 99 in UMTS as we discussed earlier.

3 The Umesh came out at about the same time
4 that these newer high-speed channels were being defined
5 to support streaming, media, video, a lot of the higher
6 speed applications that required -- in -- in the
7 parlance of technical people required a bigger pipe
8 between the base station and a mobile terminal.

9 So what the -- in my mind, what Umesh is
10 describing as enhanced transmission of user data he's
11 referring to those higher speed applications like video,
12 streaming, file transfer, any of the user data that --
13 that requires a higher speed, and so that's why I've
14 been describing -- and these -- sorry -- and so the
15 E-DPDCH is one of those higher speed channels to
16 transfer data.

17 So a mobile terminal out at the -- after
18 this was implemented (these higher speed channels) had
19 the option of requesting a lower speed channel to send
20 lower speed data, might be just a packet, for instance,
21 on a DPDCH, which I'd characterize as a low-speed
22 channel. Or if the mobile terminal wanted a faster
23 connection, for say streaming video, it would request an
24 allocation for an E-DPDCH so it would have a faster
25 connection for that application.



1 Hopefully that wasn't too long, but
2 there's a lot of things going on here with the
3 terminology.

4 Q. All right. Are the -- when a mobile terminal
5 is assigned a DB -- DPDCH channel and assigned an
6 E-DPDCH channel do those channels use different radio
7 resources?

8 A. Well, the -- I -- I think at a high level, I
9 would say yes, and I could explain that the DPDCH is a
10 different type of channel or the data is transmitted
11 differently on a DPDCH than it is on an E-DPDCH, and
12 I'll just -- and -- and I -- I believe that Umesh
13 describes this. But data on the E-DPDCH is transmitted
14 or allocated to the terminals in slots at a time -- on a
15 time division basis. So when a mobile terminal requests
16 a resource -- a transmission resource to transmit on the
17 E-DPDCH it --

18 Q. Uh-huh.

19 A. -- is allocated a time slot on that channel in
20 which it can transmit, and then other mobile terminals
21 are transmitting at the same time on other time slots.

22 Q. Right.

23 A. Now, going to finish the answer, for a DPDCH it
24 does not have time slots. It is a channel that's
25 defined by -- and I'm getting technical, but it's the



1 only way I can explain it --

2 Q. Okay.

3 A. A DCDPH channel is defined by a spreading code
4 and a scrambling code and it is then allocated or
5 specified to the mobile phone which code to use, and, as
6 I explained earlier, the mobile phone or the mobile
7 terminal sends the data for that allocation and then
8 that channel's dropped so the base station can use that
9 channel to allocate it to other mobiles that need to
10 transmit on the uplink.

11 Q. Okay. So is -- is "CDMA" an example of that
12 type of spreading, scrambling codes?

13 A. For the DPDCH the -- or interface as referred
14 to in UMTS as wideband CMA, so it is a CDMA spreading
15 code that I'm referring to and a CDMA scrambling code.

16 Q. Okay. So it -- is it fair to say then that
17 DPDCH and E-DPDCH are separate data channels?

18 A. Definitely. And they're on different spreading
19 codes and the data is transferred in different ways,
20 yes.

21 Q. Okay. Does Umesh provide any description about
22 how the DPDCH is set up?

23 A. You -- you -- I don't understand your question
24 or the term "set up." Do -- that is a term in the art
25 so I need to be very careful what you mean by "set up."



1 Q. Does Umesh -- so before the DPDCH channel is
2 established between the mobile terminal and the base
3 station does Umesh describe the process for how to
4 establish the DPDCH channel between the mobile terminal
5 and the base station?

6 A. And I want to make sure I heard you correctly.
7 Are you specifically asking for setting up the E-DPDCH?

8 Q. No. I'm asking for just DPDCH, so let me just
9 ask again.

10 Before the DPDCH channel is established
11 between the mobile terminal and the base station does
12 Umesh teach how -- the process for how to establish the
13 DPDCH channel between the mobile terminal and the base
14 station?

15 A. I need to look briefly. I won't spend too much
16 time. I would just -- I'm re- -- I -- I've just
17 finished just scanning the first few pages of Umesh, but
18 I wanted to refresh my memory what Umesh did disclose
19 about what I've been referring to as the lower speed
20 channels, where your question specifically included
21 setting up the DPDCH.

22 As I read through and in this, I
23 understood Umesh is focusing on modifications for
24 establishing an enhanced DPDCH or what I've referred to
25 as the higher speed channels.



1 Q. Okay.

2 A. And Umesh is just stating that the DPDCH is
3 there, I think, for contrast and for full disclosure
4 that those channels are there, but Umesh then focuses
5 on -- on -- on the control and data transfer for the
6 higher speed channels, specifically the E-DPDCH.
7 Hopefully that answers your question.

8 Q. It does. Thank you.

9 In paragraph 36 of Umesh it refers to the
10 HS-DPCCH. Can you tell me what that is? What is the
11 "HS-DPCCH"?

12 A. Well, and -- and he's -- and he's provided a
13 description of what that stands for, is the -- and I
14 referred to this acronym earlier, and I apologize for
15 all the acronym cyprian, but the HS-DPA that you see two
16 lines down in paragraph 36 is the high-speed data packet
17 access functionality I referred to that was added in
18 four or five years after the initial release. This is
19 one of the high-speed packet access channels. And so he
20 refers to that DPCCH, the control channel that's used
21 for the high-speed data channel as the HS-DPCCH. The
22 difference in these acronyms, if you notice, in the last
23 three letters, it's either a D or a C, the "D" is for
24 data the "C" is for control.

25 Q. Right. And the -- the HS-DPA, the high-speed



1 downloading packet access, that -- that was created
2 essentially to provide a high-speed way to stream data
3 down to mobile terminals?

4 A. Yes. The functionality was implemented in two
5 different releases: The first release just had
6 high-speed downlinks; and then the second release at --
7 or the release subsequent to HS-DP release had HS-UPA
8 which added the high-speed uplinks.

9 Q. And what type of signals are transmitted on the
10 HS-DPCCH?

11 A. Again, you broke up a little bit. I heard
12 "what type" and then I heard "DPCCH." That's all I
13 heard, so probably need to re-ask it.

14 Q. Repeat.

15 So what types of signals are sent on the
16 HS-DPCCH channel?

17 A. There's multiple up -- the higher level
18 answer -- or my high-level answer would be: Those would
19 be the associated control signals for -- to supplement
20 (or support) the high-speed DPDCH. I don't know if you
21 wanted a more specific answer. I could look up what he
22 listed or included on that if you would like.

23 Q. I -- I just want -- so you're saying control
24 signals. Just so you don't -- data transmit --
25 there's -- a mobile terminal does not send data -- does



1 not make data transmissions using the HS-DPCCH; is that
2 correct?

3 A. I have to be careful because the control
4 messages are data, they're just used for different
5 functions. And we refer -- "we" meaning a person of
6 ordinary skill in the art would refer to those as
7 signaling messages and so they are data and messages.
8 And so it's about -- as a high level I earlier
9 characterized it as control messages or control data,
10 they are typic- -- the high-speed DPCCH does not
11 typically transfer user data. I think that answers your
12 question.

13 Q. Okay.

14 A. I hope.

15 Q. Yeah. I -- it doesn't typically transfer user
16 data, but you're saying there are circumstances where it
17 would transfer user data; is that correct?

18 A. I'm just always -- I -- I'm trying to be
19 careful instead of saying it never does, because I think
20 there's some rare exceptions where user data can be
21 transferred on the DPCCH. I'm just being careful. But
22 as far as Umesh and its disclosures I don't believe
23 Umesh discloses that user data is transported over the
24 high-speed DPCCH.

25 Q. So I -- thank you. And -- and thanks for the



1 explanations of the distinctions between the -- the two
2 types of data channels; the E, dash, and just the
3 regular DPDCH.

4 So it -- is it possible to establish an
5 E-DPDCH channel without having a DPDCH channel?

6 A. Okay. I -- I -- I think I got a little lost.
7 I heard all the words, but I'm not understanding your
8 question.

9 But if we could also characterize, we --
10 we need to be careful whether we're referring to uplink
11 or downlink now. Or I -- I'm guessing, and -- and you
12 need to verify for me, that we're -- you're asking me
13 about the uplink portion; is that --

14 Q. Yeah.

15 A. -- correct?

16 Q. That's correct.

17 A. Okay. Now, if you could try again. We're
18 talking --

19 Q. Sure.

20 A. -- where you're asking me about the uplink
21 high-speed channels, okay?

22 Q. Okay. So let -- and just to maybe make it a
23 little bit easier, instead of repeating the five letters
24 every time, when I refer to "E-DPDCH" I'm just going to
25 say "enhanced channel" and if I'm referring to "DPDCH"



1 I'm just going to say "regular channel"; is that clear?

2 A. Yeah.

3 Q. Does that make sense?

4 A. Yes. But if you could, also for me to
5 understand, if you can refer to it as the high-speed
6 control or the high-speed data channel then I'll
7 understand which one of those channels you're referring
8 to.

9 Q. Okay. Is it possible to establish the enhanced
10 data channel without having the regular data channel for
11 uplink?

12 A. That question is more difficult for me than --
13 than what you might think.

14 First off, the -- the low-speed data
15 channels are mandatory data channels that are always
16 included and always a part of the functionality between
17 the base station and the mobile terminal. So that's why
18 the question. Because I've never considered what
19 happens if those channels are not there because those
20 channels were at the initial part of UMTS, and they've
21 been there ever since and those are always there, and
22 the high speed channels are an option. In other words,
23 some mobile terminals don't need to support the
24 high-speed uplink or downlink channels.

25 But to answer your question, typically the



1 high-speed data channel is requested through the
2 high-speed control channel; in other words, they're --
3 they're self-contained for the high-speed aspects of
4 both the uplink and the downlink.

5 Q. Okay. In -- in Umesh is -- does Umesh provide
6 any example in which there is the enhanced uplink data
7 channel but there is no regular uplink data channel?

8 A. Well, again, I'm not trying to be difficult,
9 but Umesh provides the figures -- I think Figure 2 and
10 as the first part, yes, or the first figure. Now, Umesh
11 if I can go -- I'll try to go slowly because we've got
12 acronyms here.

13 If I look at Figure 2 where the mobile
14 terminal that's on the top that's labeled 20b mobile
15 station, on the left hand Umesh is -- left-hand side of
16 those arrows -- he it is labeled the channels 1b and 2b,
17 now, those are what I refer to as the low speed or
18 non-enhanced uplink and downlink control and data
19 channels. As I --

20 Q. Uh-huh.

21 A. -- explained earlier, he's listed those
22 channels as being an arrow, but your question said when
23 they're not there.

24 There is many cases when a mobile station
25 can request an uplink data transfer on an enhanced data



1 channel when the lower speed DPDCH is not present; in
2 other words, the functionality can be there but, as I
3 explained, that arrow is drawn like -- and it could
4 imply it's there all the time, but that DPDCH is only
5 there a small amount of time and only as a result of the
6 mobile terminals sending a request for data transfer on
7 the low-speed chan- -- uplink channel.

8 Again, I'm hoping I answered your question
9 without trying to go too long, but --

10 Q. Okay. Let me go back. And see if we can look
11 at those paragraphs we were looking at before. So in
12 paragraph 35 it makes reference to the enhanced data
13 channel but also to the E-U-L-U-L control signal; do you
14 see that in paragraph 35?

15 A. Yes.

16 Q. Okay. Is -- is there a short -- a shorthand
17 way to pronounce that? Like EULUL? Is there anything
18 that --

19 A. Frankly this is unique terminology to Umesh.

20 Q. Okay.

21 A. Umesh came out before all of the terminology
22 was finalized for the standard, he's right on the
23 leading edge of these high-speed channels. So I just
24 say the acronym. I -- engineers typically try to
25 pronounce things as words, but that one I -- I don't try



1 to answer your question. So, yeah --

2 Q. Okay.

3 A. -- sorry, it's E-U-L-U-L. I don't know how
4 else to say it.

5 Q. Yeah. I -- when I've been considering it, I've
6 just -- in my head, I say EULUL like yuletide just as
7 I --

8 A. I -- that's fine. I understand what you're
9 talking about. If you want to pronounce it that way,
10 I'm fine with that and we can go with that.

11 Q. Okay. So just to be clear when I refer to
12 "EULUL" I'm referring to the E-U-L-U-L signal, okay?

13 A. Yes.

14 Q. What is -- what is the EULUL control signal
15 for?

16 A. I believe I covered that in my declaration.
17 There are multiple control signals that Umesh defines
18 for the EULUL control signal and different
19 characteristics. Again, in my declaration I believe
20 I've pulled the cites out where he's described the
21 different control signals that can be carried by the
22 E-U-L-U-L.

23 Q. Okay. And what is the relationship between the
24 EULUL control signal and the enhanced data channel?

25 A. The E-U-L-U-L control signal, as it says in



1 paragraphs -- as Umesh says in paragraph 35, is an
2 enhanced uplink physical control signal. So that means
3 that these control signals are carried on the enhanced
4 DPCCH channel and, as I described earlier, the control
5 and data channels are self-contained.

6 So if a mobile terminal wants to send data
7 on the high-speed uplink data channel it would send a
8 U -- E-U-L-U-L control signal on the enhanced uplink
9 control signal. And that -- that's described in
10 paragraph 36, he continues on to explain what the
11 high-speed DPCCH is and what it controls.

12 Q. So when you refer to sending in EULUL control
13 signal on the high speed or enhanced control channel
14 you're referring to the HS-DPCCH; is that correct?

15 A. That's correct.

16 Q. In paragraphs 8 and 9 of Umesh it refers to
17 what are -- I believe it -- it considers to be different
18 methods that you can send the EULUL control signal; do
19 you see that?

20 A. Yes, I do. If I recall correctly, and I -- I
21 think I am, Umesh describes three different methods that
22 might be used to -- to transfer the E-U-L-U-L control
23 signal, then I believe the -- the solution that he's
24 saying, the best solution is the third method. But
25 again, we can walk through these paragraphs if you'd



1 like.

2 Q. The -- in the first two methods it talks about
3 using the EULUL control signal and either the DPDCH or
4 the DPCCH, but when you do that it degrades channel
5 quality; is that an accurate description?

6 A. And he's saying it's inviting transmission
7 quality degradation and I would agree with that, yes.

8 Q. Okay. In -- in the third method it says to
9 transmit the -- the EULUL control signal using a
10 physical channel of a different spread code than the
11 other uplink physical channels, but that can increase a
12 peak-to-average ratio in transmission power; is that --
13 is that also an accurate summary?

14 A. Yes. That -- that it may. But then he goes on
15 to explain what his invention is so it doesn't do --

16 Q. Right.

17 A. -- that. Right.

18 Q. Right. And so he's saying the invention is to
19 avoid both the transmission quality degradation of the
20 first and second methods and to avoid increasing the
21 peak-to-average ratio in transmission power that results
22 in the -- in the third method; correct?

23 A. Yes. If he uses a -- again, it's a different
24 spreading code or a different physical channel is what
25 he's explaining there.



1 Q. Right. And so the -- the -- just to summarize.

2 So the Umesh's invention he's saying is to
3 avoid affecting the existing physical channels and to
4 avoid increasing the peak-to-average ratio in
5 transmission power, correct, that's in paragraph 10?

6 A. I think you're close with the characterization,
7 but I think I'm interpreting it a little different.
8 Maybe we're the same.

9 He sat -- and let me read the text and
10 then, "therefore, the present invention has an object to
11 transmit an enhanced uplink physical control signal
12 conforming to the enhanced access without affecting
13 existing physical channels or increasing the
14 peak-to-average ratio in transmission power on a mobile
15 station." So there's two things here that I interpret.

16 Q. Uh-huh.

17 A. He's saying, No. 1, I'm not going to -- I
18 don't -- he's not recommending sending the E-U-L-U-L on
19 those low-speed channels that we referred to,
20 specifically. He's not recommending sending it on the
21 DPDCH or the DPCCH because that has problems. He's --
22 he's recommending to send it on the high speed or the
23 enhanced control signal, but he's also saying he needs
24 to do something in order to not increase the
25 peak-to-average ratio in transmission power.



1 So as I'm reading this and now understand
2 the invention, he's saying I'm not going to send two
3 control signals at the same time. Which I'm sure we'll
4 probably get into in a while, but this is to me a setup
5 for saying I'm going to use the enhanced control channel
6 to send the -- the control information, the E-U-L-U-L
7 control signals, but then I'm also going to make sure
8 that I don't send two signals at the same time, meaning
9 the quality notification signal and the resource request
10 signal at the same time. That's how he's proposing not
11 to increase the peak-to-average ratio in transmission
12 power.

13 Q. Okay. I -- I just change -- I just want to
14 make sure, when it shows screen sharing are you now
15 looking at paragraph 91 of your declaration?

16 A. Yes. I see it.

17 Q. Okay. In -- in this paragraph here on page 49
18 it says, "in other words, the EULUL is an uplink control
19 signal that is transmitted on the enhanced uplink
20 channel." The "enhanced uplink channel" that you're
21 referring to here is that E-DPDCH or is that the
22 HS-DPCCH?

23 A. Yes. And I should have been more specific
24 here. It's the HS control channel (or the HS-DPCCH).

25 Q. Okay. Okay. Thanks for the clarification.



1 Going back to Umesh, in paragraph 75 it
2 makes reference to the -- an RR/SI signal. What -- what
3 is the RR/SI signal?

4 A. And as I -- I pointed -- I believe I actually
5 referred to this -- the paragraph in the -- in the
6 paragraphs I read for my declaration equating the RR/SI
7 that's disclosed in Umesh to be essentially the same as
8 the scheduling request disclosed by the -- and required
9 by the claim, and he describes the rate request and the
10 scheduling information.

11 So for the high-speed channel two pieces
12 of information are required for the base station in
13 order for the base station to understand what the mobile
14 terminal is requiring for the high-speed uplink data
15 channel. So there's multiple rates that are -- or -- or
16 data speeds that are supported by the high-speed uplink
17 data channel. So the mobile can request a specific rate
18 and if it wants a -- a big pipe, as I explained earlier,
19 or a highest rate it will request a high rate, and then
20 the scheduling information will be typically for how
21 much data or how long it needs that.

22 Q. Okay.

23 A. And I -- again, I should have used the
24 pronoun -- I should have said how long the mobile
25 terminal needs that. Because the mobile terminal is the



1 only one at this point that knows what request for data
2 it's getting from its user and what it needs to send on
3 the uplink. It needs to convey that information to a
4 base station and then the base station determines if it
5 can support that rate request and gives a grant back.
6 Then the next step as Umesh describes is then the -- the
7 terminal transmits data on the uplink --

8 Q. Okay.

9 A. -- high-speed uplink.

10 Q. And it's correct to say that the -- the RR/SI
11 signal is an example of a EULUL control signal?

12 A. Yes. Sorry. Threw me a little bit with the
13 pronunciation, but I -- I got there.

14 Q. Sure. I -- I -- yeah. And I can go back to
15 saying E-U-L-U-L.

16 A. That's -- it doesn't matter.

17 Q. Okay.

18 A. That's why I hesitated. I was processing that.
19 But yes, it is. And I --

20 Q. Okay.

21 A. And as I've stated earlier, I've -- I've
22 equated that in my declaration.

23 Q. It -- it is correct that the only description
24 of the RR/SI signal in Umesh is here in paragraph 75?

25 A. Now, you're ask- -- asking me to prove a



1 negative and I don't remember going through and saying
2 this was the only place. I do recall citing this one,
3 but I need to be careful of agreeing that it's not
4 listed anywhere else. I wouldn't be able to tell you
5 that without actually doing an electronic scan of the
6 document. I'm not trying to be difficult.

7 Q. Okay.

8 A. I'm just trying to be careful.

9 Q. No. I understand. Let -- let me just ask it
10 differently then.

11 Are you aware of any other part of Umesh
12 that describes the RR/SI signal?

13 A. I'm going to look to my declaration that I
14 described earlier and see if I've cited any other --
15 sitting here now and quickly looking at my declaration,
16 I'm not aware of any other disclosure of the -- of -- in
17 Umesh for the RR/SI information. It doesn't mean it's
18 not there, I'm just not aware of it.

19 Q. Okay. And are you aware of any other part of
20 Umesh that discusses or describes anything about a
21 scheduling request or scheduling information?

22 A. Just give me just a minute to look. I'm
23 recalling some text that I want to look at.

24 I -- I think for background or for -- I
25 think Umesh is providing background in paragraph 2 if



1 you want to go to paragraph 2 of Umesh.

2 Q. Uh-huh.

3 A. This, to me, Umesh is providing a high-level
4 description, to me, of what one of ordinary skill would
5 understand, and he is pointing specifically to the
6 W-CDMA standard. And just to -- I've used the acronym
7 UMTS --

8 Q. Yeah.

9 A. -- but many people use the acronym W-CDMA to
10 mean UMTS. So, to me, they're synonymous with Umesh
11 paragraph 2, when he says "W-CDMA" it is also referring
12 to the UMTS standard, and he's referring to the UMTS
13 channels and functionality. And so, to me, to answer
14 your question, to understand what the scheduling request
15 or rate request information would be a person of
16 ordinary skill in the art would be -- would have been
17 familiar with these W-CDMA recommendations and
18 understand the details for that as well.

19 Q. Okay. Why don't we go ahead, if this is a good
20 time for you, to -- to take another break. Is that okay
21 for you?

22 THE WITNESS: Sure.

23 MR. WEINSTEIN: Okay. And why don't we go
24 off the record first.

25 COURT REPORTER: We're off the record at



1 10:52 a.m. Central.

2 (Break 10:52 a.m. to 11:05 a.m.)

3 COURT REPORTER: We are back on the record
4 at 11:05 Central.

5 Q. (BY MR. WEINSTEIN) Just bear with me one
6 moment, and, hopefully, my connection is better this
7 time than it has been in the prior sessions.

8 A. Okay.

9 Q. Okay. I'm going to introduce Exhibit 1012, the
10 R1-060583 reference.

11 A. Okay. I have it in front of me.

12 Q. Okay. And I'm going to go ahead and share it.
13 And you can see it? Yes?

14 A. Yes.

15 Q. Okay. On what is page 2 of the document, in
16 the Introduction you see there is a -- a bullet point,
17 the first bullet point is listed as Scheduling Request?

18 A. Yes. I see that.

19 Q. What -- what is your understanding of the
20 scheduling request according to this R1 reference?

21 A. As it states right there in the first bullet,
22 "i.e., control signaling transmitted by the UE to
23 request resources for uplink data transmission" and --

24 Q. Okay.

25 A. And then it states that -- the obvious, to me,



1 but it states "the scheduling requests are only
2 transmitted when the UE does not have valid scheduling
3 grant as inband signaling can be used otherwise."

4 Q. Okay. Is it require -- is it correct to say
5 that there are resources for uplink that are not for
6 data transmission?

7 Well, let -- let me withdraw that
8 question.

9 In -- in that bullet point for Scheduling
10 Requests it says it's to request resources for uplink
11 data transmission. As a -- a more general question, are
12 there resources for uplink that are not for data
13 transmission available?

14 A. As we discussed earlier, there would be an
15 uplink control channel would be a -- a resource.

16 Q. Okay. And that resource is for sending control
17 signals; correct?

18 A. Yes. For sending the -- sending scheduling
19 requests as one of the control signals.

20 Q. Okay. And in that bullet point regarding
21 Scheduling Requests it makes reference to a scheduling
22 grant. What is a "scheduling grant"?

23 A. The grant is the response back from the base
24 station to the mobile telling the mobile terminal we --
25 it's referred to as a UE here, that's what the standards



1 refer to it as. But it's telling the mobile terminal
2 what type of resources it has, meaning how much data it
3 can send and specifically at what rate would be what's
4 referred to here as the grant.

5 Q. Okay. And what is "inband signaling"?

6 A. That would be -- inband signaling would be over
7 the -- the way it's referred to here is over the actual
8 data link.

9 Q. Okay. And so is there -- if the UE has never
10 previously sent a scheduling request, is it possible for
11 the UE to have a valid scheduling grant?

12 A. No. They -- the grant is in response to a
13 scheduling request.

14 Q. Okay. Is there anything else? So the -- the
15 only way to get a scheduling grant is to first make a
16 scheduling request; correct?

17 A. Again, I'm being very careful because the --

18 Q. Yeah.

19 A. -- LTE standard is very sophisticated, has many
20 different functions. But if I can just limit it to the
21 scope of the discussion we're having now, the typical
22 way to send data, a mobile terminal would send data on
23 an uplink would send a scheduling request, receive a
24 scheduling grant, and then it would send the data at the
25 rate that the grant specified it could send it at.



1 Q. Okay. So just in -- in general, based on your
2 understanding, the -- the -- the scheduling grant is the
3 response to the scheduling request and a -- is that
4 correct?

5 A. Yes. In the context of -- of this
6 functionality. I'm not trying to be difficult.

7 Q. Yeah.

8 A. It's just --

9 Q. No.

10 A. -- we're bringing in a whole bunch of stuff
11 that would confuse the whole issue.

12 Q. Okay. And to have resources for uplink data
13 transmission the UE must have, or the mobile terminal
14 must have a scheduling grant; is that correct?

15 A. That's true. That -- there's only -- with
16 that -- there's only one exception where the mobile
17 terminals cannot send randomly they always -- to the
18 base station. The base station is the traffic cop and
19 schedules all of the transmissions for all of the mobile
20 terminals and it skip -- in its cell. There's one
21 example, one exception, it's called random access, but
22 again, that's not in the context of what we're referring
23 to here.

24 So in order for a UE to send data on the
25 uplink, as far as it's described here, using scheduling



1 requests, it then receives a grant, and then the paper
2 or the next bullets describe how the mobile terminal or
3 how the base station acknowledges each packet as it's
4 sent, whether it was received correctly or not.

5 Q. Okay. The -- the first time. It's been really
6 good so far.

7 So it -- is it correct to say that based
8 on what R1 teaches here about the scheduling requests
9 that the scheduling request signal is sent only when
10 there is no resource for uplink data transmission?

11 A. Yes. And I guess, as I said, it's somewhat
12 obvious, if the mobile terminal (or the UE) has an
13 allocation it would just go to the second bullet and
14 send data. It -- in other words, there's no reason for
15 a UE to send a scheduling request if it already has or
16 its working on a grant that it -- that it's already
17 received. It's just at that point sending data until --

18 Q. Okay.

19 A. -- it runs out of that grant, and then it
20 doesn't have anymore resource. And if new data comes
21 in, it would need to go back through the scheduling
22 request process.

23 Q. Okay. So when there is a scheduling grant it
24 means that the mobile terminal has previously sent a
25 scheduling request?



1 A. That's correct.

2 Q. Okay. On page 3 the R1 reference makes
3 reference to the CQI signal?

4 A. Uh-huh.

5 Q. And here in the -- the very first sentence it
6 says "the transmission of CQI is independent of uplink
7 data transmissions." What does it mean that it's
8 independent of uplink data transmissions?

9 A. The way I translate this and the meaning it
10 means that a CQI does not need to be carried on an
11 uplink data channel or with uplink data. A CQI control
12 message can be sent independently of any uplink user
13 data.

14 Q. Okay. And on page 4 in the Conclusion section
15 there is this Table 2, and it refers to different types
16 of signals under the Information tab -- column, and when
17 a scheduling request, data-associated control signaling,
18 CQI, and then ACK/NAK (or ACK, slash, NAK) are those
19 signals under information are they all considered
20 control signals?

21 A. Yes, I would. And I -- I believe a person of
22 ordinary skill would understand these to be different
23 types of control signals.

24 Q. And in the next column it says Approximate
25 Size, and it gives numbers for each of those different



1 types of control signals. Does "Approximate Size" refer
2 to the number of bits for that signal?

3 A. The control signal has other bits in it, but I
4 believe this is referring to the relevant bits or that
5 specific control message.

6 Q. Okay. So the -- when it says the approximate
7 size for a scheduling request is 1-2 within a control
8 signal there would be one to two bits that relate to the
9 scheduling request; is that correct?

10 A. That -- that's the way I'm interpreting that
11 table. My -- like I said, the scheduling request
12 typically is more than one to two bits long, it's just
13 the field is one to two bits depending upon what type of
14 scheduling request is being sent.

15 Q. Okay. And then in the next column it refers to
16 Simultaneous Transmission, and, by my count, each row
17 has 11 rectangular boxes. Do you know what each
18 rectangular box represents?

19 A. I can't think of anything that maps to the 11
20 boxes. Candidly, haven't studied this part in detail,
21 it wasn't relevant for any analysis, so I'd have to
22 think. But I think what this table is addressing is the
23 peak-to-average power that we discussed earlier. So
24 it's listing the different signals and the combinations
25 that can be transmitted simultaneously so that the peak



1 power doesn't -- isn't exceeded past the reasonable
2 limit.

3 Q. Okay. And in -- it -- my understanding is that
4 at -- in, at least, two instances -- I'm going to see --
5 no. That's not going to work. That won't -- here and
6 then also here, it -- it seems like the scheduling
7 request signal or bit -- and the CQI can be transmitted
8 simultaneously; is that your understanding?

9 A. I -- that, again, I haven't done a detailed
10 analysis, but based on what I'm reading my understanding
11 would be that there are situations where the CQI and
12 scheduling request can be transmitted at the same time.
13 But it's also considering the other signals that are
14 there too. Notice that when those occur some of the
15 other signals could not occur. So this is this paper's
16 way of saying this is one method to minimize the
17 peak-to-average power ratios.

18 Q. All right. So it -- in looking at it, it -- it
19 seems like there is -- you know, there's an example here
20 of three different types of signals being sent at the
21 same time. An example here where there -- you can see
22 here also where it's three different signals being sent
23 at the same time, and -- but there's no example of four
24 at the same time. So consistent with your proposition
25 that the -- this table is set to have a maximum



1 peak-to-average ratio, it seems to do that by limiting
2 to no more than three of the four control signals at the
3 same time?

4 A. Well, I -- I -- I think we need to back up a
5 little bit and take this paragraph or this section in --
6 in -- in context.

7 Q. Yeah.

8 A. And I think the text above the table describes
9 what's going on here. In Table 2 -- and -- and I'm
10 reading the text from Section 6. It says "In Table 2,
11 uplink control signaling is summarized. It is proposed
12 to take this as a guideline when modeling the uplink
13 control signaling overhead in system simulations."

14 They are not recommending that this go out
15 and that this be the network requirement. They're
16 recommending that this be in system simulations for
17 modeling, and then based on the outcome of that
18 modeling, then this table may be modified. But they're
19 saying here's the combinations we should look at for the
20 modeling not necessarily what the network's going to do.

21 Q. Okay. But, at least, for the purposes of
22 modeling in, at least, two instances it's saying that
23 you could have a scheduling request control signal and a
24 CQI control signal transmitted simultaneously; correct?

25 A. I -- I think the paper is saying we want the



1 modeling to consider those two going out at the same
2 time. It might -- you know, they didn't know the
3 results, but then after looking at the results there
4 would be a recommendation.

5 So this is wanting to -- to me, they're --
6 they're saying the modeling should consider these
7 combinations, and then let's look at the results of the
8 modeling to decide what goes into the actual
9 specification.

10 Q. Sure. So to put it conversely, there --
11 there's nothing here saying that -- or, at least,
12 there's nothing here recommending that you should not
13 have the scheduling request and CQI sent simul- --
14 simultaneously?

15 A. I would agree with that. I think that the --
16 the -- that the engineers who are subject matter experts
17 will want to see how much the performance is degraded in
18 case that combination would be there. Again, it's not
19 recommending -- this paper is not recommending any
20 specific outcome. It just wants the modeling to
21 actually provide different outputs so that they can make
22 a final decision here.

23 Q. Okay.

24 MR. WEINSTEIN: I have no further
25 questions. So we can finish now or is there anything



1 else?

2 MR. SNODGRASS: I have no questions
3 either. We'll review and sign.

4 MR. WEINSTEIN: Okay. I -- I've asked for
5 the -- the formal deposition transcript to be provided
6 within five days. I'm more than happy once I receive it
7 to circulate it to -- to you, to petitioner's counsel.

8 COURT REPORTER: Thank you.

9 The time is 11:23. We are off the record.

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1	CHANGES AND SIGNATURE			
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3	PAGE	LINE	CHANGE	REASON
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1 I, MARK R. LANNING, have read the foregoing
2 deposition and hereby affix my signature that same is
3 true and correct, except as noted above.

4

MARK R. LANNING, Witness

5
6 THE STATE OF _____)

7 COUNTY OF _____)

8 Before me, _____, on this day
9 personally appeared MARK R. LANNING, known to me (or
10 proved to me under oath or through _____)
11 (description of identity card or other document) to be
12 the person whose name is subscribed to the foregoing
13 instrument and acknowledged to me that they executed
14 the same for the purposes and consideration therein
15 expressed.

16 Given under my hand and seal of office this _____
17 day of _____, _____.
18

19

Notary Public in and for the
20 State of _____.
21
22
23
24
25



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

TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED
TCT MOBILE INTERNATIONAL LIMITED
TCT MOBILE, INC.
TCT MOBILE (US) INC.
TCT MOBILE (US) HOLDINGS, INC.,

Petitioner(s),

VS.

MITSUBISHI ELECTRIC CORPORATION,

Patent Owner(s).

CASE NO.: IPR2023-00957
U.S. PATENT NO. 9,635,656

REPORTER'S CERTIFICATION
DEPOSITION OF MARK R. LANNING
FEBRUARY 14, 2024
(Reported Remotely)

I, DICIE LEE EYTCHESON, a Certified Shorthand
Reporter in and for the State of Texas, do hereby
certify that the foregoing deposition is a full, true
and correct transcript;
That the foregoing deposition of MARK R. LANNING,
the Witness, hereinbefore named was at the time named,
taken by me in stenograph on February 14, 2024, the
said Witness having been by me first duly cautioned
and sworn to tell the truth, the whole truth, and



1 nothing but the truth, and the same were thereafter
2 reduced to typewriting by me or under my direction.

3 () That upon request by the witness and/or
4 counsel, the Witness shall have 30 days after being
5 notified by certified mail, return receipt requested,
6 by the deposition officer that the original deposition
7 transcript is available in Kim Tindall & Associates'
8 office for review and signature by the Witness and if
9 any corrections made are attached hereto;

10 () That upon request by the witness and/or
11 counsel, a reading condensed copy of the deposition
12 transcript along with the full-sized original Changes
13 and Signature Sheet has been sent to _____
14 on _____ for review and signature within 30
15 days and if any corrections returned are attached
16 hereto;

17 () That upon request by the witness and/or
18 counsel, the deposition officer is instructed to
19 release the original deposition transcript to
20 _____ on _____, for
21 review and signature, and the deposition officer is
22 thereafter released of any further responsibility with
23 regard to the original.

24 () That upon request by the Witness and/or
25 counsel, the Witness shall have thirty (30) days for



1 review and signature of the original transcript and if
2 any corrections returned are attached hereto.

3 () That the signed transcript () was () was not
4 received from the Witness within 30 days.

5 That the amount of time used by each party at the
6 deposition is as follows:

7 Marc Weinstein - 1hr:50min

8 That before the completion of the deposition, the
9 Deponent, and/or the Plaintiff/Defendant did request
10 to review the transcript.

11 I further certify that I am neither counsel for,
12 related to, nor employed by any of the parties in the
13 action in which this proceeding was taken, and further
14 that I am not financially or otherwise interested in
15 the outcome of the action.

16 WITNESS MY HAND, this the 20th day of February,
17 A.D., 2024.

18

19

Dicie Lee Eytcheson

DICIE LEE EYTCHESON, Texas CSR 5392

20

Expiration Date: 10/31/25

Magna Legal Services

21

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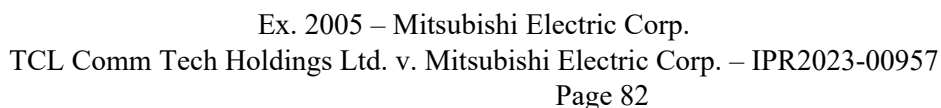
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