



TP.One
Court Reporting

Transcript of Bruce McNair

Wednesday, June 11, 2025

Maxell, Ltd. v. Samsung Electronics Co., Ltd.

www.TP.One
800.FOR.DEPO (800.367.3376)
Scheduling@TP.One

Reference Number: 155667

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3 INTERPARTES REVIEW NOS.
4 IPR2004-00906 and IPR2024-00907

5 - - - - -

6 SAMSUNG ELECTRONICS CO., LTD.,
7 Petitioners,

8 vs.

9 MAXELL, LTD.,
10 Patent Owner.

11 - - - - -

12

13 TRANSCRIPT of the stenographic notes of
14 the deposition of Bruce McNair in the above-entitled
15 matter, as taken by and before LORRAINE B. ABATE, a
16 Certified Court Reporter and Notary Public of the
17 State of New Jersey, and Registered Professional
18 Reporter, held at the offices of DLA Piper, 51
19 John F. Kennedy Parkway, Suite 120, Short Hills, New
20 Jersey, on June 11, 2025, commencing at 9:14 a.m.,
21 pursuant to Notice.

22

23

24

25

1 A P P E A R A N C E S:

2

3 DLA PIPER, ESQS.

4 Attorneys for the Petitioners

5 303 Colorado Street, Suite 3000

6 Austin, Texas 78701

7 BY: BRIAN K. ERICKSON, ESQ.

8 [512)457-7000

9 brian.erickson@us.dlapiper.com

10

11 MAYER BROWN, ESQS.

12 Attorneys for the Patent Owner

13 1999 K Street NW

14 Washington, DC 20006-1101

15 BY: SAQIB J. SIDDIQUI, ESQ.

16 [202)263-3167

17 ssiddiqui@mayerbrown.com

18

19

20

21

22

23

24

25

1

I N D E X

2

3

WITNESS

EXAMINATION BY

PAGE

4

Bruce McNair

Mr. Erickson

4

5

Mr. Siddiqui

85

6

7

8

* * * NO EXHIBITS MARKED * * *

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 B R I A N M C N A I R,

2 Having been first duly sworn by a Notary

3 Public of the State of New Jersey, was

4 examined and testified as follows:

5 EXAMINATION BY MR. ERICKSON:

6 Q. Good morning, Mr. McNair.

7 A. Good morning.

8 Q. You understand you're here today to
9 provide testimony in two IPRs. It's IPR 2024-00906
10 and IPR 2024-00907; is that correct?

11 A. Correct.

12 Q. Okay. And the 906 IPR involves what we
13 refer to as the '241 patent, and the 907 IPR involves
14 what we refer to as the '590 patent; is that correct?

15 A. Correct.

16 Q. You have a laptop in front of you that
17 should have the complete IPR files for both IPRs.

18 Have you been able to confirm that
19 you've been able to access the directories with those
20 files?

21 A. I have directories open here, and I see
22 several files that appear to be related to the IPR.

23 Q. Okay.

24 Can you please open -- go to the folder
25 for the 906 IPR, and find Exhibit 1001 which should

1 be the '241 patent. Open that, please.

2 A. Okay. I am in the 907. Which -- you
3 said the '241?

4 Q. The 906.

5 A. 906. Okay. All right.

6 And which exhibit was that?

7 Q. If you'll scroll down to EX 1001 and
8 open that, please.

9 A. Okay.

10 Q. Okay. Is Exhibit EX 1001 the '241
11 patent?

12 A. Yes.

13 Q. Okay. I'm sorry. Mr. McNair, is there
14 any reason that you cannot provide your best, full
15 and accurate testimony today?

16 A. No.

17 Q. Okay. In Exhibit 1001, the '241 patent,
18 will you scroll to column 7, line 53, please.

19 A. Okay.

20 Q. You see the sentence there that states
21 The modum circuits 1002 and 1003 conduct demodulation
22 through orthogonal frequency division multiplexing
23 OFDM; you see that sentence?

24 A. I see that, and just to correct the
25 record, the word is demodulation.

1 Q. Okay. Thank you.

2 Was OFDM known in the art at the time
3 the '241 patent was filed?

4 A. Yes.

5 Q. All right. And a POSITA would know what
6 OFDM is?

7 A. Yes.

8 Q. What is OFDM?

9 A. With OFDM, as the name implies, it's
10 orthogonal frequency division multiplexing.
11 Frequency division multiplexing means that
12 information is transmitted on a number of frequencies
13 simultaneously. Orthogonal means the carriers are
14 arranged in such a way so that the information can be
15 modulated into -- modulated onto the individual
16 carriers independently. And typically, using OFDM,
17 one would create the signal as a series of
18 sinusoidally-modulated carriers and would use the
19 fast Fourier transform to convert the signal from the
20 frequency domain to the time domain, where it can be
21 transmitted, and conversely, the receiver would do
22 the opposite function.

23 Q. What standards would a POSITA have been
24 aware of in November 2007 that implemented OFDM?

25 A. Well, there were -- there were several.

1 There was -- in Europe, there was the digital video
2 broadcasting terrestrial television standard. There
3 was the digital audio broadcasting satellite
4 standard. There was 802.11-A Wi-Fi standard.
5 802.11-G, another Wi-Fi standard. There were some
6 other earlier standards. I forget what they were.
7 They were developed in Europe about the same time as
8 DVB was developed. There were also some evolving
9 wireless standards for cellular communications, but
10 they weren't yet at the stage of implementation.

11 Q. What are some examples of those cellular
12 systems?

13 A. Well, there's something called long-term
14 evolution, LTE, that is referred to as a fourth
15 generation standard.

16 Q. Does the '241 patent teach a POSITA the
17 details about how to implement OFDM?

18 MR. SIDDIQUI: Objection, hypothetical.

19 A. It doesn't go into detail as to the
20 specifics of OFDM, but it references OFDM, that a
21 person of ordinary skill in the art would recognize
22 it is an existing technology and a -- there are many
23 techniques -- I didn't mention one. It had been used
24 in analog modems. Gandalf, for instance, implemented
25 OFDM for analog modems.

1 I think in the 1970s or Eighties, it was
2 also used in what's called digital subscriber loop,
3 DSL.

4 So in reference to OFDM, as a
5 technology, would inform a person of ordinary skill
6 that there are, you know, many systems that use that
7 modulation technique.

8 Q. In your opinion, would a POSITA know how
9 to implement OFDM in a radio circuit in a cell phone?

10 MR. SIDDIQUI: Objection, calls for
11 hypothetical.

12 A. There would certainly be a lot of
13 information available for a person of ordinary skill
14 to draw upon to understand what the implementation
15 issues might be and what problems they might need to
16 solve to get an OFDM system working. I, myself,
17 published some of that information.

18 Q. Okay. In the '241 patent, can you
19 scroll to column 12, line 18, please.

20 A. Okay.

21 Q. You see the sentence there that states
22 The modems 2015 and 2016 carry out OFDM
23 modulation/demodulation?

24 A. Yes.

25 Q. Okay. Is it fair to say that the '241

1 patent simply states that the modems perform OFDM
2 without describing the details to a person of
3 ordinary skill and how to implement OFDM?

4 A. Well, the patent describes the use of
5 OFDM and would rely on the skill of a person of
6 ordinary skill in the art to do the research to find
7 references that would enable them to see how to go
8 about doing that.

9 Q. Some of the claims recite OFDM as a
10 limitation, correct?

11 A. That's correct.

12 Q. In your opinion, does the specification
13 of the '241 patent enable a POSITA to practice the
14 claims that include the limitation OFDM?

15 A. I didn't offer an opinion in my
16 declaration about that. I was under the impression
17 that enablement was not an issue that needed to be
18 addressed. I didn't understand that it was something
19 that could be questioned in an IPR proceeding, so I
20 didn't -- I didn't analyze that.

21 Q. Okay. In your opinion -- well, I
22 believe the patent in front of you is text
23 searchable.

24 Are you aware of whether there are any
25 other references to OFDM in the specification of the

1 patent other than the two we've looked at?

2 A. I'm not aware.

3 Q. Okay. Based on the '241 patent's
4 teaching that the radio circuits use OFDM, would a
5 person of ordinary skill in the art have been able to
6 implement OFDM without undue experimentation?

7 MR. SIDDIQUI: Objection, asked and
8 answered.

9 A. Yeah. Again, as I said, I do not
10 believe anywhere in my declaration I made any
11 analysis of enablement of the '241 patent, because
12 again, as I said, it was my understanding, correct me
13 if I am wrong, but it was my understanding that in an
14 IPR proceeding, there is not a question of
15 enablement.

16 Q. Did you consider the level of detail
17 provided in the specification of the '241 patent in
18 determining your understanding of level of skill of a
19 person of ordinary skill in the art?

20 A. Yes.

21 Q. And it's fair to say that the '241
22 patent simply tells a person of ordinary skill in the
23 art to use OFDM and relies on that person's skill in
24 order to implement OFDM, correct?

25 A. Well, again, it sounds like you're

1 asking a question concerning enablement, and again, I
2 didn't analyze in terms of enablement. I looked at
3 the overall specification and the claims to
4 understand what the patent was dealing with to
5 determine a person of ordinary skill in the art, and
6 with my understanding of what people of that level of
7 skill would be capable of doing, I used that to set
8 what I believe to be the level of ordinary skill in
9 the art. I've supervised, taught, recruited people
10 of the skill level of a person of ordinary skill in
11 the art. I based it on that.

12 Q. Okay. So a person of ordinary skill in
13 the art could read these passages in the '241 patent,
14 and based on their level of skill, implement a radio
15 that carries out OFDM?

16 MR. SIDDIQUI: Objection, calls for
17 speculation.

18 A. Well, again, you know, you're asking
19 questions that sound like questions of enablement,
20 but I'll just say that I have supervised people who
21 actually didn't have a level of ordinary skill in the
22 art, according to the level that we've described.

23 I supervised senior design students in
24 the Capstone design project and providing them with
25 papers that I had written, looking at OFDM for use in

1 cellular systems.

2 I suggested to them a project where they
3 would be able to experiment with OFDM. My interest
4 was in the area of high frequency radio communication
5 as an amateur radio operator. I frequently use high
6 frequency radio communications, and there are similar
7 problems to what exists in a cellular system over an
8 ionospheric channel, and I questioned whether they
9 could use that as the basis of their design project;
10 and in fact, they did. They did not yet have a
11 bachelor's degree. They were advanced
12 undergraduates, and they were able to implement a
13 prototype of an OFDM system. So you know, to me,
14 that's an existence proof.

15 Q. A person of ordinary skill in the art
16 could implement OFDM as described in the 802.11-A
17 standard that you referenced, correct?

18 MR. SIDDIQUI: Objection, outside the
19 scope.

20 A. Well, here again, when one is
21 implementing something like the 802.11 standard, one
22 will frequently rely on devices that have been
23 manufactured to meet the standard.

24 Q. What is QAM modulation?

25 A. QAM stands for quadrature amplitude

1 modulation.

2 Q. Would a person of ordinary skill in the
3 art have been knowledgeable about QAM modulation?

4 A. Yes.

5 Q. What is QPSK modulation?

6 A. QPSK stands for quaternary phase shift
7 keying.

8 Q. Would a person of ordinary skill in the
9 art have been knowledgeable about QPSK modulation?

10 A. Yes.

11 Q. The '241 and '590 patents don't explain
12 the details of how to implement QAM or QPSK
13 modulation, correct?

14 MR. SIDDIQUI: Objection, outside the
15 scope.

16 A. Again, your question sounds like you're
17 addressing issues of enablement, and I did not
18 express in my expert report anything about
19 enablement, because, again, I believe that that was
20 something that was not germane to the IPR process.

21 Q. Are you aware of anything in the '241
22 and '590 patents that explain the details of how to
23 implement QAM or QPSK modulation?

24 MR. SIDDIQUI: Objection, asked and
25 answered.

1 A. Again, I don't believe that I addressed
2 that at all in my expert report for the reasons that
3 I previously stated.

4 Q. Is it fair to say that the patents
5 merely state that QAM or QPSK modulation could be
6 used and rely on the knowledge of one of ordinary
7 skill in the art to implement them, correct?

8 MR. SIDDIQUI: Same objection.

9 A. Again, using the definition of a person
10 of ordinary skill in the art, you know, these are
11 techniques that are routinely taught in undergraduate
12 courses in communications theory, where one
13 encounters the techniques QPSK, QAM, and would
14 understand what that means and where to find the
15 information about the specifics of how they're
16 implemented.

17 Q. In the '241 patent, would you please
18 scroll to column 8.

19 And scroll down to line -- about
20 line 50. This is where the '241 patent describes an
21 embodiment where the controller changes the
22 transmission schemes between scheme 1 and scheme 2 in
23 Figure 9.

24 Are you familiar with this embodiment?

25 A. Okay. Yes.

1 Q. Okay. In this embodiment, scheme 1 is
2 used for the video because it provides up to 17
3 megabits per second, which is greater than scheme 2,
4 which is up to 5 megabits per second.

5 A. I see that.

6 Q. Okay. What is your understanding as to
7 why a controller changes the transmission rate of
8 modem 1003 to lower it to scheme 2?

9 MR. SIDDIQUI: Objection, outside the
10 scope of the declaration.

11 A. Yeah, I don't remember addressing that
12 question. Again, that's -- as I sit here, I don't
13 remember that I've addressed that at all.

14 Q. Can you think of any reason why changing
15 one of the radios to scheme 2 would somehow help the
16 other radio implement scheme 1 at a higher
17 transmission rate?

18 MR. SIDDIQUI: Objection, calls for
19 speculation.

20 A. I don't believe I've analyzed that.

21 Q. In this embodiment, do radio one -- does
22 the first radio -- sorry about that. Scratch that.

23 In this embodiment, does modem 1002 and
24 modem 1003 transmit in the same frequency band?

25 MR. SIDDIQUI: Same objection.

1 A. So this is at column 50 -- column 8,
2 lines around 50. I'm just reading the material in
3 the specification to see if I've offered an opinion
4 about this, and I don't remember that I have. If you
5 could point me to something in my declaration where
6 you think that I may have addressed this, but as I
7 sit here, I don't remember having addressed that.

8 Q. Yeah. I don't think you've addressed
9 this in your declaration. I believe you've addressed
10 interference or potential interference in certain
11 prior art references, and I want to understand
12 whether this embodiment does anything to address
13 interference between radios modum 1002 and 1003.

14 A. Well, if I've addressed it in the
15 context of the prior art references, I don't know
16 that I've ever analyzed anything with regard to the
17 '241, because, again, that sounds like it's a
18 question of enablement.

19 Q. You're familiar with the term
20 coexistence as it applies to multiple radios
21 transmitting simultaneously?

22 A. Yes.

23 Q. Okay. What's your understanding of
24 coexistence in this context?

25 A. Well, when two radios are communicating

1 at the same time, there is the potential for the
2 transmitter of one system creating interference that
3 would impact the ability of the second system to be
4 able to receive information, overloading or creating
5 cross-modulation products, or even when you have two
6 transmitters operating at the same time, the two
7 transmitters operating at the same time can create
8 cross-modulation products that may cause interference
9 to other nearby receivers or other services.

10 Q. Okay. Are you aware of anything in the
11 '241 patent or '590 patent that addresses coexistence
12 issues between multiple radios?

13 MR. SIDDIQUI: Objection to form.

14 A. I don't remember that I've analyzed that
15 in my expert report.

16 Q. And last question on this embodiment in
17 column 8 -- I think I already asked that. Never
18 mind. Scratch that.

19 All right. Let's go to column 9, and
20 you see at about line 11 on column 9, it references
21 Figure 11. So if you want to glance at Figure 11,
22 then come back to column 9.

23 In the embodiment in column 9, there are
24 four radios, 5001 to 5004, correct?

25 A. Yes.

1 Q. And as disclosed, they each have a
2 different frequency band that's adjacent to each
3 other, correct?

4 A. Yes.

5 Q. There's no discussion in the patent
6 about potential interference by the adjacent bands on
7 each other, correct?

8 MR. SIDDIQUI: Objection to form.

9 A. Without looking through the entire
10 specification, I don't -- I don't see anything
11 concerning interference between bands in this
12 section, and I don't remember having addressed that.

13 Q. Okay. One of ordinary skill in the art
14 could implement for radios using adjacent frequency
15 bands as disclosed in this embodiment in column 9 in
16 Figure 11, correct?

17 MR. SIDDIQUI: Objection to form.

18 A. Well, it's my understanding the
19 specification is instructing the person that that's
20 what they should do, but again, you know, you're
21 touching on questions that sound like they're
22 enablement.

23 Q. Well, a person of ordinary skill in the
24 art would know how to implement the necessary
25 filtering and other issues to implement this type of

1 scheme, correct?

2 MR. SIDDIQUI: Objection to form.

3 A. Again, with the definition of a person
4 of ordinary skill in the art, they would understand
5 the need for filtering. They would understand the
6 kinds of filters that are available. They would
7 understand where they would be able to search for
8 that information to see what is commercially
9 available that they could use. And again, you know,
10 basing it on students that I've taught and courses
11 that I've taught, the things that I know that they're
12 capable of doing, yeah, I would expect that that
13 would be within the understanding of a person of
14 ordinary skill in the art.

15 Q. If you could scroll to Figure --
16 column 5, please. And if you look down at line about
17 38, there's a discussion of a television signal
18 processing circuit 125.

19 Do you see that?

20 A. Telephone signal processing circuit,
21 yes, not television.

22 Q. Sorry. Thank you.

23 It states that that circuit is -- has a
24 signal that's transmitted to a base station, and then
25 in a couple lines down below that, it talks about

1 voice signals, and then you see at about line 47, it
2 talks about receiving content of moving picture
3 transmitted from the base station of the cellular
4 phone.

5 Do you see that?

6 A. Yes.

7 Q. Okay. So is it your understanding this
8 is describing, essentially, a cellular modum for a
9 cellular phone?

10 MR. SIDDIQUI: Objection.

11 Q. That's another radio circuit, correct?

12 MR. SIDDIQUI: Objection.

13 A. I'm sorry. I'm just reading over this
14 section.

15 Q. Okay.

16 A. Yes. So what I see here, describing the
17 fact that the cellular phone circuitry could
18 alternatively be used for receiving voice signals or
19 for what they refer to as moving picture information.

20 Q. You see down at line 65, they discuss a
21 broadcast receiver 180?

22 Do you see that passage? I think it's
23 line 66.

24 A. Yes.

25 Q. Okay. So the embodiment in Figure 1

1 discloses the broadcast radio circuitry 180, the
2 cellular phone circuitry, and at least radio modem
3 1002 and 1003. Is that right?

4 MR. SIDDIQUI: Objection to form.

5 A. I don't know whether I would
6 characterize -- I think you referred to Figure 1
7 where the various modems are described. I would look
8 at the sum total of what the specification is
9 describing to understand what is being described here
10 in this section of the specification.

11 Q. Okay. Can you scroll up to Figure 1,
12 please.

13 A. Yeah. I was just up here.

14 Q. Okay.

15 A. Right. So Figure 1 is describing the
16 modems, at least 10'2 and 10'3. That's describing
17 the various other circuitry, and I see reference of
18 where we're talking, where it's describing the
19 functions of encryption Box 171 and the various other
20 things like a controller.

21 Q. Do you see the broadcast reception
22 there? Kind of in the middle on the left, broadcast
23 reception 180?

24 A. Yes.

25 Q. And then up at the kind of upper right,

1 you see the telephone signal processing 125 and it's
2 radio IF 122?

3 A. Yes.

4 Q. Okay. So there are at least four radios
5 disclosed in the Figure 1 embodiment; is that fair?

6 A. That's correct.

7 Q. And then in Figure 4, it shows that
8 there could actually be four radio modems, 5001 to
9 5004, right?

10 A. That's correct.

11 Q. Is it fair to say that it discloses
12 there could be up to six radios?

13 A. That looks feasible. That looks like it
14 may be describing that.

15 Q. And you're not aware of the '241 patent
16 or the '590 patent discussing any coexistence issues
17 among all of these radios; is that correct?

18 MR. SIDDIQUI: Objection.

19 A. Again, I don't remember addressing this
20 in my expert report, because again, I didn't look to
21 any issues that might exist in the '241 or '590
22 patent. I did not consider questions of enablement.

23 Q. Do you know whether the patents teach
24 anything regarding the power requirements for all of
25 the radios in a cell phone?

1 MR. SIDDIQUI: Objection to form.

2 A. Well, if I look at Figure 1, I don't
3 notice that there is any -- I don't notice that there
4 is any indication of a power circuit, batteries or
5 power conditioning, or anything like that. So I
6 think that's -- I don't think that power requirements
7 are addressed in the patent.

8 Q. The '241 and '590 patents do not teach
9 anything about maintaining regulatory compliance --

10 MR. SIDDIQUI: Objection.

11 Q. -- for a cell phone with multiple
12 radios, correct?

13 A. I'm not aware of any teaching about any
14 requirements for FCC or any other regulatory
15 requirements. Again, I did not search for that.

16 Q. In your declarations, you refer to the
17 N93 and Dua devices as specialized devices. Do you
18 recall that?

19 MR. SIDDIQUI: Objection.

20 A. I don't know if I used the word
21 specialized. I know that I have referred to the N93
22 user manual as teaching a closed system for
23 particular purposes, with instructions that the user
24 is not to modify the device in any way.

25 Q. Okay. Let's look at your declaration.

1 I think right now, we're in the -- actually, we can
2 open your declaration that's in the 906 subfolder.
3 So it would be EX 2017. And let me know when you
4 have that up, please.

5 A. Okay. Let's see. Is there any way to
6 keep two tabs open on separate windows? I don't
7 think so.

8 Q. If you drag one of them out, you should
9 be able to do that.

10 A. Oh, yes. Okay. Good.

11 All right. I have it open.

12 Q. Okay. If you go to paragraph 147,
13 please.

14 A. Okay. 147. I've got it.

15 Q. Okay. I think -- one moment. I think
16 I've directed you to the wrong spot. Hold on.

17 Apologies. Okay. I found the error.

18 If you could close that exhibit, please.

19 A. Okay.

20 Q. And navigate to the 907 directory.

21 A. Okay.

22 Q. Okay. And open up Exhibit 2017.

23 A. Okay.

24 Q. Now, if you could scroll to paragraph
25 147 of Exhibit 2017, which is in the 907 directory.

1 A. Okay. 147. All right.

2 Q. You see in the second line there, you
3 see specialized devices like N93 or Dua.

4 Do you see that?

5 A. Yes.

6 Q. Okay. So now, turning back to
7 Exhibit 1001, the '241 patent, in your opinion, is
8 the architecture described in the '241 and '590
9 patent specialized?

10 MR. SIDDIQUI: Objection, outside the
11 scope.

12 A. I don't believe in my declaration I've
13 made any comments about whether or not the '241
14 patent describes a specialized system.

15 Q. Is the architecture described in the
16 '241 and '590 patents opened or closed?

17 MR. SIDDIQUI: Objection, scope.

18 A. Well, I don't -- I don't know that that
19 question makes any sense. I specifically recognize
20 that the N93 user manual describes a system which is
21 not intended for modification. So in that sense,
22 it's closed.

23 The '241 patent and then '590 patent are
24 describing an idea for a device that can handle
25 multiple radio transceivers in multiple functions.

1 It doesn't inherently say whether or not it should
2 stand by itself or whether it could be combined with
3 something or whether it could be augmented in any
4 way. So I don't see that the patent is addressing
5 that question at all.

6 Q. If you scroll to column 6, line 55 of
7 the '241 patent.

8 A. Column 6, 55, was that?

9 Q. Yes.

10 A. Okay.

11 Q. You see this is where the patent
12 discusses an update?

13 A. Yes.

14 Q. The patent does not say what the source
15 of the update is, correct?

16 MR. SIDDIQUI: Objection, scope.

17 A. Within these lines, I don't see that it
18 mentions anything about what the source of the update
19 is.

20 Q. The patent doesn't teach how many
21 servers might be required to provide updates over the
22 internet, correct?

23 MR. SIDDIQUI: Objection, scope.

24 A. I don't believe I've analyzed whether it
25 talks about how one should manage the design of the

1 updating function.

2 Q. The patent doesn't talk about how to
3 mitigate any risks regarding updating an operating
4 system, correct?

5 MR. SIDDIQUI: Objection, scope.

6 A. I don't believe I've addressed that or
7 expressed any opinion about that, because again, that
8 sounds like you're asking a question of enablement,
9 which I did not address.

10 Q. Are you aware of anything in the '241 or
11 '590 patents that discuss how to mitigate the risks
12 of updating an operating system?

13 MR. SIDDIQUI: Objection, asked and
14 answered.

15 A. Again, I do not believe I've expressed
16 any opinion, because that would have been something
17 out of scope of what I would have considered for my
18 expert report.

19 Q. Are you aware of anything in the '590 or
20 '241 patent that discusses the amount of memory that
21 would be required for an over-the-air operating
22 system update?

23 MR. SIDDIQUI: Objection, scope.

24 A. Same response. I don't believe I've
25 analyzed that, for the same reasons that it was

1 outside the scope of what I was asked to look at.

2 Q. Okay. All right. If you could navigate
3 on the computer -- are you still in the directory for
4 the 907 IPR?

5 A. I'm not quite sure where I am. Let me
6 see. 907, yes.

7 Q. If you could open up Exhibit 1008,
8 please.

9 A. Okay.

10 Q. Exhibit 1008 is what we refer to as the
11 Dua reference, correct?

12 A. Correct.

13 Q. All right. Scroll down to paragraph 66,
14 please. And you see the reference to GSM down
15 towards the bottom of paragraph 66?

16 A. Yes.

17 Q. And that's what we've referred to as --
18 in these proceedings as 2G, correct?

19 A. That's correct.

20 Q. You see in paragraph 70, it begins a
21 discussion of the operation of the RFID tag reader
22 module?

23 A. Yes.

24 Q. If you could scroll to Figure 1.

25 A. Okay.

1 Q. You see the RFID activation button in
2 the upper right-hand corner?

3 A. Yes.

4 Q. When the user presses that button, that
5 will cause the CPU to cause the RFID tag reader
6 module to use the NFC radio to obtain information
7 about the nearby device, correct?

8 A. I'd have to look through the
9 specification to see if it actually says that. I
10 don't remember that it said that series of actions
11 will occur.

12 Q. Okay. Dua discloses that the NFC radio
13 can obtain information from a nearby device, correct?

14 A. I don't remember explicitly seeing that,
15 but that would be my understanding of what the
16 intention of the RFID and near field communication
17 would be.

18 Q. And one piece of information that's
19 received is what radio the nearby device supports,
20 correct?

21 A. One -- I'm not sure what one of
22 information -- I'm looking for the reference for
23 what -- where that one of information --

24 Q. Sure.

25 A. -- was.

1 Q. You scroll to Figure 7. And you see
2 message with example content illustrated in Figure 7?

3 A. Okay.

4 Q. And this is an example of the types of
5 information that could be received using the NFC
6 radio, correct?

7 MR. SIDDIQUI: Objection.

8 A. Well, I'll have to look and see where
9 reference to Figure 7 is in the document. Let's see
10 if I can search that.

11 Q. If you go to paragraph 0129, that might
12 help, and look at transmission 450.

13 A. 0129. Okay. Figure 7.

14 Okay. So I see paragraph 0129 is
15 describing the RFID transmission between two devices
16 and the message components. Yes, I see that.

17 Q. All right. So if you look at the first
18 sentence of paragraph 0128, those -- that message or
19 the information in that message is provided to CPU
20 109, correct?

21 A. Yes.

22 Q. And one part of that message or
23 component are the RF capabilities of the target
24 device as described in paragraph 0137, correct?

25 A. Yes.

1 Q. And one possible RF capability is
2 bluetooth, correct?

3 A. Yes.

4 Q. So if the CPU is informed through this
5 message that the target device supports only
6 bluetooth, then the CPU will assign the bluetooth
7 radio, correct?

8 MR. SIDDIQUI: Objection to form.

9 A. That seems to be the case.

10 Q. Okay. If you turn to paragraph 0124,
11 please.

12 A. Okay.

13 Q. You see the first sentence where it
14 states The RFID discovery/paging process shortens the
15 session setup time as compared to normal bluetooth
16 terminal discovery process for establishing a
17 session?

18 Did I read that correctly?

19 A. I see that, yes.

20 Q. What is the normal bluetooth terminal
21 discovery process for establishing a session?

22 MR. SIDDIQUI: Objection, scope.

23 A. I don't know that I've expressed any
24 opinion about that in my expert report.

25 Q. Is the example in the N93 user guide of

1 using bluetooth an example of a normal bluetooth
2 process for establishing a session?

3 A. The N93 user guide talks at a very high
4 level about the functionality that's apparent to a
5 user. So it really doesn't go into any detail that
6 would inform the user about what's happening
7 underneath the hood. It's just telling the user in
8 the user guide that this device is capable of being
9 used by bluetooth without really going into any
10 details about what happens.

11 Q. Well, in general, the user guide
12 discusses the user searching for and selecting a
13 target or bluetooth device and to manually transfer a
14 file at a high level.

15 That's a fair description, right?

16 A. Well, the user manual tells the user
17 that the device is capable of interacting with
18 bluetooth devices, but it doesn't get into any detail
19 about how that happens or whether there's any unusual
20 processing that the specific N93 device does that the
21 user would have to know about, other than routine
22 things that the user would normally interact with any
23 device that has a bluetooth capability.

24 Q. Okay. So the N93 user manual discloses
25 the routine things the user would do to interact the

1 device -- interact with a device that has bluetooth
2 capability; is that fair?

3 A. That's fair to say.

4 Q. Okay. Going back to the message in Dua,
5 one of the other message components is the media
6 capability 461.

7 Do you see that? It's in the figure and
8 it's described in paragraph 0142.

9 A. So you're referring to the media
10 capability 461, right?

11 Q. Yes.

12 A. And that was paragraph?

13 Q. 0142.

14 A. 0142. That's correct.

15 Q. In paragraph 0142, it lists several
16 video formats. MPEG 1, MPEG 2, MPEG 4, MPEG 7, AVI,
17 and XviD.

18 Do you see that?

19 A. Yes.

20 Q. Which of those are you familiar with?

21 A. I don't know that I've ever seen
22 anything with XviD. I understand the general MPEG,
23 motion picture experts group. I think I've seen MPEG
24 1, 2, and 4. And I've seen AVI. I'm not sure about
25 MPEG 7.

1 Q. Okay. Do the different MPEGs have
2 different compression ratios?

3 A. That's my general understanding.

4 Q. So if you compress something with
5 MPEG 4, it would be more efficiently compressed than
6 if you compress with MPEG 2?

7 A. I don't know that I would use
8 efficiently as a descriptor. I would look at the
9 characteristics being quality of the image and
10 compression rates, data rates.

11 Q. So would the same file being compressed
12 with MPEG 2, would it be smaller if compressed with
13 MPEG 4?

14 A. The same file? I believe so.

15 Q. What about AVI relative to MPEG 2 or
16 MPEG 4?

17 A. I don't know that I've ever made that
18 comparison.

19 Q. What about MPEG 1 versus MPEG 4?

20 A. I'm not sure that I made those
21 comparisons. I've used them, but I haven't really
22 examined how they operate, and I don't think I've
23 expressed any opinion about that.

24 Q. If you can turn to Figure 11 in Dua,
25 please.

1 A. Okay.

2 Q. In the upper right, there's a user B
3 domain 850.

4 Do you see that?

5 A. Yes.

6 Q. And the Media Player 100B is receiving
7 audio and video over a cellular radio and
8 simultaneously sending the video to television 851
9 and the audio to stereo system 852, correct?

10 A. That seems to be the case.

11 Q. Going back to Figure 7.

12 A. Okay.

13 Q. Which of the radios listed in Figure 7
14 under the RF capability are capable of streaming
15 video?

16 A. I don't believe I've analyzed this in my
17 report, so I'm -- I don't think I could answer that
18 without, you know, looking into this a little bit
19 more to see exactly what's been described in Dua.

20 Q. Okay. Let's go to paragraph 63 in Dua.

21 A. Okay.

22 Q. And you see how it states The
23 transceiver 108 and antenna system 117 are
24 specifically designed to support the widest array of
25 communication protocols? You see that?

1 A. Yes.

2 Q. So does this teach a person of ordinary
3 skill in the art that bluetooth would implement
4 bluetooth 2.0 with EDR?

5 MR. SIDDIQUI: Objection, scope.

6 A. I don't know that it addresses that, and
7 I don't think I've expressed an opinion about that.

8 Q. Okay. Well, bluetooth 2.0 with EDR was
9 a known communication protocol in November 2007,
10 correct?

11 A. I believe that's the case, but -- let's
12 see. This was filed in May of 2005, so I don't know
13 that -- I don't remember what the specific timing
14 was, whether it's 2007 or 2005, what Dua is referring
15 to.

16 Q. Well, legally, what do you understand is
17 the relevant date for the purposes of determining
18 whether the claims -- the challenge claims are
19 obvious?

20 A. Well, it would be the priority date of
21 the '241, '590 patents --

22 Q. Okay. So --

23 A. -- which is 2007.

24 Q. Yeah. So as of November 2007, does this
25 statement in paragraph 63 of Dua, to support the

1 widest array of communication protocols, teach a
2 POSITA to use bluetooth with EDR?

3 MR. SIDDIQUI: Objection to form.

4 A. I don't believe I've expressed an
5 opinion on that.

6 Q. Okay.

7 THE WITNESS: By the way, I've run out
8 of water, so that's usually my key for --

9 MR. ERICKSON: We can go off the record.

10 [Discussion held off the record.]

11 [There was a recess taken.]

12 BY MR. ERICKSON:

13 Q. Mr. McNair, could you go to the folder
14 for the 907 proceeding and open Exhibit 1006, part 1.

15 A. Okay.

16 Q. And you should be able to type into the
17 box at the top 424, to skip right to page 424.

18 A. Okay.

19 Q. Do you see the Tee Patent Application
20 that ends in 758?

21 A. Yes.

22 Q. Okay. Have you -- you've analyzed Tee
23 before as part of the file history of the '590 and
24 '241 patents, correct?

25 A. I've looked it over.

1 Q. Okay. You see the non-provisional
2 application was filed September 27th, 2005? You see
3 that?

4 A. Yes.

5 Q. And Tee discloses a cell phone 110.
6 You see that on the cover?

7 A. I see that.

8 Q. And if you scroll to Figure 2, you see
9 it discloses a WAN transceiver 201, a WLAN
10 transceiver 0202, and a PAN transceiver 203?

11 You see that?

12 A. I see that.

13 Q. Okay. Now, if we scroll down to
14 paragraph 31 of Tee, which breaks across the page 430
15 to 431 of Exhibit 1006. Are you there?

16 A. Yes.

17 Q. Okay. At the end of that paragraph 31,
18 it states A high data rate bluetooth transceiver that
19 is capable of supporting the required video data
20 throughput.

21 You see that?

22 A. Yes.

23 Q. So Tee is disclosing that the bluetooth
24 transceiver can stream video, correct?

25 MR. SIDDIQUI: Objection, scope.

1 A. Well, what it says is it's referring to
2 a bluetooth transceiver capable of supporting the
3 required video data throughput. That's what it says.

4 I haven't analyzed this. As I said,
5 I've seen it. I've probably skimmed through it, but
6 I have not analyzed Tee.

7 Q. Okay. So the first sentence of
8 paragraph 31 refers to the mobile terminal 201 may
9 receive a video stream from a base station or access
10 point of a home or office WLAN via WLAN transceiver
11 202 and may relay the video stream over a short
12 distance to a remote display device via PAN
13 transceiver 203.

14 A. I see that.

15 Q. Okay. And then it states that the
16 bluetooth transceiver is capable of supporting the
17 required video data throughput.

18 So does Tee disclose that a bluetooth
19 transceiver is capable of streaming video?

20 MR. SIDDIQUI: Objection, scope.

21 A. I see what it says, but I have not
22 analyzed the conditions that this would pertain to or
23 whether it's relevant to the patent in question,
24 because I haven't looked at the enablement questions
25 of the patent.

1 Q. Okay. If you scroll up to paragraph 20
2 of Tee, which is on page 429 of Exhibit 1006.

3 A. I see that.

4 Q. Okay. In the -- about the middle of
5 paragraph 20, it states In other embodiments, base
6 station 120 may communicate according to such
7 wireless interface standards, or their evolutions, as
8 1 xEV-D0, 1 xEV-DV, GSM/GPRS/EDGE, 3GPP UTRAN,
9 HSDPA/HSUPA, 3GPP EUTRAN, and it continues with
10 others.

11 Do you see that?

12 A. I see that.

13 Q. Okay. What is 3GPP UTRAN?

14 A. Well, 3GPP is the standards group. I
15 don't remember what UTRAN stands for, but these are
16 various standards that have been discussed for data
17 transmission over wireless and various other cellular
18 type networks.

19 Q. And what is HSDPA/HSUPA?

20 A. HSDPA is high speed digital packet
21 access, I believe, if I remember correctly. Or is it
22 downstream? Yeah, I think HSDPA downstream and HSUPA
23 is upstream, if I remember correctly.

24 Q. Is that a 3GPP standard?

25 A. I think it's under the 3GPP umbrella, if

1 I remember correctly.

2 Q. Is it an addition to UMTS?

3 A. Is it an addition to UMTS?

4 Q. Yes. Is it an enhancement to UMTS?

5 A. It's been a while since I looked at it.

6 I don't remember exactly what the -- how they all fit
7 together with -- whether it's a parallel path or a
8 branch off of UMTS.

9 Q. Okay.

10 A. I haven't analyzed this.

11 Q. Okay.

12 A. I don't believe I've expressed any
13 opinion about it, either.

14 Q. Okay. And last one, what is 3GPP
15 EUTRAN?

16 A. I don't remember what that acronym
17 stands for, but it's, again, another -- another
18 alternative as a communication protocol under 3GPP.

19 Q. Turning back to Dua, which is
20 Exhibit 1008, and going to paragraph 69.

21 A. All right. 69.

22 Q. And Dua states that it will be fully
23 compliant with 3GPP standards, correct?

24 A. Yes.

25 Q. And so by November 2007, this teaching

1 in Dua to be fully compliant with 3GPP standards
2 would include 3GPP UTRAN, HSDPA, HSUPA, and 3GPP
3 EUTRAN, correct?

4 MR. SIDDIQUI: Objection, scope.

5 A. Again, I haven't expressed any opinion
6 about that, and the standards that are described in
7 Tee -- well, I guess Tee is prior art to the '590
8 patent. So I suspect if Tee is describing particular
9 standards and they would have been known to Tee as
10 prior art to the '590 patent, but I haven't
11 specifically analyzed those.

12 Q. Okay. So as we saw, Tee was filed in
13 September of 2005.

14 Okay. So do you have any reason --
15 well, is there any reason to believe that the 3GPP
16 standards limited in Tee would not be encompassed
17 within Dua's teaching in paragraph 69 to be fully
18 compliant with 3GPP standards?

19 MR. SIDDIQUI: Objection, scope.

20 A. I haven't analyzed that, so I don't
21 really have any opinion about what specific standards
22 would or would not have been applicable at that
23 specific point in time. I'd have to go back and look
24 at the particular chronology to be able to answer
25 that question.

1 Q. Okay. If we could go to -- if you would
2 navigate, please, to the directory again for
3 proceeding 907 and open Exhibit 1010, which is the
4 Nokia N93 User Guide.

5 A. Okay. I'm trying to get to the
6 directory here. There it is.

7 Okay. This is in 907?

8 Q. Yes.

9 A. And 1010?

10 Q. Yes.

11 A. Okay. Okay. Got that open.

12 Q. If you'll go to page 113 in
13 Exhibit 1010.

14 A. Okay.

15 Q. You see the network mode selection?

16 A. Yes.

17 Q. If a user selects dual mode, then the
18 device will choose between the GSM and UMTS radios,
19 correct?

20 A. It doesn't say radios. It says GSM or
21 UMTS network.

22 Q. Okay.

23 A. It doesn't give any details about what's
24 happening inside. It's just telling the user that in
25 dual mode, it can select between the networks.

1 Q. And if the user selects GSM, it will
2 connect to the GSM network, correct?

3 MR. SIDDIQUI: Objection, form.

4 A. Well, it doesn't really -- it doesn't
5 really say. It says dual mode. I don't see -- I see
6 here it says If you select dual mode, it selects GSM
7 or UMTS, but I don't see what the other options are
8 here.

9 Q. Okay. You see where it says select
10 which network to use?

11 A. Yes.

12 Q. And the two networks are GSM and UMTS,
13 correct?

14 A. Right. And as I look right here, I
15 don't see -- I'd have to see what the other options
16 are other than -- it says if you select dual mode, it
17 selects between the two automatically, but I'd have
18 to see where the other options are. What can a user
19 select if they do not select dual mode, I don't --
20 that's not revealed here.

21 Q. Okay.

22 A. Perhaps it's elsewhere.

23 Q. Okay. If you turn to page 115.

24 Are you on page 115?

25 A. I'm on 115, yes.

1 Q. Okay. In the upper left of page 115,
2 the user guide states that Files can be installed by
3 downloading them during browsing, correct?

4 MR. SIDDIQUI: Objection, form.

5 A. It says, as one of the options,
6 Installation files may be transferred to your device
7 from a compatible computer, downloaded during
8 browsing, or sent to you in a multimedia message or
9 as an e-mail attachment or using bluetooth
10 connectivity or infrared.

11 So I see that as one of the options.

12 Q. Okay. And on the right side of page
13 115, on the third bullet, you'll see it refers to --

14 A. Sorry.

15 [Discussion held off the record.]

16 Q. On -- let me just start fresh.

17 On page 115 of the N93 User Guide, in
18 the third bullet, it states that if file could
19 contain an update or repair to an existing
20 application.

21 Do you see that?

22 A. Yes. And I recognize that this is part
23 of, on page 114, the application manager, and it's
24 talking about install applications and software.

25 So yeah, I see it is giving the option

1 of updating or repairing an existing application.

2 That's correct.

3 Q. So the user guide discloses you can
4 receive a file for installation through any one of
5 those means, and that that file for installation
6 could be an update or repair to an existing
7 application, right?

8 MR. SIDDIQUI: Objection, form.

9 A. That's correct. An application could be
10 updated in that manner.

11 Q. Okay. All right. If you could go back
12 to the directory and find Exhibit 1014, please.

13 A. Okay.

14 Q. And if you will -- in the upper box if
15 you type in page 200, let me know when you're there.

16 A. Okay. Page 200.

17 Q. All right. In paragraph 3.2, or I guess
18 Section 3.2 on page 200 of Exhibit 1014, it discusses
19 the basic rate of 1 megabit per second GFSK
20 modulation scheme.

21 Do you see that?

22 A. Yes.

23 Q. That modulation scheme is in all
24 versions of bluetooth -- let me strike that.

25 Bluetooth 2.0 without EDR includes the

1 basic rate 1 megabit per second GFSK modulation
2 scheme, correct?

3 A. That's correct.

4 Q. Okay.

5 All right. Let me close that document,
6 and go back to the directory and find Exhibit 1011,
7 please.

8 A. Okay.

9 Q. Exhibit 1011 is the van Rooyen patent
10 publication -- patent application publication, right?

11 A. That's correct.

12 Q. Okay. In Figure 4-A of van Rooyen, it
13 discloses a radio front-end system with a 2G and 3G
14 radios implemented in different radio circuits,
15 correct?

16 A. Which figure?

17 Q. Yeah. Turn to Figure 4-A, please, and
18 I'll re-ask the question.

19 A. Figure 4-A, right.

20 In Figure 4-A. Okay.

21 Q. In Figure 4-A, van Rooyen discloses
22 separate 3G and 2G radio frequency integrated
23 circuits, correct?

24 MR. SIDDIQUI: Objection, form.

25 A. That's correct.

1 Q. And those radio communication circuits
2 both transmit and receive, correct?

3 MR. SIDDIQUI: Objection to form.

4 A. Yes.

5 Q. And the 3G circuit supports HSDPA,
6 correct?

7 A. That's what it's labeled as, correct.

8 Q. And in paragraph 10, van Rooyen
9 discloses that HSDPA supports QAM modulation,
10 correct?

11 A. That's what it says.

12 Q. Okay. Well, van Rooyen was filed in
13 December 2004 and published in June 2006, correct?

14 A. Correct.

15 Q. HSDPA is one of the 3GPP standards,
16 correct?

17 A. Correct.

18 Q. When Dua teaches to be fully compliant
19 with the 3GPP standards, is there any reason that
20 that would not include HSDPA with QAM modulation as
21 taught by van Rooyen?

22 MR. SIDDIQUI: Objection, scope.

23 A. I don't believe I've expressed an
24 opinion about that in my expert report.

25 Q. Okay. We can close Exhibit 1011.

1 If you will open Exhibit 1012, please.

2 A. Okay.

3 Q. Going to -- well, Exhibit 1012 is the
4 Desai reference, correct?

5 A. Correct.

6 Q. If you turn to Figure 7, Desai discloses
7 that the WLAN radio and bluetooth radio can be
8 implemented in separate radio communication circuits,
9 correct?

10 MR. SIDDIQUI: Objection to form.

11 A. Well, they're both on a single chip,
12 WLAN/BT radio, according to the figure. So I haven't
13 analyzed whether that would be considered to be
14 separate radio communication circuits for the purpose
15 of this analysis. The fact that they are on a single
16 chip suggests that it is a single circuit.

17 Q. If you'll go back to the '241 patent,
18 Exhibit 1001, and turn to claim 16, please.

19 A. I'm in -- what directory are we in?

20 Q. Oh, I'm sorry. This would be -- I
21 thought you might still have it open. Yeah, you have
22 to go to the 906 directory and open Exhibit 1001.

23 A. Right. 1001. I might have it open, but
24 I've got too many tabs.

25 Q. Yeah.

1 A. Okay. And where are we in this?

2 Q. Claim 16. You see claim 16 states, in
3 part, The first radio communication circuit and the
4 third radio communication circuit are implemented as
5 a combined circuit.

6 Do you see that?

7 A. I see that.

8 Q. Okay. Turning back to Desai, in Figure
9 7, are the WLAN radio and bluetooth radio -- let me
10 start over.

11 In Desai, in Figure 7, is the WLAN radio
12 a radio communication circuit and the bluetooth radio
13 a radio communication circuit implemented as a
14 combined radio circuit?

15 MR. SIDDIQUI: Objection to form.

16 A. I don't believe I've offered an opinion
17 and analysis of that.

18 Q. All right. Desai schedules bluetooth
19 and WLAN transmissions with, for example, the packet
20 traffic scheduler shown in Figure 3, correct?

21 A. That's my understanding.

22 Q. And if you turn to paragraph 51 -- well,
23 through that scheduling, it avoids the packets
24 colliding with each other; is that fair?

25 MR. SIDDIQUI: Objection to form.

1 A. That would be one reasonable reason to
2 have packet scheduling, because they're both
3 operating in the -- a 2.4 gigahertz.

4 Q. Paragraph 51, the last sentence, you'll
5 notice Desai states This usage model may be
6 implemented when, for example, a bluetooth-enabled
7 headset communicates with the mobile device via the
8 bluetooth protocol, and the mobile device
9 simultaneously communicates with an access point via
10 the WLAN protocol.

11 Do you see that?

12 A. I see that.

13 Q. Do you agree that interleaving packets,
14 as described in Desai, would constitute
15 simultaneously communicating over the two protocols?

16 MR. SIDDIQUI: Objection, scope.

17 A. Well, the important thing, as Desai is
18 describing here, a bluetooth headset is conveying
19 audio rate information, which may be several dozen
20 kilobits per second. The occupancy rate of the
21 channel would be relatively low. So I can well
22 imagine that you could hold off a transmission over
23 the wireless LAN network momentarily while you get
24 some speech traffic over the bluetooth. So I would
25 think of it more as a -- alternating between the two,

1 because if they were simultaneously -- if they were
2 both transmitted in the same time interval, then they
3 would collide with each other.

4 Q. So by quickly alternating between the
5 two, the device can simultaneously communicate audio
6 information over both the WLAN and bluetooth
7 connections, correct?

8 MR. SIDDIQUI: Objection, scope.

9 A. The user might have the perception that
10 the communication is simultaneous because they don't
11 notice any buffering of any of the information. They
12 don't notice any jitter in the -- for instance, if
13 I'm surfing a website or streaming video over
14 wireless LAN, I don't see the impact of the fact that
15 audio is being transmitted at the same time on a
16 broad scale, but if you're talking about
17 simultaneous, when I look at the individual
18 transmissions, I can see that there is a certain time
19 interval with Desai, when the packet is scheduled to
20 be transmitting an audio packet in bluetooth, and
21 there's a different interval of time when a WLAN is
22 given access and able to transmit whatever
23 information it is being used to transmit.

24 So the user may perceive them as being
25 simultaneous, but in fact, they are, just as time

1 division multiple access always transmits information
2 in a Round Robin or alternating scheme, they are not,
3 in fact, simultaneous with each other.

4 Q. While the bluetooth radio is
5 transmitting a packet, the devices are still
6 connected over the WLAN radio, correct?

7 A. They are connected at a higher level of
8 the protocol at the network or the end-to-end layer,
9 but at the physical layer, at the radio physical
10 layer, they are not connected, because the -- there
11 is no transmission occurring while the bluetooth is
12 in the process of transmitting, because if there
13 were, then the transmitter of the wireless LAN would
14 basically blank the transmission of the bluetooth
15 packet.

16 So you have to consider at what layer --
17 when you talk about connection, at what layer of the
18 protocol. Level 1, the physical layer? No, no
19 connection. Level 3, network layer? Yes.
20 Connection is maintained in the broad sense.

21 Q. So do you agree or disagree with Desai's
22 characterization of this protocol as supporting
23 simultaneous communication?

24 A. From the user's perspective, there are
25 simultaneous communication paths, but at the physical

1 level, because there is packet scheduling, it is not.

2 So I interpret what he's saying to be
3 that there is a session that is simultaneously
4 established at the network layer or above, but I do
5 not see that he's saying that there is a physical
6 level connection maintained simultaneously, because
7 the two radios have the potential for clobbering each
8 other. The bluetooth radio is hopping over the entire
9 2.4 gigahertz band, and the WLAN -- the Wi-Fi radio
10 is operating over a segment of the 2.4 gigahertz
11 band.

12 Q. Okay. Close that exhibit, and if you
13 would please find Exhibit 2026.

14 A. Okay.

15 Q. You'll have to give me a moment. My
16 computer is not responding.

17 MR. ERICKSON: Let's go off the record.

18 [Discussion held off the record.]

19 BY MR. ERICKSON:

20 Q. Mr. McNair, have you -- do you have
21 Exhibit 2026 open?

22 A. Yes.

23 Q. This is the book Essentials of Mobile
24 Handset Design that you discuss in your declaration,
25 correct?

1 A. Correct.

2 Q. Was this book provided to you by counsel
3 or did you find this book?

4 A. I don't remember. I know I've got a
5 copy of this in my library at home, so I don't
6 remember who found it first.

7 Q. On page 8, it indicates this book was
8 published in 2012.

9 Do you see that?

10 A. Yes.

11 Q. And that was its first publication?

12 A. Yes.

13 Q. Jump to page 99, please.

14 A. Okay.

15 Q. You see in the second sentence of the
16 first full paragraph, it states Early 3G handsets
17 contained two discrete radio chip sets, one for 2G
18 and another for 3G, which was one factor in the high
19 cost of early 3G handsets.

20 Do you see that?

21 A. Yes.

22 Q. Okay. Is it true that initially in the
23 early -- that early 3G handsets, some contained two
24 discrete radio chip sets, one for 2G and one for 3G?

25 MR. SIDDIQUI: Objection.

1 A. Are you asking me if it's true?

2 Q. Do you believe that that statement we
3 read out of the book is true?

4 A. For early 3G handsets, yes.

5 Q. Close that document, and if we could
6 pull up Exhibit 1015. We can stay in the 907
7 directory. Exhibit 1015.

8 A. Oh, we're in 906. 907. 1015?

9 Q. Yeah, please.

10 A. Okay.

11 Q. This is the document that is referred to
12 in the petition as 3GPP Spec, right?

13 A. Yes.

14 Q. And if you could also pull up
15 Exhibit 2036.

16 A. Okay.

17 Q. You discuss Exhibit 2036 in your
18 declaration, correct?

19 A. Yes.

20 Q. And what is Exhibit 2036?

21 A. So this is a message exchange with this
22 fellow at archive.org.

23 Q. Okay. Let's -- hold on for a second.
24 I'm sorry. Let me stop you.

25 Can you confirm which exhibit you're

1 looking at there, because I think --

2 A. 1036.

3 Q. Okay. Yeah, please close that. It's
4 2 -- please open 2036.

5 A. 2036. Sorry. Okay.

6 Q. All right. So you discuss Exhibit 2036
7 in your declaration, correct?

8 A. My memory escapes me.

9 Q. Okay.

10 A. I don't remember if I specifically
11 discussed this document. I'd have to refer to my
12 declaration.

13 Q. That's fine. Yeah, if you want to pull
14 up your declaration, 2017, and scroll down to page --
15 well, let's see -- 161, it looks like.

16 A. Okay. Page 161.

17 Q. In this section of your declaration,
18 generally, I believe what you're doing is you're
19 comparing and contrasting 2036 with 1015, but if you
20 want to kind of skim a couple of pages there just to
21 confirm that. If that refreshed your recollection,
22 that would be helpful.

23 A. We must be in different documents,
24 because I don't see reference to 20 -- what is the
25 document, 2036?

1 Q. 36, yeah. All right.

2 A. This is the -- this is the '590
3 declaration we're on?

4 Q. Yes. It should be page 161. It's also
5 searchable, if you just want to search for 2036, and
6 let me know what first instance you find, and we can
7 resolve this.

8 A. Okay. I see it's in the Table of
9 Content, the declaration considered.

10 Okay. So there's the frame structure on
11 page 167. Okay. Right.

12 Okay. So yes, I see that I have -- I
13 did reference this document.

14 Q. Okay. And are you sure you're in your
15 declaration for the '590 patent or are you in your
16 declaration for the '241 patent? Either way, I'm
17 okay with either one. I just want to make sure we're
18 on the same exhibit.

19 A. This is the '590. 167. Yeah. Okay.
20 Page 167.

21 Q. All right.

22 MR. ERICKSON: Can we go off the record
23 for a second.

24 [Discussion held off the record.]

25 BY MR. ERICKSON:

1 Q. So Mr. McNair, we were referencing your
2 declaration to refresh your recollection about what
3 Exhibit 2036 is.

4 So having looked at that, what is
5 Exhibit 2036?

6 A. So this is the 3GPP UMTS physical map --
7 physical channels and mapping of transport channels
8 onto physical channels. That's the document that
9 describes the UMTS protocol, the physical layer.

10 Q. Well, what modulation schemes are
11 supported by UMTS as shown in Exhibit 2036?

12 Well, let me -- can you search for QPSK
13 and tell me whether QPSK modulation is supported by
14 UMTS as shown in Exhibit 2036.

15 A. Yes. It describes the encoder for QPSK.

16 Q. Okay. Does it describe an encoder for
17 QAM modulation?

18 A. Yes.

19 Q. Okay. So UMTS as shown in Exhibit 2036
20 includes both QPSK and QAM modulation, correct?

21 A. Correct.

22 Q. All right. If you turn to page 9,
23 you'll see there's a definition for UTRAN. You
24 recall we were discussing UTRAN in Tee, the Tee
25 reference?

1 A. Yes.

2 Q. What is the definition of UTRAN in
3 Exhibit 2036?

4 A. As defined on page 8 -- or document page
5 8, PDF page 9, UTRAN stands for UMTS terrestrial
6 radio access network.

7 Q. All right. So now let's look at
8 Exhibit 1015, which you already have open. If you'll
9 turn to page 5, under the heading Scope, and I think
10 this time it's actually -- what is -- what does
11 Exhibit 1015 state as its scope on page 5?

12 A. It says The present document describes
13 its physical channels for evolved UTRA.

14 Q. Okay.

15 MR. ERICKSON: All right. Let's go off
16 the record.

17 [Discussion held off the record.]

18 BY MR. ERICKSON:

19 Q. Okay. Mr. McNair, could you navigate to
20 the 907 directory again and open Exhibit 1033.

21 A. Okay.

22 Q. All right. And I will refer to this as
23 the Zeif, Z-E-I-F, the Zeif declaration. Okay?

24 A. Directory 907?

25 Q. Yes. Exhibit 1033.

1 A. Okay. I've got the -- okay. Yeah, it
2 opened further down and I saw it was a Wikipedia
3 page, but yes, Zeif is the --

4 Q. Yes.

5 A. -- is the author.

6 Q. Affidavit of Tanya Zeif?

7 A. Yes.

8 Q. Okay. All right. So scrolling down to
9 probably where you were at page 4 of the Zeif
10 declaration, you can see a link to the Wikipedia
11 page -- or a Wikipedia page for the N93.

12 Do you see that?

13 A. Yes.

14 Q. And then the page itself is reproduced
15 on pages 5 and 6 of the Zeif declaration, correct?

16 A. Correct.

17 Q. The Wikipedia page includes, at the
18 bottom, under the External Links heading, a link to
19 an online copy of the N93 Manual PDF.

20 Do you see that?

21 A. I see that.

22 Q. Can you also open Exhibit 1034.

23 A. Okay.

24 Q. And that's the Bhattarai declaration,
25 correct?

1 A. Correct.

2 Q. In paragraph 2, Mr. Bhattarai states
3 that the link in the Wikipedia page is to a URL that
4 begins NDS1.Nokia.com.

5 Do you see that?

6 A. Yes.

7 Q. Did you confirm whether that is true or
8 not?

9 A. I have followed that link, but the
10 difficulty that I've seen is that it's difficult to
11 correlate specific archive pages, Wikipedia pages,
12 and actual documents with each other. So that is a
13 link to a page, and I have followed links to various
14 pages, but I have no way of being sure -- oops, it's
15 trying to open that. I don't want to open that. I
16 accidentally clicked on that.

17 I have no way to verify that what
18 version of what document existed where and when,
19 particularly since Wikipedia is constantly subject to
20 change.

21 Q. Okay. Well, let's go ahead, do that
22 now. If you open up the browser, there should be a
23 bookmark already to the Wikipedia page. So if you'll
24 open up a new page in your Edge browser and go to
25 Favorites. Let me know if you can find the Wikipedia

1 page link.

2 A. I don't know where Favorites is because
3 I don't use Windows.

4 Q. Okay. There's a little star -- in the
5 upper right, you can see kind of half a star with
6 three horizontal lines on the right side of the star,
7 up in the upper right corner.

8 A. I don't have anything in the upper right
9 corner.

10 Q. Okay.

11 A. Of the desktop?

12 Q. Of the -- do you have the browser open?

13 A. Oh. Okay. Got you. That -- no, that's
14 minimized.

15 Q. Just to the right of the Search bar,
16 there should be a little puzzle piece that's called
17 Extensions, and then a little star with three --

18 A. Okay.

19 Q. Yeah.

20 MR. SIDDIQUI: It's this star.

21 THE WITNESS: That one?

22 MR. SIDDIQUI: No.

23 THE WITNESS: Extensions?

24 MR. SIDDIQUI: It's this star.

25 THE WITNESS: That star. Favorites.

1 Got you. Okay. Favorites.

2 A. Okay. I see Wikipedia N93.

3 Q. All right. Click on that, please.

4 A. Okay. I see the current.

5 Q. All right. Can you --

6 A. Oh, that's web archive.

7 Q. Correct, correct.

8 All right. Can you verify that the full
9 URL for the web archive is the URL that we looked at
10 in the Zeif declaration at page 4 so we know we're
11 looking at the same page.

12 A. Okay. Zeif declaration, page 4.

13 MR. SIDDIQUI: It's Exhibit 1034.

14 Q. In the 907 file, it's Exhibit 1033 --

15 A. Oh.

16 Q. -- and it's page 4. That's the Zeif
17 declaration. It's also in the other one. No, I see
18 what you're saying. Yeah.

19 A. Yes.

20 Q. Okay. So you're looking at the
21 October 15th, 2007 web archive capture of the N93
22 Wikipedia page, right?

23 A. That's correct.

24 Q. Okay. And if you roll your cursor over
25 the link to the N93 manual, can you very slowly read

1 out the URL for that link.

2 The URL should pop up if you put your
3 cursor on top of it.

4 A. Right.

5 Q. Okay.

6 A. So it's the external link to the online
7 copy of the N93 Manual PDF, and the web link is
8 HTTP://NDS1.nokia.com/phones/files/guides/Nokia_N93-1
9 _UG_EN PDF.

10 Q. Okay. Now, if we go back to
11 Mr. Bhattarai's declaration, which is Exhibit 1034 at
12 page 2, that's the URL he includes in paragraph 2 of
13 his declaration, correct?

14 A. Correct.

15 Q. Okay. If you could click on that link
16 now.

17 A. In his declaration?

18 Q. No. I'm sorry.

19 A. Oh.

20 Q. Very good. If you could go back to
21 the -- way back -- go back to the browser --

22 A. Yes.

23 Q. -- where you're looking at the -- and
24 click on the actual link to the N93 manual.

25 A. Right.

1 Q. Okay.

2 A. So what I notice is an immediate
3 problem.

4 Q. Yeah. Let me -- let me ask a question,
5 and then you can elaborate.

6 Now that you've clicked on that link,
7 you're looking at the copy of Nokia N93 User Guide,
8 correct?

9 A. Correct.

10 Q. And this is the version of the user
11 guide as archived on April 23rd, 2007, correct?

12 A. I don't know.

13 Q. Well, how do you not know that?

14 A. Well, I don't know that what was
15 archived on Wikipedia is the same thing that exists
16 on the Nokia website, because immediately, I see a
17 problem. The title -- the web link ends in
18 N93-1_UG_EN, suggesting that it's a version 1, and
19 what I see on the page that opens says issue 2-EN.

20 So that suggests to me that it's
21 probably the English language version of it, but I
22 don't know what version 1 and version 2 are. And
23 this is a common problem that I've seen with
24 archiving and with Wikipedia, that you don't know
25 specifically that you're pointing to what you think

1 you're pointing to all the time, because everything
2 changes on the web, and you get a snapshot at one
3 point in time of what Wikipedia looked like and you
4 may get a snapshot at one point in time of what the
5 web link was, and it may point somewhere else.

6 Q. Okay.

7 A. These things are all dynamic.

8 Q. Okay. So N93 -- you're -- N93-1 is a
9 model number of the N93, correct?

10 A. I don't see reference to the model
11 number in the user guide at this point.

12 Q. Okay.

13 A. I see...

14 Q. So in the URL, you're theorizing that
15 that N93-1 means version 1; is that correct?

16 A. I don't know.

17 Q. Okay.

18 A. I have no basis to make any
19 determination. I'd have to -- I'd have to research
20 this further to be sure exactly what it is that I'm
21 looking at.

22 Q. Okay. So the version of the Nokia User
23 Guide -- well, let me ask it this way; what you're
24 looking at now is what was archived by the internet
25 archive on April 23rd, 2007, correct?

1 A. That's the Wikipedia page that was
2 archived at that time, yes.

3 Q. Okay. But right now, we're looking at
4 the archive.org website as it captured in April -- on
5 April 23rd, 2007, correct?

6 A. That's the -- that's what the archive
7 tells me that the date is. Let me just -- let me
8 open this up so I can see more of this.

9 So the archive is telling me that this
10 is what captured in April 23rd of 2007 at the Nokia
11 website.

12 Q. Okay. At that NDS-1 URL?

13 A. Yes.

14 Q. Okay. All right. Do you see the
15 Navigation button in the upper right-hand corner with
16 the blue arrows left and right?

17 A. Yes.

18 Q. Okay. And you see the one on the right
19 says July 2011?

20 Do you see that?

21 A. I do.

22 Q. Okay. So right now, we're on
23 April 23rd, 2007, and this is the Nokia User Guide
24 that's labeled 9245183, Issue 2EN, correct?

25 A. Correct.

1 Q. And this is the version that's been
2 marked in these proceedings as Exhibit 1010, correct?

3 A. Correct.

4 Q. All right. Now, if you click on the
5 blue arrow to the right for July 2011. Let me know
6 when it's moved to that date.

7 A. Okay.

8 Q. Okay. Can you describe what you're
9 looking at now.

10 A. It appears to be the same, if I remember
11 the number correctly, 9245183, Issue 2EN. It appears
12 to be the same document. I haven't compared line by
13 line, but at least the first page is the same.

14 Q. This is the version that was captured by
15 the archive on July 14th, 2011 at the same NDS-1 URL,
16 correct?

17 A. That's correct.

18 Q. Okay. All right. You can close that.
19 And if we go back to the Zeif
20 declaration, and go to page 7, you'll see a URL for
21 the 3GPP.org.

22 Do you see that URL?

23 A. Yes.

24 Q. Okay. You should also have -- you
25 should have a bookmark for that as well. If you

1 could look at your Favorites and find that bookmark,
2 please.

3 A. Okay.

4 Q. Have you been to this web page before?

5 A. I've -- I've been to 3GPP quite a bit.

6 I don't remember specifically -- yeah. Okay. I
7 think I've navigated to this page from this capture.

8 Q. Okay. Can you confirm that what you're
9 looking at now has the same URL as what's on page 7
10 of the Zeif declaration.

11 A. Yeah. I confirmed that when I opened
12 it. It's the same.

13 Q. Okay. Great.

14 Well, can you click on -- see up at the
15 top it says Specifications?

16 A. Yes.

17 Q. Can you click on that, please.

18 A. Okay.

19 Q. Now, can you compare the URL you're
20 looking at there to the URL on page 9 of the Zeif
21 declaration.

22 A. It appears to be the same.

23 Q. And can you just compare the actual web
24 page itself to the web page that follows it in the
25 Zeif declaration at pages -- the next couple of pages

1 after that link, just to see if they appear to be the
2 same.

3 A. Well, a cursory glance, they look like
4 they're probably the same.

5 Q. Now, you see in the text, there's a
6 statement There's a quick link to the specifications
7 file server area, HTTP, for those who know where they
8 are going!

9 Do You see that?

10 A. Yes.

11 Q. Okay. If you click on the highlighted
12 text Specifications File Server Area, and let me know
13 when the page is loaded.

14 A. Specifications File Server Area --

15 Q. Yeah.

16 A. -- for those who know where they're
17 going!

18 So click on that link. Okay.

19 Q. Please.

20 A. Okay.

21 Q. All right. Now, can you compare the
22 URL -- I'm sorry. Do you see something that says
23 www.3GPP.org-/FTP/specs?

24 A. Yes.

25 Q. Okay. Can you compare the URL to the

1 URL that's on page 14 of the Zeif declaration,
2 Exhibit 1033.

3 A. It appears to be the same.

4 Q. Okay. And can you look at the content
5 of the page, and compare it to the content of the
6 page that's on page 15 of the Zeif declaration, and
7 confirm they're the same.

8 A. Again, with a cursory comparison, it
9 looks like they're the same.

10 Q. If you scroll down to the last entry in
11 the list that's labeled Latest Drafts, and click on
12 that, please.

13 A. Okay.

14 Q. Can you compare the URL of the screen
15 you're looking at now with the URL that's on page 16
16 of the Zeif declaration.

17 A. It seems to be the same.

18 Q. Okay. And again, if you could look at
19 the content of the page with what's on page 17 and 18
20 of the Zeif declaration to confirm those are the
21 same.

22 A. Again, a cursory comparison, they seem
23 to be the same.

24 Q. And then if you could click on the link
25 36211-021. That download a ZIP file?

1 A. Yes.

2 Q. Can you click Open File, please.

3 And do you see two Word documents?

4 A. Yes.

5 Q. And is the first one

6 36.211V0.2.1clean.doc?

7 A. Oh, that's the second there. The first
8 is just the name without clean.

9 Q. If you open the one that's marked clean,
10 please.

11 A. Table in this document has become
12 corrupted.

13 Q. Yeah.

14 A. There's not enough memory or disk space
15 to complete the operation.

16 Q. I think that is a law firm computer
17 problem.

18 A. And I'd have to sign in to DLA Piper to
19 do anything.

20 Q. Okay. All right. Let's come back to
21 that in a minute.

22 If you go back to the browser and
23 navigate back up to the web page that ends in
24 specs.HTM.

25 A. Okay. I'm there.

1 Q. Okay. This is the one where we clicked
2 on the hyperlink Specifications File Server Area for
3 those who know where they are going!

4 You recall that?

5 A. Yes. Correct.

6 Q. Okay. Underneath that, there's a line
7 that says To find a particular spec quickly, go here
8 and click on the links in the spec series in the
9 table or use the links in the further information
10 section.

11 Do you see that sentence?

12 A. Yes.

13 Q. Can you click on the Go Here highlighted
14 words, please.

15 A. Yes. Got it.

16 Q. All right. Now, can you hit Control P.
17 Does that give you a print preview?

18 A. Yes.

19 Q. And do you have the option to save as
20 PDF in Portrait value?

21 A. Yes.

22 Q. Okay. Can you please save to the
23 Desktop and mark it EX 1052.

24 A. 3052?

25 Q. 1052.

1 A. Okay. EX 1052.

2 Q. Okay. All right. And you see under the
3 subject of Specific Series heading in the table,
4 there's an Evolved UTRA Aspects.

5 Do you see that row down at the very
6 bottom?

7 A. Yes.

8 Q. And if you follow it to the right under
9 the second column, there's a link that says 36
10 Series.

11 Do you see that?

12 A. Yes.

13 Q. Okay. Can you click on that link,
14 please.

15 A. Okay.

16 Q. All right. Now, can you do another
17 Control P, and can you save that page as
18 Exhibit 1053, please.

19 A. Okay.

20 Q. All right. Do you see the second row
21 that states in the first column of the table,
22 TS36.211?

23 A. Yes.

24 Q. Okay. Can you click on that link,
25 please.

1 A. Okay.

2 Q. All right. And now, can you, once
3 again, do Control P and save this as a PDF as Exhibit
4 EX 1054, please.

5 A. Okay.

6 Q. All right. Now, in this table, do you
7 see the last row of the -- in the table is Post
8 R1-47, and Version 0.2.1?

9 Do you see that?

10 A. Yes.

11 Q. Can you click on that 0.1.2, please.

12 A. And it's downloading a ZIP file.

13 Q. Yeah.

14 A. All right.

15 Q. Is the ZIP file 3621-0.2.1?

16 A. Yes.

17 Q. Okay. And does that have two Word
18 documents in it again?

19 MR. SIDDIQUI: Maybe it went to the
20 downloads.

21 A. Okay. I have two files. Let's see.
22 Are these --

23 MR. SIDDIQUI: I think it's the old one.

24 A. I'm looking at the time. I want to see
25 if that's --

1 Q. I have 11:37 on my -- of course, I'm a
2 Central computer, so that should be 12:37, probably.

3 A. Date modified, 12 -- I don't know what
4 file I've got, because I don't have a modification
5 date.

6 Q. Okay. That's okay. I tell you what;
7 why don't we delete both of the ZIP files that are
8 named 36211 so that there are none on the computer.

9 A. I'll have to find where those ZIP files
10 are first.

11 Q. Okay. You have -- you open the File
12 Explorer and click on Downloads, they should be
13 there.

14 A. 31, 38. Okay. I've got the one that I
15 just downloaded because it's created at 9:38 and it's
16 now 12:39. So that's the one that I just created.

17 Q. Okay.

18 A. It's --

19 Q. Okay. Great.

20 A. -- Version 1. Okay.

21 Q. Can you rename that to the next exhibit
22 which, would be EX -- just the ZIP folder, you can
23 just rename it to EX -- I believe it's 1055. Let me
24 double-check. Yeah, 1055.

25 A. Okay.

1 Q. Okay.

2 Okay. Is it your opinion -- well, do
3 you have an opinion as to whether one of ordinary
4 skill in the art in November 2007 could have
5 performed the navigations you just performed to find
6 these documents?

7 A. Well, with 2020 hindsight, if they know
8 where they were looking, I'm sure they could perform
9 the navigation. If they did not know where to look
10 for it, they would have had to explore quite a bit to
11 find their way through the path that we just traced
12 through.

13 Q. If the person of ordinary skill in the
14 art were looking for the most recent 3GPP EUTRA
15 specs, wouldn't they have been led to this point?

16 MR. SIDDIQUI: Objection.

17 A. Well, I've seen this document, and if we
18 can open a copy of the document that's already in the
19 files, rather than trying to get this new version of
20 it, what I would note is the document, specifically,
21 is a version 0 document, and if you look at -- I
22 think it's page 4 or 5 of the document, it describes
23 what the version number means, and they don't even
24 have a version 0. It starts with version 1.

25 So version 0 would be a version that has

1 not been distributed to the standards committee for
2 review. It certainly has not been approved, and it
3 is noted in several places that one should not rely
4 on that document for any implementation because
5 it's -- it's preliminary. It's subject to change.

6 Q. Okay. So let's go back to, again, the
7 point where we chose the Go Here link for -- to
8 quickly find the spec as opposed to picking this
9 Specifications File Server Area link. And you could
10 just hit Back until you find that.

11 A. Okay.

12 Q. Now, keep -- assuming a person of
13 ordinary skill in the art is looking for the latest
14 version of EUTRA and they click Go Here, what would
15 they do next?

16 MR. SIDDIQUI: Objection, speculation.

17 A. Yeah, I can't -- I can't put myself in
18 that position, because I know what the answers are
19 based on having worked with a lot of these
20 specifications.

21 Q. Okay. So --

22 A. I don't know what they would do.

23 Q. So if they're looking at a table and the
24 last row on the table is Evolved UTRA Aspects,
25 wouldn't they click on Evolved URTA Aspects -- I'm

1 sorry, UTRA Aspects?

2 A. If they were looking specifically for
3 evolved UTRA aspects and found their way to this
4 point in the table, then...

5 Q. Okay. Then they would click on 36
6 series, right?

7 A. If they were familiar with this, they
8 might, but it's -- it's not obvious. It's not
9 obvious what they would do or what they would
10 understand at this point, particularly going through,
11 you know, the arcane series of incantations that
12 they've got to get to to find this in the first
13 place. And when they found it, the first thing that
14 they would do is they would look at the scope and
15 they would look at the status, and they would see
16 it's telling me don't use this.

17 Q. Okay. If you could open up both
18 Exhibit 1015, which may already be open, and Exhibit
19 1007.

20 A. And we're in the 907 directory?

21 Q. Yes.

22 A. All right. So 1007, the Declaration of
23 Nathaniel Frank White.

24 Q. Yep.

25 A. Okay.

1 Q. And in 1007, if you want to type in the
2 PDF page No. 141.

3 A. Okay.

4 Q. So staying in Exhibit 1007, beginning at
5 page 141 and extending through 164, this is the clean
6 version of the document that we've referred to as the
7 3GPP spec that has been excerpted as Exhibit 1015,
8 correct?

9 A. That's correct.

10 Q. Okay.

11 A. And I note that on page 145 of
12 Exhibit 1007, that's page 5 of this 3GPP TS36.211,
13 Version 0.2.1, and I notice in the Forward, it says
14 You can identify what the version means, version
15 X.Y.Z, where X is the first digit. 1 means presented
16 to the TSG for information. 2, 3 are various stages.
17 There is no version 0.

18 And again, as I noted elsewhere,
19 elsewhere in this document, it says that this version
20 is not for -- not for implementation, that it is a
21 preliminary document.

22 Q. Okay. If you could go to -- okay. All
23 right. One last thing for the bluetooth
24 specification.

25 If we go back to Exhibit 1033, if that's

1 still open in your computer, that's the Zeif
2 declaration. And go to page 19, and let me know when
3 you're there.

4 A. Okay.

5 Q. All right. You should have -- if you
6 could also open up the browser again.

7 A. Okay.

8 Q. And you should have one last Favorite
9 for bluetooth.

10 A. Okay.

11 Q. Okay. If you could open that Favorite
12 and compare it to the URL that's on page 19 of the
13 Zeif declaration, please.

14 A. Well, the website appears to be the
15 same, but the web link is spinning. It's -- oh,
16 there it is. Okay. All right. This is opened.

17 Q. So you --

18 A. It is open, that page.

19 Q. Okay. You confirm the URL is the same,
20 and then if you compare the content of what you're
21 looking at to the content that's on page 20 of the
22 Zeif declaration to make sure that's the same.

23 A. It appears to be the same.

24 Q. Over on the left, do you see the first
25 item in the list is labeled Learn?

1 A. Yes.

2 Q. Can you click on that, please.

3 A. Okay.

4 Q. Okay. Can you compare what you're
5 looking at now to the Zeif declaration at the URL on
6 page 21 and the content on page 22 to see if it's the
7 same.

8 A. The page is the same. The content is
9 different. The Zeif declaration doesn't have -- at
10 least the image that's on the web archive page.

11 Q. Yeah. If you'd go ahead and Control P
12 that and save that as Exhibit 1056, please.

13 A. Okay.

14 Q. Okay. Now, if you click on the link
15 Bluetooth Technology on the left.

16 A. Okay.

17 Q. All right. And can you compare the URL
18 and the content of that page to what's in the Zeif
19 declaration at page 23 and 24.

20 A. The URL is the same. The content
21 appears to be the same.

22 Q. If you click on the left there at the
23 link Specification Documents, please.

24 A. Okay.

25 Q. All right. And can you compare what

1 you're looking at now to the URL and content on page
2 25 and 26 of the Zeif declaration.

3 A. The URL is the same, and the contents
4 appear to be the same.

5 Q. Okay. All right. Now, if you could
6 open up or go back to Exhibit 1007, that's the other
7 declaration from Mr. Frank White, and go to page 2.
8 All right?

9 A. Okay.

10 Q. And this could be a bit of a -- if you
11 could -- let me see. One second.

12 Okay. If you could compare the URL
13 that's in row 3, and that's folder 003, compare that
14 URL to the link that's displayed, if you roll your
15 cursor over the Core Specification V2.0 plus EDR
16 link, and take your time.

17 A. I won't read the entire URL into the
18 record, but they do appear to be the same.

19 Q. All right. And if you could click on
20 that link, and it will download a ZIP file, and open
21 the document, please.

22 A. Okay.

23 Q. All right. Do you have the document
24 open?

25 A. I have the document open.

1 Q. Is that the same document that we've
2 marked as Exhibit 1014 in these proceedings?

3 A. It appears to be.

4 Q. All right.

5 MR. ERICKSON: Okay. So I could -- I'll
6 pass the witness.

7 MR. SIDDIQUI: Thank you.

8 EXAMINATION BY MR. SIDDIQUI:

9 Q. Bruce, do you recall counsel asking you
10 questions about Exhibit 1008? It's Dua, so I
11 would --

12 A. Yes.

13 Q. And it's in the folder 907.

14 A. Yes.

15 Q. Can you please turn to Figure 11.

16 A. Okay. I have Figure 11.

17 Q. Do you recall counsel asking you a
18 question that the Media Player 100B is receiving
19 audio and video over cellular radio and
20 simultaneously sending the video to television 851
21 and the audio to stereo system 852?

22 A. I believe so.

23 Q. Is there anything in Figure 11 that
24 mentions the word simultaneous?

25 A. No.

1 Q. Is there anything in Figure 11 that
2 shows that the arrowed communication is occurring
3 simultaneously?

4 A. No.

5 Q. If you can please -- in fact, is there
6 any -- sorry. Let me restart.

7 In fact, is there anywhere in Dua that
8 it mentions that bluetooth can be used to transmit
9 video?

10 A. I don't remember any reference to
11 bluetooth sending video in Dua.

12 Q. In fact, if you could please turn to
13 paragraph 138 of Dua.

14 A. Okay.

15 Q. Do you see where Dua says bluetooth
16 profiles includes hands-free handset?

17 A. Yes.

18 Q. Looking at this section of Dua, does
19 that indicate to you that Dua is referring to using
20 bluetooth for audio, primarily?

21 MR. ERICKSON: Objection, form.

22 A. Yes. I would associate hands-free
23 handset with audio interaction with the device.

24 Q. Okay. Did you commit your expert
25 declarations to memory?

1 A. I wish I had such a good memory, but no.

2 Q. So to the extent if you testified about
3 anything today that was different from your expert
4 declaration, would your opinions in the expert
5 declaration supersede what you said in the
6 deposition?

7 MR. ERICKSON: Objection, form, leading.

8 A. Yes.

9 Q. Okay.

10 MR. SIDDIQUI: Nothing further, Counsel.

11 MR. ERICKSON: Off the record.

12 [Time noted: 1:06 p.m.]

13

14

15

16

17

18

19

20

21

22

23

24

25

1 CERTIFICATE

2 I, LORRAINE B. ABATE, a Certified Court
3 Reporter and Notary Public of the State of New Jersey
4 and Registered Professional Reporter, do hereby
5 certify that prior to the commencement of the
6 examination, Bruce McNair was duly sworn by me to
7 testify to the truth, the whole truth and nothing but
8 the truth.

9 I DO FURTHER CERTIFY that the foregoing
10 is a true and accurate transcript of the testimony as
11 taken stenographically by and before me at the time,
12 place and on the date hereinbefore set forth.

13 I DO FURTHER CERTIFY that I am neither a
14 relative nor employee nor attorney nor counsel of any
15 of the parties to this action, and that I am neither
16 a relative nor employee of such attorney or counsel,
17 and that I am not financially interested in the
18 action.

19 

20 Certified Court Reporter
21 Registered Professional Reporter
22 Notary Public of the State of New Jersey
My Commission expires December 29, 2029
CCR License No. XI01992

23 Dated: June 14, 2025

24

25

Notice Date: Monday, 16. June 2025

Attention: Bruce McNair

Re:Maxell, Ltd. v. Samsung Electronics Co., Ltd.
Deposition of Bruce McNair (6/11/2025)

NOTICE REGARDING SIGNING DEPOSITION TRANSCRIPT

The above referenced transcript is available for review. Within 30 days, or the applicable timeframe of your legal jurisdiction, the witness may read the testimony to verify its accuracy. Any changes can be noted on the following errata page.

Once the transcript has been reviewed, the witness should sign and date the certificate of deponent page. The signed certificate, errata, and original transcript (if provided) must be returned to TP.One per the rules of civil procedure.

If the transcript and errata are not returned within the allotted time, the unsigned transcript may be used as if signed by the witness.

Thank you,

TP.One Production Department
Production@tp.one



Notice Date: 06/16/2025

Deposition Date: 6/11/2025

Deponent: Bruce McNair

Case Name: Maxell, Ltd. v. Samsung Electronics Co., Ltd.

Page:Line

Now Reads

Should Read

[illegible]

CERTIFICATE OF DEPONENT

I hereby certify that I have read and examined the foregoing transcript, and the same is a true and accurate record of the testimony given by me.

Any additions or corrections that I feel are necessary, I will attach on a separate sheet of paper to the original transcript.

Signature of Deponent

I hereby certify that the individual representing himself/herself to be the above-named individual, appeared before me this ____ day of _____, 20__, and executed the above certificate in my presence.

NOTARY PUBLIC IN AND FOR

County Name

MY COMMISSION EXPIRES:

WORD INDEX

< 0 >

0 78:21, 24, 25
81:17**0.1.2** 76:11**0.2.1** 76:8 81:13**003** 84:13**0124** 31:10**0128** 30:18**0129** 30:11, 13,
14**0137** 30:24**0142** 33:8, 13,
14, 15**0202** 38:10

< 1 >

1 14:22 15:1,
16 20:25 21:6,
11, 15 22:5
23:2 28:24

33:16, 24 34:19

37:14 40:8

46:19 47:1

53:18 66:18, 22

67:15 77:20

78:24 81:15

1:06 87:12**10** 48:8**1001** 4:25 5:7,
10, 17 25:7

49:18, 22, 23

1002 5:21

15:23 16:13

21:3

1003 5:21 15:8,
24 16:13 21:3**1006** 37:14

38:15 40:2

1007 80:19, 22
81:1, 4, 12 84:6**1008** 28:7, 10
41:20 85:10**100B** 35:6
85:18**1010** 43:3, 9, 13
69:2**1011** 47:6, 9
48:25**1012** 49:1, 3**1014** 46:12, 18
85:2**1015** 56:6, 7, 8
57:19 60:8, 11

80:18 81:7

10'2 21:16**10'3** 21:16**1033** 60:20, 25
64:14 72:2

81:25

1034 61:22
64:13 65:11**1036** 57:2**1052** 74:23, 25
75:1**1053** 75:18**1054** 76:4**1055** 77:23, 24**1056** 83:12**108** 35:23**109** 30:20**11** 1:20 17:20,
21 18:16 34:24

85:15, 16, 23

86:1

11:37 77:1**110** 38:5**113** 43:12**114** 45:23**115** 44:23, 24,
25 45:1, 13, 17**117** 35:23**12** 8:19 77:3**12:37** 77:2**12:39** 77:16**120** 1:19 40:6**122** 22:2**125** 19:18 22:1**138** 86:13**14** 72:1 88:23**141** 81:2, 5**145** 81:11**147** 24:12, 14,
25 25:1**14th** 69:15**15** 72:6**15th** 64:21**16** 49:18 50:2
72:15**161** 57:15, 16
58:4**164** 81:5**167** 58:11, 19, 20**17** 15:2 72:19**171** 21:19**18** 8:19 72:19**180** 20:21 21:1,
23**19** 82:2, 12**1970s** 8:1**1999** 2:13

< 2 >

2 14:22 15:3, 8,
15 33:16, 24

34:6, 12, 15

38:8 57:4 62:2

65:12 66:22

81:16 84:7

2.0 36:4 46:25**2.4** 51:3 54:9,
10**2.O** 36:8**20** 40:1, 5

57:24 82:21

200 46:15, 16, 18**20006-1101** 2:14**2004** 48:13**2005** 36:12, 14

38:2 42:13

2006 48:13**2007** 6:24 36:9,
14, 23, 24 41:25

64:21 66:11

67:25 68:5, 10,

23 78:4

201 38:9 39:8**2011** 68:19

69:5, 15

2012 55:8**2015** 8:22**2016** 8:22**2017** 24:3, 22,
25 57:14**202** 39:11**202)263-3167**

2:16

2020 78:7**2024-00906** 4:9**2024-00907** 4:10**2025** 1:20 88:23**2026** 54:13, 21**2029** 88:21**203** 38:10 39:13**2036** 56:15, 17,

20 57:4, 5, 6, 19,

25 58:5 59:3, 5,

11, 14, 19 60:3

21 83:6**22** 83:6**23** 83:19

23rd 66:11 67:25 68:5, 10, 23 24 83:19 241 4:13 5:1, 3, 10, 17 6:3 7:16 8:18, 25 9:13 10:3, 11, 17, 21 11:13 13:11, 21 14:17, 20 16:17 17:11 22:15, 21 23:8 25:7, 8, 13, 16, 23 26:7 27:10, 20 36:21 37:24 49:17 58:16 25 84:2 26 84:2 27th 38:2 29 88:21 2EN 68:24 69:11 2-EN 66:19 2G 28:18 47:13, 22 55:17, 24 < 3 > 3 50:20 53:19 81:16 84:13 3.2 46:17, 18 3000 2:5 303 2:5 3052 74:24 31 38:14, 17 39:8 77:14 36 58:1 75:9 80:5 36.211V0.2.1clean.doc 73:6 3621-0.2.1 76:15	36211 77:8 36211-021 72:25 38 19:17 77:14 3G 47:13, 22 48:5 55:16, 18, 19, 23, 24 56:4 3GPP 40:8, 9, 13, 14, 24, 25 41:14, 18, 23 42:1, 2, 15, 18 48:15, 19 56:12 59:6 70:5 78:14 81:7, 12 3GPP.org 69:21 < 4 > 4 3:4 22:7 33:16, 24 34:5, 13, 16, 19 61:9 64:10, 12, 16 78:22 424 37:17 429 40:2 430 38:14 431 38:15 450 30:12 461 33:6, 10 47 20:1 4-A 47:12, 17, 19, 20, 21 < 5 > 5 15:4 19:16 60:9, 11 61:15 78:22 81:12 50 14:20 16:1, 2 5001 17:24 22:8 5004 17:24 22:9 51 1:18 50:22 51:4	512)457-7000 2:8 53 5:18 55 26:6, 8 590 4:14 13:11, 22 17:11 22:16, 21 23:8 25:8, 16, 23 27:11, 19 36:21 37:23 42:7, 10 58:2, 15, 19 < 6 > 6 26:6, 8 61:15 63 35:20 36:25 65 20:20 66 20:23 28:13, 15 69 41:20, 21 42:17 < 7 > 7 5:18 30:1, 2, 9, 13 33:16, 25 35:11, 13 49:6 50:9, 11 69:20 70:9 70 28:20 758 37:20 78701 2:6 < 8 > 8 14:18 16:1 17:17 55:7 60:4, 5 802.11 12:21 802.11-A 7:4 12:16 802.11-G 7:5 85 3:5	850 35:3 851 35:8 85:20 852 35:9 85:21 < 9 > 9 14:23 17:19, 20, 22, 23 18:15 59:22 60:5 70:20 9:14 1:20 9:38 77:15 906 4:12, 25 5:4, 5 24:2 49:22 56:8 907 4:13 5:2 24:20, 25 28:4, 6 37:14 43:3, 7 56:6, 8 60:20, 24 64:14 80:20 85:13 9245183 68:24 69:11 99 55:13 < A > a.m 1:20 ABATE 1:15 88:2 ability 17:3 able 4:18, 19 10:5 12:3, 12 17:4 19:7 24:9 37:16 42:24 52:22 above-entitled 1:14 access 4:19 39:9 40:21 51:9 52:22 53:1 60:6
--	---	--	--

accidentally 62:16 accurate 5:15 88:10 acronym 41:16 action 88:15, 18 actions 29:10 activation 29:1 actual 62:12 65:24 70:23 addition 41:2, 3 address 16:12 27:9 addressed 9:18 14:1 15:13 16:6, 7, 8, 9, 14 18:12 23:7 27:6 addresses 17:11 36:6 addressing 13:17 15:11 22:19 26:4 adjacent 18:2, 6, 14 advanced 12:11 Affidavit 61:6 agree 51:13 53:21 ahead 62:21 83:11 alternating 51:25 52:4 53:2 alternative 41:18 alternatively 20:18 amateur 12:5 amount 27:20 amplitude 12:25 analog 7:24, 25	analysis 10:11 49:15 50:17 analyze 9:20 11:2 analyzed 15:20 16:16 17:14 26:24 27:25 35:16 37:22 39:4, 6, 22 41:10 42:11, 20 49:13 answer 35:17 42:24 answered 10:8 13:25 27:14 answers 79:18 antenna 35:23 Apologies 24:17 apparent 32:4 APPEAL 1:2 appear 4:22 71:1 84:4, 18 appears 69:10, 11 70:22 72:3 82:14, 23 83:21 85:3 applicable 42:22 Application 37:19 38:2 45:20, 23 46:1, 7, 9 47:10 applications 45:24 applies 16:20 approved 79:2 April 66:11 67:25 68:4, 5, 10, 23 arcane 80:11 architecture 25:8, 15	archive 62:11 64:6, 9, 21 67:25 68:6, 9 69:15 83:10 archive.org 56:22 68:4 archived 66:11, 15 67:24 68:2 archiving 66:24 area 12:4 71:7, 12, 14 74:2 79:9 arranged 6:14 array 35:24 37:1 arrow 69:5 arrowed 86:2 arrows 68:16 art 6:2 7:21 9:6 10:5, 19, 23 11:5, 9, 11, 13, 22 12:15 13:3, 9 14:7, 10 16:11, 15 18:13, 24 19:4, 14 36:3 42:7, 10 78:4, 14 79:13 asked 10:7 13:24 17:17 27:13 28:1 asking 11:1, 18 27:8 56:1 85:9, 17 Aspects 75:4 79:24, 25 80:1, 3 assign 31:6 associate 86:22 assuming 79:12 attachment 45:9 attorney 88:14, 16	Attorneys 2:4, 12 audio 7:3 35:7, 9 51:19 52:5, 15, 20 85:19, 21 86:20, 23 augmented 26:3 Austin 2:6 author 61:5 automatically 44:17 available 8:13 19:6, 9 AVI 33:16, 24 34:15 avoids 50:23 aware 6:24 9:24 10:2 13:21 17:10 22:15 23:13 27:10, 19 < B > bachelor's 12:11 back 17:22 25:6 33:4 35:11 41:19 42:23 46:11 47:6 49:17 50:8 65:10, 20, 21 69:19 73:20, 22, 23 79:6, 10 81:25 84:6 band 15:24 18:2 54:9, 11 bands 18:6, 11, 15 bar 63:15 base 19:24 20:3 39:9 40:5
---	---	---	--

Based 10:3 11:11, 14 79:19 basic 46:19 47:1 basically 53:14 basing 19:10 basis 12:9 67:18 batteries 23:4 beginning 81:4 begins 28:20 62:4 believe 9:22 10:10 11:8 13:19 14:1 15:20 16:9 25:12 26:24 27:6, 15, 24 34:14 35:16 36:11 37:4 40:21 41:12 42:15 48:23 50:16 56:2 57:18 77:23 85:22 best 5:14 Bhattarai 61:24 62:2 Bhattarai's 65:11 bit 35:18 70:5 78:10 84:10 blank 53:14 blue 68:16 69:5 bluetooth 31:2, 6, 15, 20 32:1, 9, 13, 18, 23 33:1 36:3, 4, 8 37:2 38:18, 23 39:2, 16, 18 45:9 46:24, 25 49:7	50:9, 12, 18 51:8, 18, 24 52:6, 20 53:4, 11, 14 54:8 81:23 82:9 83:15 86:8, 11, 15, 20 bluetooth- enabled 51:6 BOARD 1:2 book 54:23 55:2, 3, 7 56:3 bookmark 62:23 69:25 70:1 bottom 28:15 61:18 75:6 Box 21:19 37:17 46:14 branch 41:8 breaks 38:14 BRIAN 2:7 brian.erickson@ us.dlapiper.com 2:9 broad 52:16 53:20 broadcast 20:21 21:1, 21, 22 broadcasting 7:2, 3 BROWN 2:11 browser 62:22, 24 63:12 65:21 73:22 82:6 browsing 45:3, 8 Bruce 1:14 3:4 85:9 88:6 buffering 52:11 bullet 45:13, 18	button 29:1, 4 68:15 < C > called 7:13 8:2 63:16 calls 8:10 11:16 15:18 capabilities 30:23 capability 31:1 32:23 33:2, 6, 10 35:14 capable 11:7 19:12 32:8, 17 35:14 38:19 39:2, 16, 19 Capstone 11:24 capture 64:21 70:7 captured 68:4, 10 69:14 carriers 6:13, 16, 18 carries 11:15 carry 8:22 case 31:9 35:10 36:11 cause 17:8 29:5 CCR 88:22 cell 8:9 22:25 23:11 38:5 cellular 7:9, 11 12:1, 7 20:3, 8, 9, 17 21:2 35:7 40:17 85:19 Central 77:2 certain 16:10 52:18 certainly 8:12 79:2	CERTIFICATE 88:1 Certified 1:16 88:2, 20 certify 88:5, 9, 13 challenge 36:18 change 62:20 79:5 changes 14:21 15:7 67:2 changing 15:14 channel 12:8 51:21 channels 59:7, 8 60:13 characteristics 34:9 characterization 53:22 characterize 21:6 chip 49:11, 16 55:17, 24 choose 43:18 chose 79:7 chronology 42:24 circuit 8:9 19:18, 20, 23 20:11 23:4 48:5 49:16 50:3, 4, 5, 12, 13, 14 circuitry 20:17 21:1, 2, 17 circuits 5:21 10:4 47:14, 23 48:1 49:8, 14 claim 49:18 50:2
--	--	--	--

claims 9:9, 14 11:3 36:18 clean 73:8, 9 81:5 Click 64:3 65:15, 24 69:4 70:14, 17 71:11, 18 72:11, 24 73:2 74:8, 13 75:13, 24 76:11 77:12 79:14, 25 80:5 83:2, 14, 22 84:19 clicked 62:16 66:6 74:1 clobbering 54:7 close 24:18 47:5 48:25 54:12 56:5 57:3 69:18 closed 23:22 25:16, 22 coexistence 16:20, 24 17:11 22:16 collide 52:3 colliding 50:24 Colorado 2:5 column 5:18 8:19 14:18 16:1 17:17, 19, 20, 22, 23 18:15 19:16 26:6, 8 75:9, 21 combined 26:2 50:5, 14 come 17:22 73:20 commencement 88:5	commencing 1:20 comments 25:13 commercially 19:8 Commission 88:21 commit 86:24 committee 79:1 common 66:23 communicate 40:6 52:5 communicates 51:7, 9 communicating 16:25 51:15 communication 12:4 29:16 35:25 36:9 37:1 41:18 48:1 49:8, 14 50:3, 4, 12, 13 52:10 53:23, 25 86:2 communications 7:9 12:6 14:12 compare 70:19, 23 71:21, 25 72:5, 14 82:12, 20 83:4, 17, 25 84:12, 13 compared 31:15 69:12 comparing 57:19 comparison 34:18 72:8, 22 comparisons 34:21 compatible 45:7	complete 4:17 73:15 compliance 23:9 compliant 41:23 42:1, 18 48:18 component 30:23 components 30:16 33:5 compress 34:4, 6 compressed 34:5, 11, 12 compression 34:2, 10 computer 28:3 45:7 54:16 73:16 77:2, 8 82:1 concerning 11:1 18:11 conditioning 23:5 conditions 39:22 conduct 5:21 confirm 4:18 56:25 57:21 62:7 70:8 72:7, 20 82:19 confirmed 70:11 connect 44:2 connected 53:6, 7, 10 connection 53:17, 19, 20 54:6 connections 52:7 connectivity 45:10 consider 10:16 22:22 53:16	considered 27:17 49:13 58:9 constantly 62:19 constitute 51:14 contain 45:19 contained 55:17, 23 content 20:2 30:2 58:9 72:4, 5, 19 82:20, 21 83:6, 8, 18, 20 84:1 contents 84:3 context 16:15, 24 continues 40:9 contrasting 57:19 Control 74:16 75:17 76:3 83:11 controller 14:21 15:7 21:20 conversely 6:21 convert 6:19 conveying 51:18 copy 55:5 61:19 65:7 66:7 78:18 Core 84:15 corner 29:2 63:7, 9 68:15 correct 4:10, 11, 14, 15 5:24 9:10, 11 10:12, 24 12:17 13:13 14:7 17:24 18:3, 7, 16 19:1 20:11 22:6, 10, 17 23:12 26:15,
---	---	--	---

22 27:4 28:11, 12, 18, 19 29:7, 13, 20 30:6, 20, 24 31:2, 7 33:14 35:9 36:10 37:24 38:24 41:23 42:3 43:19 44:2, 13 45:3 46:2, 9 47:2, 3, 11, 15, 23, 25 48:2, 6, 7, 10, 13, 14, 16, 17 49:4, 5, 9 50:20 52:7 53:6 54:25 55:1 56:18 57:7 59:20, 21 61:15, 16, 25 62:1 64:7, 23 65:13, 14 66:8, 9, 11 67:9, 15, 25 68:5, 24, 25 69:2, 3, 16, 17 74:5 81:8, 9 correctly 31:18 40:21, 23 41:1 69:11 correlate 62:11 corrupted 73:12 cost 55:19 counsel 55:2 85:9, 17 87:10 88:14, 16 couple 19:25 57:20 70:25 course 77:1 courses 14:12 19:10 Court 1:16 88:2, 20 cover 38:6	CPU 29:5 30:19 31:4, 6 create 6:17 17:7 created 77:15, 16 creating 17:2, 4 cross- modulation 17:5, 8 current 64:4 cursor 64:24 65:3 84:15 cursory 71:3 72:8, 22 < D > data 34:10 38:18, 19 39:3, 17 40:16 date 36:17, 20 68:7 69:6 77:3, 5 88:12 Dated 88:23 DC 2:14 dealing 11:4 December 48:13 88:21 declaration 9:16 10:10 15:10 16:5, 9 23:25 24:2 25:12 54:24 56:18 57:7, 12, 14, 17 58:3, 9, 15, 16 59:2 60:23 61:10, 15, 24 64:10, 12, 17 65:11, 13, 17 69:20 70:10, 21, 25 72:1, 6, 16,	20 80:22 82:2, 13, 22 83:5, 9, 19 84:2, 7 87:4, 5 declarations 23:16 86:25 defined 60:4 definition 14:9 19:3 59:23 60:2 degree 12:11 delete 77:7 demodulation 5:21, 25 deposition 1:14 87:6 Desai 49:4, 6 50:8, 11, 18 51:5, 14, 17 52:19 Desai's 53:21 describe 59:16 69:8 described 11:22 12:16 21:7, 9 25:8, 15 30:24 33:8 35:19 42:6 51:14 describes 9:4 14:20 25:14, 20 59:9, 15 60:12 78:22 describing 9:2 20:8, 16 21:9, 15, 16, 18 22:14 25:24 30:15 42:8 51:18 description 32:15 descriptor 34:8	design 11:23, 24 12:9 26:25 54:24 designed 35:24 desktop 63:11 74:23 detail 7:19 10:16 32:5, 18 details 7:17 9:2 13:12, 22 32:10 43:23 determination 67:19 determine 11:5 determining 10:18 36:17 developed 7:7, 8 device 23:24 25:24 29:7, 13, 19 30:24 31:5 32:8, 13, 17, 20, 23 33:1 39:12 43:18 45:6 51:7, 8 52:5 86:23 devices 12:22 23:17 25:3 30:15 32:18 53:5 different 18:2 34:1, 2 47:14 52:21 57:23 83:9 87:3 difficult 62:10 difficulty 62:10 digit 81:15 digital 7:1, 3 8:2 40:20 directed 24:16 directories 4:19, 21
--	--	--	--

directory 24:20, 25 28:3 43:2, 6 46:12 47:6 49:19, 22 56:7 60:20, 24 80:20 disagree 53:21 disclose 39:18 disclosed 18:1, 15 22:5 discloses 21:1 22:11 29:12 32:24 38:5, 9 46:3 47:13, 21 48:9 49:6 disclosing 38:23 discovery 31:16, 21 discovery/paging 31:14 discrete 55:17, 24 discuss 20:20 27:11 54:24 56:17 57:6 discussed 40:16 57:11 discusses 26:12 27:20 32:12 46:18 discussing 22:16 59:24 discussion 18:5 19:17 28:21 37:10 45:15 54:18 58:24 60:17 disk 73:14 display 39:12 displayed 84:14 distance 39:12 distributed 79:1	division 5:22 6:10, 11 53:1 DLA 1:18 2:3 73:18 document 30:9 47:5 56:5, 11 57:11, 25 58:13 59:8 60:4, 12 62:18 69:12 73:11 78:17, 18, 20, 21, 22 79:4 81:6, 19, 21 84:21, 23, 25 85:1 documents 57:23 62:12 73:3 76:18 78:6 83:23 doing 9:8 11:7 19:12 57:18 domain 6:20 35:3 double-check 77:24 download 72:25 84:20 downloaded 45:7 77:15 downloading 45:3 76:12 downloads 76:20 77:12 downstream 40:22 dozen 51:19 Drafts 72:11 drag 24:8 draw 8:14 DSL 8:3 Dua 23:17 25:3 28:11 29:12	33:4 34:24 35:19, 20 36:14, 25 41:19, 22 42:1 48:18 85:10 86:7, 11, 13, 15, 18, 19 dual 43:17, 25 44:5, 6, 16, 19 Dua's 42:17 duly 4:2 88:6 DVB 7:8 dynamic 67:7 < E > earlier 7:6 Early 55:16, 19, 23 56:4 Edge 62:24 EDR 36:4, 8 37:2 46:25 84:15 efficiently 34:5, 8 Eighties 8:1 either 41:13 58:16, 17 elaborate 66:5 ELECTRONICS 1:6 e-mail 45:9 embodiment 14:21, 24 15:1, 21, 23 16:12 17:16, 23 18:15 20:25 22:5 embodiments 40:5 employee 88:14, 16 enable 9:7, 13	enablement 9:17 10:11, 15 11:1, 2, 19 13:17, 19 16:18 18:22 22:22 27:8 39:24 encoder 59:15, 16 encompassed 42:16 encounters 14:13 encryption 21:19 ends 37:20 66:17 73:23 end-to-end 53:8 English 66:21 enhancement 41:4 entire 18:9 54:8 84:17 entry 72:10 ERICKSON 2:7 3:4 4:5 37:9, 12 54:17, 19 58:22, 25 60:15, 18 85:5 86:21 87:7, 11 error 24:17 escapes 57:8 ESQ 2:7, 15 ESQS 2:3, 11 essentially 20:8 Essentials 54:23 established 54:4 establishing 31:16, 21 32:2 Europe 7:1, 7 EUTRA 78:14 79:14
---	---	---	--

EUTRAN 40:9 41:15 42:3 evolution 7:14 evolutions 40:7 evolved 60:13 75:4 79:24, 25 80:3 evolving 7:8 EX 5:7, 10 24:3 74:23 75:1 76:4 77:22, 23 exactly 35:19 41:6 67:20 EXAMINATION 3:3 4:5 85:8 88:6 examined 4:4 34:22 example 30:2, 4 31:25 32:1 50:19 51:6 examples 7:11 excerpted 81:7 exchange 56:21 Exhibit 4:25 5:6, 10, 17 24:18, 22, 25 25:7 28:7, 10 37:14 38:15 40:2 41:20 43:3, 13 46:12, 18 47:6, 9 48:25 49:1, 3, 18, 22 54:12, 13, 21 56:6, 7, 15, 17, 20, 25 57:6 58:18 59:3, 5, 11, 14, 19 60:3, 8, 11, 20, 25	61:22 64:13, 14 65:11 69:2 72:2 75:18 76:3 77:21 80:18 81:4, 7, 12, 25 83:12 84:6 85:2, 10 EXHIBITS 3:8 exist 22:21 existed 62:18 existence 12:14 existing 7:22 45:19 46:1, 6 exists 12:7 66:15 expect 19:12 experiment 12:3 experimentation 10:6 expert 13:18 14:2 17:15 22:20 27:18 31:24 48:24 86:24 87:3, 4 experts 33:23 expires 88:21 explain 13:11, 22 explicitly 29:14 explore 78:10 Explorer 77:12 express 13:18 expressed 27:7, 15 31:23 34:23 36:7 37:4 41:12 42:5 48:23 extending 81:5 Extensions 63:17, 23 extent 87:2	External 61:18 65:6 < F > fact 12:10 20:17 49:15 52:14, 25 53:3 86:5, 7, 12 factor 55:18 fair 8:25 10:21 14:4 22:5, 11 32:15 33:2, 3 50:24 familiar 14:24 16:19 33:20 80:7 fast 6:19 Favorite 82:8, 11 Favorites 62:25 63:2, 25 64:1 70:1 FCC 23:14 feasible 22:13 fellow 56:22 field 29:16 Figure 14:23 17:21 18:16 19:15 20:25 21:6, 11, 15 22:5, 7 23:2 28:24 30:1, 2, 9, 13 33:7 34:24 35:11, 13 38:8 47:12, 16, 17, 19, 20, 21 49:6, 12 50:8, 11, 20 85:15, 16, 23 86:1 file 32:14 34:11, 14 37:23	45:18 46:4, 5 64:14 71:7, 12, 14 72:25 73:2 74:2 76:12, 15 77:4, 11 79:9 84:20 filed 6:3 36:12 38:2 42:12 48:12 files 4:17, 20, 22 45:2, 6 76:21 77:7, 9 78:19 filtering 18:25 19:5 filters 19:6 financially 88:17 find 4:25 9:6 14:14 46:12 47:6 54:13 55:3 58:6 62:25 70:1 74:7 77:9 78:5, 11 79:8, 10 80:12 fine 57:13 firm 73:16 first 4:2 15:22 30:17 31:13 39:7 50:3 55:6, 11, 16 58:6 69:13 73:5, 7 75:21 77:10 80:12, 13 81:15 82:24 fit 41:6 folder 4:24 37:13 77:22 84:13 85:13 follow 75:8 followed 62:9, 13
---	--	--	--

follows 4:4 70:24 foregoing 88:9 forget 7:6 form 17:13 18:8, 17 19:2 21:4 23:1 31:8 37:3 44:3 45:4 46:8 47:24 48:3 49:10 50:15, 25 86:21 87:7 formats 33:16 forth 88:12 Forward 81:13 found 24:17 55:6 80:3, 13 four 17:24 22:4, 8 Fourier 6:19 fourth 7:14 frame 58:10 Frank 80:23 84:7 frequencies 6:12 frequency 5:22 6:10, 11, 20 12:4, 6 15:24 18:2, 14 47:22 frequently 12:5, 22 fresh 45:16 front 4:16 9:22 front-end 47:13 full 5:14 55:16 64:8 fully 41:22 42:1, 17 48:18 function 6:22 27:1	functionality 32:4 functions 21:19 25:25 further 61:2 67:20 74:9 87:10 88:9, 13 < G > Gandalf 7:24 general 32:11 33:22 34:3 generally 57:18 generation 7:15 germane 13:20 GFSK 46:19 47:1 gigahertz 51:3 54:9, 10 give 43:23 54:15 74:17 given 52:22 giving 45:25 glance 17:21 71:3 go 4:24 7:19 9:7 17:19 24:12 30:11 32:5 35:20 37:9, 13 42:23 43:1, 12 46:11 47:6 49:17, 22 54:17 58:22 60:15 62:21, 24 65:10, 20, 21 69:19, 20 73:22 74:7, 13 79:6, 7, 14 81:22, 25 82:2 83:11 84:6, 7	going 32:9 33:4 35:11 41:20 49:3 71:8, 17 74:3 80:10 Good 4:6, 7 24:10 65:20 87:1 Great 70:13 77:19 greater 15:3 group 33:23 40:14 GSM 28:14 43:18, 20 44:1, 2, 6, 12 GSM/GPRS/ED GE 40:8 guess 42:7 46:17 guide 31:25 32:3, 8, 11 43:4 45:2, 17 46:3 66:7, 11 67:11, 23 68:23 < H > half 63:5 handle 25:24 Handset 54:24 86:16, 23 handsets 55:16, 19, 23 56:4 hands-free 86:16, 22 happening 32:6 43:24 happens 32:10, 19 heading 60:9	61:18 75:3 headset 51:7, 18 held 1:18 37:10 45:15 54:18 58:24 60:17 help 15:15 30:12 helpful 57:22 hereinbefore 88:12 high 12:4, 5 32:3, 14 38:18 40:20 55:18 higher 15:16 53:7 highlighted 71:11 74:13 Hills 1:19 hindsight 78:7 history 37:23 hit 74:16 79:10 Hold 24:16 51:22 56:23 home 39:10 55:5 hood 32:7 hoping 54:8 horizontal 63:6 HSDPA 40:20, 22 42:2 48:5, 9, 15, 20 HSDPA/HSUPA 40:9, 19 HSUPA 40:22 42:2 HTTP 71:7 HTTP://NDS1.no kia.com/phones/fi les/guides/Nokia_
--	---	--	---

N93-1 65:8 hyperlink 74:2 hypothetical 7:18 8:11 < I > idea 25:24 identify 81:14 illustrated 30:2 image 34:9 83:10 imagine 51:22 immediate 66:2 immediately 66:16 impact 17:3 52:14 implement 7:17 8:9 9:3 10:6, 24 11:14 12:12, 16 13:12, 23 14:7 15:16 18:14, 24, 25 36:3 implementation 7:10 8:14 79:4 81:20 implemented 6:24 7:24 14:16 47:14 49:8 50:4, 13 51:6 implementing 12:21 implies 6:9 important 51:17 impression 9:16 incantations 80:11 include 9:14 42:2 48:20	includes 46:25 59:20 61:17 65:12 86:16 independently 6:16 indicate 86:19 indicates 55:7 indication 23:4 individual 6:15 52:17 inform 8:5 32:6 information 6:12, 14 8:13, 17 14:15 17:4 19:8 20:19 29:6, 13, 18, 22, 23 30:5, 19 51:19 52:6, 11, 23 53:1 74:9 81:16 informed 31:4 infrared 45:10 inherently 26:1 initially 55:22 inside 43:24 install 45:24 Installation 45:6 46:4, 5 installed 45:2 instance 7:24 52:12 58:6 instructing 18:19 instructions 23:23 integrated 47:22 intended 25:21 intention 29:16 interact 32:22, 25 33:1	interacting 32:17 interaction 86:23 interest 12:3 interested 88:17 interface 40:7 interference 16:10, 13 17:2, 8 18:6, 11 interleaving 51:13 internet 26:22 67:24 INTERPARTES 1:3 interpret 54:2 interval 52:2, 19, 21 involves 4:12, 13 ionospheric 12:8 IPR 4:9, 10, 12, 13, 17, 22, 25 9:19 10:14 13:20 28:4 IPR2004-00906 1:4 IPR2024-00907 1:4 IPRs 4:9, 17 issue 9:17 66:19 68:24 69:11 issues 8:15 13:17 17:12 18:25 22:16, 21 item 82:25 its 55:11 60:11, 13 < J >	Jersey 1:17, 20 4:3 88:3, 21 jitter 52:12 John 1:19 July 68:19 69:5, 15 Jump 55:13 June 1:20 48:13 88:23 < K > keep 24:6 79:12 Kennedy 1:19 key 37:8 keying 13:7 kilobits 51:20 Kind 21:22, 25 57:20 63:5 kinds 19:6 know 6:5 8:6, 8 11:18 12:13 14:10 16:15 18:20, 24 19:9, 11 21:5 22:23 23:20, 21 24:3 25:18 31:23 32:21 33:21 34:7, 17 35:18 36:6, 12 46:15 55:4 58:6 62:25 63:2 64:10 66:12, 13, 14, 22, 24 67:16 69:5 71:7, 12, 16 74:3 77:3 78:7, 9 79:18, 22 80:11 82:2 knowledge 14:6 knowledgeable 13:3, 9
---	---	--	--

known 6:2 36:9 42:9	lines 16:2 19:25 26:17 63:6	78:8, 14 79:13, 23 80:2 82:21 83:5 84:1 86:18	means 6:11, 13 14:14 46:5 67:15 78:23 81:14, 15
< L >	link 61:10, 18 62:3, 9, 13 63:1 64:25 65:1, 6, 7, 15, 24 66:6, 17 67:5 71:1, 6, 18 72:24 75:9, 13, 24 79:7, 9 82:15 83:14, 23 84:14, 16, 20	looks 22:13 57:15 72:9	media 33:5, 9 35:6 85:18
labeled 48:7 68:24 72:11 82:25	LORRAINE 1:15 88:2	loop 8:2	meet 12:23
LAN 51:23 52:14 53:13	Links 61:18 62:13 74:8, 9	lot 8:12 79:19	megabit 46:19 47:1
language 66:21	list 72:11 82:25	low 51:21	megabits 15:3, 4
laptop 4:16	listed 35:13	lower 15:8	memory 27:20 57:8 73:14 86:25 87:1
Latest 72:11 79:13	lists 33:15	LTE 7:14	mention 7:23
law 73:16	little 35:18 63:4, 16, 17	< M >	mentions 26:18 85:24 86:8
layer 53:8, 9, 10, 16, 17, 18, 19 54:4 59:9	loaded 71:13	maintained 53:20 54:6	merely 14:5
leading 87:7	long-term 7:13	maintaining 23:9	message 30:2, 16, 18, 19, 22 31:5 33:4, 5 45:8 56:21
Learn 82:25	look 19:16 21:7 22:20 23:2, 25 28:1 29:8 30:8, 12, 17 34:8 42:23 44:14 52:17 60:7 70:1 71:3 72:4, 18 78:9, 21 80:14, 15	manage 26:25	middle 21:22 40:4
led 78:15	looked 10:1 11:2 37:25 39:24 41:5 59:4 64:9 67:3	manager 45:23	mind 17:18
left 21:22 45:1 68:16 82:24 83:15, 22	looking 11:25 18:9 29:22 35:18 57:1 64:11, 20 65:23 66:7 67:21, 24 68:3 69:9 70:9, 20 72:15 76:24	manner 46:10	minimized 63:14
legally 36:16		manual 23:22 25:20 32:16, 24 61:19 64:25 65:7, 24	minute 73:21
level 10:16, 18 11:6, 8, 10, 14, 21, 22 32:4, 14 53:7, 18, 19 54:1, 6		manually 32:13	mitigate 27:3, 11
library 55:5		manufactured 12:23	mobile 39:8 51:7, 8 54:23
License 88:22		map 59:6	mode 43:15, 17, 25 44:5, 6, 16, 19
limitation 9:10, 14		mapping 59:7	model 51:5 67:9, 10
limited 42:16		mark 74:23	modem 15:8, 23, 24 21:2
line 5:18 8:19 14:19, 20 17:20 19:16 20:1, 20, 23 25:2 26:6 69:12, 13 74:6		MARKED 3:8 69:2 73:9 85:2	modems 7:24, 25 8:22 9:1 21:7, 16 22:8
		material 16:2	modification 25:21 77:4
		matter 1:15	
		MAXELL 1:9	
		MAYER 2:11	
		McNair 1:14 3:4 4:6 5:13 37:13 54:20 59:1 60:19 88:6	

modified 77:3 modify 23:24 modulated 6:15 modulation 8:7 12:24 13:1, 3, 5, 9, 13, 23 14:5 46:20, 23 47:1 48:9, 20 59:10, 13, 17, 20 modulation/demo dulation 8:23 module 28:22 29:6 modum 5:21 16:13 20:8 moment 24:15 54:15 momentarily 51:23 morning 4:6, 7 motion 33:23 moved 69:6 moving 20:2, 19 MPEG 33:16, 22, 23, 25 34:5, 6, 12, 13, 15, 16, 19 MPEGs 34:1 multimedia 45:8 multiple 16:20 17:12 23:11 25:25 53:1 multiplexing 5:22 6:10, 11 < N > N93 23:17, 21 25:3, 20 31:25 32:3, 20, 24 43:4 45:17 61:11, 19 64:2,	21, 25 65:7, 24 66:7 67:8, 9 N93-1 67:8, 15 N93-1_UG_EN 66:18 name 6:9 73:8 named 77:8 Nathaniel 80:23 navigate 24:20 28:2 43:2 60:19 73:23 navigated 70:7 Navigation 68:15 78:9 navigations 78:5 NDS-1 68:12 69:15 NDS1.Nokia.com 62:4 near 29:16 nearby 17:9 29:7, 13, 19 necessary 18:24 need 8:15 19:5 needed 9:17 neither 88:13, 15 network 43:15, 21 44:2, 10 51:23 53:8, 19 54:4 60:6 networks 40:18 43:25 44:12 Never 17:17 New 1:17, 19 4:3 62:24 78:19 88:3, 21 NFC 29:6, 12 30:5 Nokia 43:4 66:7, 16 67:22 68:10, 23	non-provisional 38:1 normal 31:15, 20 32:1 normally 32:22 NOS 1:3 Notary 1:16 4:2 88:3, 21 note 78:20 81:11 noted 79:3 81:18 87:12 notes 1:13 Notice 1:21 23:3 51:5 52:11, 12 66:2 81:13 November 6:24 36:9, 24 41:25 78:4 number 6:12 67:9, 11 69:11 78:23 NW 2:13 < O > Objection 7:18 8:10 10:7 11:16 12:18 13:14, 24 14:8 15:9, 18, 25 17:13 18:8, 17 19:2 20:10, 12 21:4 22:18 23:1, 10, 19 25:10, 17 26:16, 23 27:5, 13, 23 30:7 31:8, 22 36:5 37:3 38:25 39:20 42:4, 19 44:3	45:4 46:8 47:24 48:3, 22 49:10 50:15, 25 51:16 52:8 55:25 78:16 79:16 86:21 87:7 obtain 29:6, 13 obvious 36:19 80:8, 9 occupancy 51:20 occur 29:11 occurring 53:11 86:2 October 64:21 OFDM 5:23 6:2, 6, 8, 9, 16, 24 7:17, 20, 25 8:4, 9, 16, 22 9:1, 3, 5, 9, 14, 25 10:4, 6, 23, 24 11:15, 25 12:3, 13, 16 offer 9:15 offered 16:3 50:16 OFFICE 1:1 39:10 offices 1:18 Oh 24:10 49:20 56:8 63:13 64:6, 15 65:19 73:7 82:15 Okay 4:12, 23 5:2, 5, 9, 10, 13, 17, 19 6:1 8:18, 20, 25 9:21 10:3 11:12 14:25 15:1, 6 16:23 17:10
--	--	---	--

18:13 20:7, 15, 25 21:11, 14 22:4 23:25 24:5, 10, 12, 14, 15, 17, 19, 21, 22, 23 25:1, 6 26:10 28:2, 9, 25 29:12 30:3, 13, 14 31:10, 12 32:24 33:4 34:1 35:1, 12, 20, 21 36:8, 22 37:6, 15, 18, 22 38:1, 13, 17 39:7, 15 40:1, 4, 13 41:9, 11, 14 42:12, 14 43:1, 5, 7, 11, 14, 22 44:9, 21, 23 45:1, 12 46:11, 13, 16 47:4, 8, 12, 20 48:12, 25 49:2 50:1, 8 54:12, 14 55:14, 22 56:10, 16, 23 57:3, 5, 9, 16 58:8, 10, 11, 12, 14, 17, 19 59:16, 19 60:14, 19, 21, 23 61:1, 8, 23 62:21 63:4, 10, 13, 18 64:1, 2, 4, 12, 20, 24 65:5, 10, 15 66:1 67:6, 8, 12, 17, 22 68:3, 12, 14, 18, 22 69:7, 8, 18, 24 70:3, 6, 8, 13, 18 71:11, 18, 20, 25 72:4, 13, 18 73:20, 25	74:1, 6, 22 75:1, 2, 13, 15, 19, 24 76:1, 5, 17, 21 77:6, 11, 14, 17, 19, 20, 25 78:1, 2 79:6, 11, 21 80:5, 17, 25 81:3, 10, 22 82:4, 7, 10, 11, 16, 19 83:3, 4, 13, 14, 16, 24 84:5, 9, 12, 22 85:5, 16 86:14, 24 87:9 old 76:23 once 76:2 online 61:19 65:6 oops 62:14 open 4:21, 24 5:1, 8 24:2, 6, 11, 22 28:7 37:14 43:3, 11 49:1, 21, 22, 23 54:21 57:4 60:8, 20 61:22 62:15, 22, 24 63:12 68:8 73:2, 9 77:11 78:18 80:17, 18 82:1, 6, 11, 18 84:6, 20, 24, 25 opened 25:16 61:2 70:11 82:16 opens 66:19 operate 34:22 operating 17:6, 7 27:3, 12, 21 51:3 54:10	operation 28:21 73:15 operator 12:5 opinion 8:8 9:12, 15, 21 16:3 25:7 27:7, 16 31:24 34:23 36:7 37:5 41:13 42:5, 21 48:24 50:16 78:2, 3 opinions 87:4 opposed 79:8 opposite 6:22 option 45:25 74:19 options 44:7, 15, 18 45:5, 11 order 10:24 ordinary 7:21 8:5, 13 9:3, 6 10:5, 19, 22 11:5, 8, 10, 12, 21 12:15 13:2, 8 14:6, 10 18:13, 23 19:4, 14 36:2 78:3, 13 79:13 orthogonal 5:22 6:10, 13 outside 12:18 13:14 15:9 25:10 28:1 overall 11:3 overloading 17:4 over-the-air 27:21 Owner 1:10 2:12	< P > p.m 87:12 packet 40:20 50:19 51:2 52:19, 20 53:5, 15 54:1 packets 50:23 51:13 PAGE 3:3 37:17 38:14 40:2 43:12 44:23, 24 45:1, 12, 17, 23 46:15, 16, 18 55:7, 13 57:14, 16 58:4, 11, 20 59:22 60:4, 5, 9, 11 61:3, 9, 11, 14, 17 62:3, 13, 23, 24 63:1 64:10, 11, 12, 16, 22 65:12 66:19 68:1 69:13, 20 70:4, 7, 9, 20, 24 71:13 72:1, 5, 6, 15, 19 73:23 75:17 78:22 81:2, 5, 11, 12 82:2, 12, 18, 21 83:6, 8, 10, 18, 19 84:1, 7 pages 57:20 61:15 62:11, 14 70:25 PAN 38:10 39:12 papers 11:25 paragraph 24:12, 24 28:13, 15, 20 30:11, 14, 18, 24 31:10
--	--	--	---

33:8, 12, 15 35:20 36:25 38:14, 17 39:8 40:1, 5 41:20 42:17 46:17 48:8 50:22 51:4 55:16 62:2 65:12 86:13 parallel 41:7 Parkway 1:19 part 30:22 37:14, 23 45:22 50:3 particular 23:23 42:8, 24 74:7 particularly 62:19 80:10 parties 88:15 pass 85:6 passage 20:22 passages 11:13 PATENT 1:1, 2, 10 2:12 4:13, 14 5:1, 11, 17 6:3 7:16 8:18 9:1, 4, 13, 22 10:1, 11, 17, 22 11:4, 13 14:17, 20 17:11 18:5 22:15, 16, 22 23:7 25:7, 9, 14, 23 26:4, 7, 11, 14, 20 27:2, 20 37:19 39:23, 25 42:8, 10 47:9, 10 49:17 58:15, 16 patents 13:11, 22 14:4 22:23 23:8 25:16	27:11 36:21 37:24 patent's 10:3 path 41:7 78:11 paths 53:25 PDF 60:5 61:19 65:7, 9 74:20 76:3 81:2 people 11:6, 9, 20 perceive 52:24 perception 52:9 perform 9:1 78:8 performed 78:5 person 7:21 8:5, 13 9:2, 5 10:5, 19, 22 11:5, 10, 12 12:15 13:2, 8 14:9 18:19, 23 19:3, 13 36:2 78:13 79:12 person's 10:23 perspective 53:24 pertain 39:22 petition 56:12 Petitioners 1:7 2:4 phase 13:6 phone 8:9 20:4, 9, 17 21:2 22:25 23:11 38:5 physical 53:9, 18, 25 54:5 59:6, 7, 8, 9 60:13 picking 79:8	picture 20:2, 19 33:23 piece 29:18 63:16 Piper 1:18 2:3 73:18 place 80:13 88:12 places 79:3 Player 35:6 85:18 please 4:24 5:1, 8, 18 8:19 14:17 19:16 21:12 24:4, 13, 18 28:8, 14 31:11 34:25 43:2 46:12 47:7, 17 49:1, 18 54:13 55:13 56:9 57:3, 4 64:3 70:2, 17 71:19 72:12 73:2, 10 74:14, 22 75:14, 18, 25 76:4, 11 82:13 83:2, 12, 23 84:21 85:15 86:5, 12 plus 84:15 point 16:5 39:10 42:23 51:9 67:3, 4, 5, 11 78:15 79:7 80:4, 10 pointing 66:25 67:1 pop 65:2 Portrait 74:20	POSITA 6:5, 23 7:16 8:8 9:13 37:2 position 79:18 possible 31:1 Post 76:7 potential 16:10 17:1 18:6 54:7 power 22:24 23:4, 5, 6 practice 9:13 preliminary 79:5 81:21 present 60:12 presented 81:15 presses 29:4 preview 74:17 previously 14:3 primarily 86:20 print 74:17 prior 16:11, 15 42:7, 10 88:5 priority 36:20 probably 39:5 61:9 66:21 71:4 77:2 problem 66:3, 17, 23 73:17 problems 8:15 12:7 proceeding 9:19 10:14 37:14 43:3 proceedings 28:18 69:2 85:2 process 13:20 31:14, 16, 21 32:2 53:12 processing 19:18, 20 22:1
---	---	---	---

32:20 products 17:5, 8 Professional 1:17 88:4, 20 profiles 86:16 project 11:24 12:2, 9 proof 12:14 protocol 36:9 41:18 51:8, 10 53:8, 18, 22 59:9 protocols 35:25 37:1 51:15 prototype 12:13 provide 4:9 5:14 26:21 provided 10:17 30:19 55:2 provides 15:2 providing 11:24 Public 1:16 4:3 88:3, 21 publication 47:10 55:11 published 8:17 48:13 55:8 pull 56:6, 14 57:13 purpose 49:14 purposes 23:23 36:17 pursuant 1:21 put 65:2 79:17 puzzle 63:16 < Q > QAM 12:24, 25 13:3, 12, 23 14:5, 13 48:9, 20 59:17, 20	QPSK 13:5, 6, 9, 12, 23 14:5, 13 59:12, 13, 15, 20 quadrature 12:25 quality 34:9 quaternary 13:6 question 10:14 11:1 13:16 15:12 16:18 17:16 25:19 26:5 27:8 39:23 42:25 47:18 66:4 85:18 questioned 9:19 12:8 questions 11:19 18:21 22:22 39:24 85:10 quick 71:6 quickly 52:4 74:7 79:8 quite 28:5 70:5 78:10 < R > R1-47 76:8 radio 8:9 10:4 11:14 12:4, 5, 6 15:16, 21, 22 20:11 21:1, 2 22:2, 8 25:25 29:6, 12, 19 30:6 31:7 35:7 47:13, 14, 22 48:1 49:7, 8, 12, 14 50:3, 4, 9, 11, 12, 13, 14 53:4, 6, 9 54:8, 9	55:17, 24 60:6 85:19 radios 15:15 16:13, 20, 25 17:12, 24 18:14 22:4, 12, 17, 25 23:12 35:13 43:18, 20 47:14 54:7 rate 15:7, 17 38:18 46:19 47:1 51:19, 20 rates 34:10 ratios 34:2 read 11:13 31:18 56:3 64:25 84:17 reader 28:21 29:5 reading 16:2 20:13 really 32:5, 9 34:21 42:21 44:4, 5 re-ask 47:18 reason 5:14 15:14 42:14, 15 48:19 51:1 reasonable 51:1 reasons 14:2 27:25 recall 23:18 59:24 74:4 85:9, 17 receive 17:4 39:9 46:4 48:2 received 29:19 30:5 receiver 6:21 20:21 receivers 17:9	receiving 20:2, 18 35:6 85:18 reception 21:21, 23 recess 37:11 recite 9:9 recognize 7:21 25:19 45:22 recollection 57:21 59:2 record 5:25 37:9, 10 45:15 54:17, 18 58:22, 24 60:16, 17 84:18 87:11 recruited 11:9 refer 4:13, 14 20:19 23:16 28:10 57:11 60:22 reference 8:4 21:17 28:11, 14 29:22 30:9 49:4 57:24 58:13 59:25 67:10 86:10 referenced 12:17 references 7:20 9:7, 25 16:11, 15 17:20 referencing 59:1 referred 7:14 21:6 23:21 28:17 56:11 81:6 referring 33:9 36:14 39:1 86:19 refers 39:8 45:13
---	---	---	---

refresh 59:2 refreshed 57:21 regard 16:16 regarding 22:24 27:3 Registered 1:17 88:4, 20 regulatory 23:9, 14 related 4:22 relative 34:15 88:14, 16 relatively 51:21 relay 39:11 relevant 36:17 39:23 relies 10:23 rely 9:5 12:22 14:6 79:3 remember 15:11, 13 16:4, 7 17:14 18:12 22:19 29:10, 14 36:13 40:15, 21, 23 41:1, 6, 16 55:4, 6 57:10 69:10 70:6 86:10 remote 39:12 rename 77:21, 23 repair 45:19 46:6 repairing 46:1 report 13:18 14:2 17:15 22:20 27:18 31:24 35:17 48:24 Reporter 1:16, 18 88:3, 4, 20	reproduced 61:14 required 26:21 27:21 38:19 39:3, 17 requirements 22:24 23:6, 14, 15 research 9:6 67:19 resolve 58:7 responding 54:16 response 27:24 restart 86:6 revealed 44:20 REVIEW 1:3 79:2 RF 30:23 31:1 35:14 RFID 28:21 29:1, 5, 16 30:15 31:14 right 5:5 6:5 17:19 21:3, 15, 25 22:9 24:1, 11 25:1 28:2, 13 30:17 32:15 33:10 35:2 37:17 41:21 44:14 45:12 46:7, 11, 17 47:5, 10, 19 49:23 50:18 56:12 57:6 58:1, 11, 21 59:22 60:7, 15, 22 61:8 63:5, 6, 7, 8, 15 64:3, 5, 8, 22 65:4, 25 68:3, 14, 16, 18,	22 69:4, 5, 18 71:21 73:20 74:16 75:2, 8, 16, 20 76:2, 6, 14 80:6, 22 81:23 82:5, 16 83:17, 25 84:5, 8, 19, 23 85:4 right-hand 29:2 68:15 risks 27:3, 11 Robin 53:2 roll 64:24 84:14 Rooyen 47:9, 12, 21 48:8, 12, 21 Round 53:2 routine 32:21, 25 routinely 14:11 row 75:5, 20 76:7 79:24 84:13 run 37:7 < S > SAMSUNG 1:6 SAQIB 2:15 satellite 7:3 save 74:19, 22 75:17 76:3 83:12 saw 42:12 61:2 saying 54:2, 5 64:18 says 29:9 39:1, 3, 21 43:20 44:5, 6, 9, 16 45:5 48:11 60:12 66:19 68:19 70:15 71:22 74:7	75:9 81:13, 19 86:15 scale 52:16 scheduled 52:19 scheduler 50:20 schedules 50:18 scheduling 50:23 51:2 54:1 scheme 14:22 15:1, 3, 8, 15, 16 19:1 46:20, 23 47:2 53:2 schemes 14:22 59:10 scope 12:19 13:15 15:10 25:11, 17 26:16, 23 27:5, 17, 23 28:1 31:22 36:5 38:25 39:20 42:4, 19 48:22 51:16 52:8 60:9, 11 80:14 Scratch 15:22 17:18 screen 72:14 scroll 5:7, 18 8:19 14:18, 19 19:15 21:11 24:24 26:6 28:13, 24 30:1 38:8, 13 40:1 57:14 72:10 scrolling 61:8 search 19:7 23:15 30:10 58:5 59:12 63:15 searchable 9:23
--	--	---	--

58:5 searching 32:12 second 15:3, 4 17:3 25:2 46:19 47:1 51:20 55:15 56:23 58:23 73:7 75:9, 20 84:11 section 18:12 20:14 21:10 46:18 57:17 74:10 86:18 see 4:21 5:20, 23, 24 8:21 9:7 15:5 16:3 17:20 18:10 19:8, 19 20:1, 5, 16, 20, 22 21:17, 21 22:1 24:5 25:2, 3, 4 26:4, 11, 17 28:6, 14, 20 29:1, 9 30:1, 8, 9, 14, 16 31:13, 19 33:7, 18 35:4, 19, 22, 25 36:12 37:19 38:1, 2, 6, 7, 8, 11, 12, 21 39:14, 21 40:3, 11, 12 43:15 44:5, 7, 9, 15, 18 45:11, 13, 21, 25 46:21 50:2, 6, 7 51:11, 12 52:14, 18 54:5 55:9, 15, 20 57:15, 24 58:8, 12 59:23 61:10, 12, 20, 21 62:5 63:5 64:2, 4, 17 66:16, 19	67:10, 13 68:8, 14, 18, 20 69:20, 22 70:14 71:1, 5, 9, 22 73:3 74:11 75:2, 5, 11, 20 76:7, 9, 21, 24 80:15 82:24 83:6 84:11 86:15 seeing 29:14 seen 33:21, 23, 24 39:5 62:10 66:23 78:17 segment 54:10 select 43:25 44:6, 9, 16, 19 selecting 32:12 selection 43:15 selects 43:17 44:1, 6, 17 sending 35:8 85:20 86:11 senior 11:23 sense 25:19, 21 53:20 sent 45:8 sentence 5:20, 23 8:21 30:18 31:13 39:7 51:4 55:15 74:11 separate 24:6 47:22 49:8, 14 September 38:2 42:13 series 6:17 29:10 74:8 75:3, 10 80:6, 11 server 71:7, 12, 14 74:2 79:9	servers 26:21 services 17:9 session 31:15, 17, 21 32:2 54:3 set 11:7 88:12 sets 55:17, 24 setup 31:15 shift 13:6 Short 1:19 39:11 shortens 31:14 shown 50:20 59:11, 14, 19 shows 22:7 86:2 SIDDQUI 2:15 3:5 7:18 8:10 10:7 11:16 12:18 13:14, 24 14:8 15:9, 18, 25 17:13 18:8, 17 19:2 20:10, 12 21:4 22:18 23:1, 10, 19 25:10, 17 26:16, 23 27:5, 13, 23 30:7 31:8, 22 36:5 37:3 38:25 39:20 42:4, 19 44:3 45:4 46:8 47:24 48:3, 22 49:10 50:15, 25 51:16 52:8 55:25 63:20, 22, 24 64:13 76:19, 23 78:16 79:16 85:7, 8 87:10 side 45:12 63:6 sign 73:18	signal 6:17, 19 19:17, 20, 24 22:1 signals 20:1, 18 similar 12:6 simply 9:1 10:22 simultaneous 52:10, 17, 25 53:3, 23, 25 85:24 simultaneously 6:13 16:21 35:8 51:9, 15 52:1, 5 54:3, 6 85:20 86:3 single 49:11, 15, 16 sinusoidally- modulated 6:18 sit 15:12 16:7 six 22:12 skill 7:21 8:13 9:3, 5, 6 10:5, 18, 19, 22, 23 11:5, 7, 8, 10, 12, 14, 21 12:15 13:2, 8 14:7, 10 18:13, 23 19:4, 14 36:3 78:4, 13 79:13 skim 57:20 skimmed 39:5 skip 37:17 slowly 64:25 smaller 34:12 snapshot 67:2, 4 software 45:24 solve 8:16 sorry 5:13 15:22 19:22
---	--	--	--

20:13 45:14 49:20 56:24 57:5 65:18 71:22 80:1 86:6 sound 11:19 18:21 sounds 10:25 13:16 16:17 27:8 source 26:14, 18 space 73:14 Spec 56:12 74:7, 8 79:8 81:7 specialized 23:17, 21 25:3, 9, 14 specific 32:20 36:13 42:21, 23 62:11 75:3 specifically 25:19 35:24 42:11 57:10 66:25 70:6 78:20 80:2 specification 9:12, 25 10:17 11:3 16:3 18:10, 19 21:8, 10 29:9 81:24 83:23 84:15 Specifications 70:15 71:6, 12, 14 74:2 79:9, 20 specifics 7:20 14:15 specs 78:15 specs.HTM 73:24	speculation 11:17 15:19 79:16 speech 51:24 speed 40:20 spinning 82:15 spot 24:16 ssiddiqui@mayer brown.com 2:17 stage 7:10 stages 81:16 stand 26:2 standard 7:2, 4, 5, 15 12:17, 21, 23 40:24 standards 6:23 7:6, 9 40:7, 14, 16 41:23 42:1, 6, 9, 16, 18, 21 48:15, 19 79:1 stands 12:25 13:6 40:15 41:17 60:5 star 63:4, 5, 6, 17, 20, 24, 25 start 45:16 50:10 starts 78:24 State 1:17 4:3 14:5 60:11 88:3, 21 stated 14:3 statement 36:25 56:2 71:6 STATES 1:1 5:20 8:21 9:1 19:23 31:14 35:22 38:18 39:15 40:5 41:22 45:2, 18 50:2 51:5	55:16 62:2 75:21 station 19:24 20:3 39:9 40:6 status 80:15 stay 56:6 staying 81:4 stenographic 1:13 stenographically 88:11 stereo 35:9 85:21 stop 56:24 stream 38:24 39:9, 11 streaming 35:14 39:19 52:13 Street 2:5, 13 strike 46:24 structure 58:10 students 11:23 19:10 subfolder 24:2 subject 62:19 75:3 79:5 subscriber 8:2 suggested 12:2 suggesting 66:18 suggests 49:16 66:20 Suite 1:19 2:5 sum 21:8 supersede 87:5 supervised 11:9, 20, 23 support 35:24 36:25 supported 59:11, 13	supporting 38:19 39:2, 16 53:22 supports 29:19 31:5 48:5, 9 sure 28:5 29:21, 24 33:24 34:20 58:14, 17 62:14 67:20 78:8 82:22 surfing 52:13 suspect 42:8 sworn 4:2 88:6 system 8:16 12:7, 13 17:2, 3 23:22 25:14, 20 27:4, 12, 22 35:9, 23 47:13 85:21 systems 7:12 8:6 12:1 < T > Table 58:8 73:11 74:9 75:3, 21 76:6, 7 79:23, 24 80:4 tabs 24:6 49:24 tag 28:21 29:5 take 84:16 taken 1:15 37:11 88:11 talk 27:2 53:17 talking 21:18 45:24 52:16 talks 19:25 20:2 26:25 32:3 Tanya 61:6 target 30:23 31:5 32:13
--	--	---	---

taught 11:9 14:11 19:10, 11 48:21 teach 7:16 22:23 23:8 26:20 36:2 37:1 teaches 48:18 teaching 10:4 23:13, 22 41:25 42:17 technique 8:7 techniques 7:23 14:11, 13 technology 7:22 8:5 83:15 Tee 37:19, 22 38:5, 14, 23 39:6, 18 40:2 42:7, 8, 9, 12, 16 59:24 Telephone 19:20 22:1 television 7:2 19:17, 21 35:8 85:20 tell 59:13 77:6 telling 32:7 43:24 68:9 80:16 tells 10:22 32:16 68:7 term 16:19 terminal 31:16, 20 39:8 terms 11:2 terrestrial 7:2 60:5 testified 4:4 87:2 testify 88:7	testimony 4:9 5:15 88:10 Texas 2:6 text 9:22 71:5, 12 Thank 6:1 19:22 85:7 theorizing 67:14 theory 14:12 thing 51:17 66:15 80:13 81:23 things 19:11 21:20 32:22, 25 67:7 think 8:1 15:14 16:6, 8 17:17 20:22 21:6 23:6 24:1, 7, 15 33:23 34:22 35:17 36:7 40:22, 25 51:25 57:1 60:9 66:25 70:7 73:16 76:23 78:22 third 45:13, 18 50:4 thought 49:21 three 63:6, 17 throughput 38:20 39:3, 17 time 6:2, 20 7:7 17:1, 6, 7 31:15 42:23 52:2, 15, 18, 21, 25 60:10 67:1, 3, 4 68:2 76:24 84:16 87:12 88:11	timing 36:13 title 66:17 today 4:8 5:15 87:3 top 37:17 65:3 70:15 total 21:8 touching 18:21 traced 78:11 TRADEMARK 1:1 traffic 50:20 51:24 transceiver 35:23 38:9, 10, 18, 24 39:2, 10, 13, 16, 19 transceivers 25:25 TRANSCRIPT 1:13 88:10 transfer 32:13 transferred 45:6 transform 6:19 transmission 14:22 15:7, 17 30:12, 15 40:17 51:22 53:11, 14 transmissions 50:19 52:18 transmit 15:24 48:2 52:22, 23 86:8 transmits 53:1 transmitted 6:12, 21 19:24 20:3 52:2, 15 transmitter 17:2 53:13 transmitters 17:6, 7	transmitting 16:21 52:20 53:5, 12 transport 59:7 TRIAL 1:2 true 55:22 56:1, 3 62:7 88:10 truth 88:7, 8 trying 43:5 62:15 78:19 TS36.211 75:22 81:12 TSG 81:16 turn 31:10 34:24 44:23 47:17 49:6, 18 50:22 59:22 60:9 85:15 86:12 turning 25:6 41:19 50:8 two 4:9 10:1 16:25 17:5, 6 24:6 30:15 44:12, 17 51:15, 25 52:5 54:7 55:17, 23 73:3 76:17, 21 type 18:25 37:16 40:18 46:15 81:1 types 30:4 typically 6:16 < U > UG_EN 65:9 umbrella 40:25 UMTS 41:2, 3, 4, 8 43:18, 21 44:7, 12 59:6, 9, 11, 14, 19 60:5
--	--	---	--

undergraduate 14:11	83:5, 17, 20 84:1, 3, 12, 14, 17	version 62:18 66:10, 18, 21, 22 67:15, 22 69:1, 14 76:8 77:20 78:19, 21, 23, 24, 25 79:14 81:6, 13, 14, 17, 19	Well 6:25 7:13 9:4, 21 10:25 11:18 12:20 16:14, 25 18:18, 23 23:2 25:18 30:8 32:11, 16 36:8, 16, 20 39:1 40:14 42:7, 15 44:4 48:12 49:3, 11 50:22 51:17, 21 57:15 59:10, 12 62:21 66:13, 14 67:23 69:25 70:14 71:3 78:2, 7, 17 82:14
undergraduates 12:12	URTA 79:25	versions 46:24	went 76:19
underneath 32:7 74:6	usage 51:5	versus 34:19	we're 21:18 24:1 56:8 58:3, 17 64:10 68:3, 22 80:20
understand 4:8 8:14 9:18 11:4 14:14 16:11 19:4, 5, 7 21:9 33:22 36:16 80:10	use 6:18 8:6 9:4 10:4, 23 11:25 12:5, 9 19:9 29:6 34:7 37:2 44:10 63:3 74:9 80:16	video 7:1 15:2 33:16 35:7, 8, 15 38:19, 24 39:3, 9, 11, 17, 19 52:13 85:19, 20 86:9, 11	we've 10:1 11:22 28:17 81:6 85:1
understanding 10:12, 13, 18 11:6 15:6 16:23 18:18 19:13 20:7 29:15 34:3 50:21	user 23:22, 23 25:20 29:4 31:25 32:3, 5, 6, 7, 8, 11, 12, 16, 21, 22, 24, 25 35:2 43:4, 17, 24 44:1, 18 45:2, 17 46:3 52:9, 24 66:7, 10 67:11, 22 68:23	voice 20:1, 18	White 80:23 84:7
undue 10:6	user's 53:24	vs 1:8	widest 35:24 37:1
UNITED 1:1	usually 37:8	< W >	Wi-Fi 7:4, 5 54:9
unusual 32:19	UTRA 60:13 75:4 79:24 80:1, 3	WAN 38:9	Wikipedia 61:2, 10, 11, 17 62:3, 11, 19, 23, 25 64:2, 22 66:15, 24 67:3 68:1
update 26:12, 15, 18 27:22 45:19 46:6	UTRAN 40:8, 13, 15 42:2 59:23, 24 60:2, 5	want 16:11 17:21 57:13, 20 58:5, 17 62:15 76:24 81:1	windows 24:6 63:3
updated 46:10	< V >	Washington 2:14	wireless 7:9 40:7, 17 51:23 52:14 53:13
updates 26:21	V2.0 84:15	water 37:8	wish 87:1
updating 27:1, 3, 12 46:1	value 74:20	way 6:14 23:24 24:5 26:4 37:7 58:16 62:14, 17 65:21 67:23 78:11 80:3	
upper 21:25 29:2 35:2 45:1 46:14 63:5, 7, 8 68:15	van 47:9, 12, 21 48:8, 12, 21	web 64:6, 9, 21 65:7 66:17 67:2, 5 70:4, 23, 24 73:23 82:15 83:10	
upstream 40:23	various 21:7, 17, 19 40:16, 17 62:13 81:16	website 52:13 66:16 68:4, 11 82:14	
URL 62:3 64:9 65:1, 2, 12 67:14 68:12 69:15, 20, 22 70:9, 19, 20 71:22, 25 72:1, 14, 15 82:12, 19	verify 62:17 64:8		

WITNESS 3:3 37:7 63:21, 23, 25 85:6 WLAN 38:9 39:10 49:7 50:9, 11, 19 51:10 52:6, 21 53:6 54:9 WLAN/BT 49:12 word 5:25 23:20 73:3 76:17 85:24 words 74:14 worked 79:19 working 8:16 written 11:25 wrong 10:13 24:16 www.3GPP.org- /FTP/specs 71:23 < X > X.Y.Z 81:15 xEV-DO 40:8 xEV-DV 40:8 XI01992 88:22 XviD 33:17, 22 < Y > Yeah 10:9 15:11 16:8 19:12 21:13 36:24 40:22 45:25 47:17 49:21, 25 56:9 57:3, 13 58:1, 19 61:1 63:19 64:18 66:4 70:6, 11 71:15	73:13 76:13 77:24 79:17 83:11 Yep 80:24 < Z > Zeif 60:23 61:3, 6, 9, 15 64:10, 12, 16 69:19 70:10, 20, 25 72:1, 6, 16, 20 82:1, 13, 22 83:5, 9, 18 84:2 Z-E-I-F 60:23 ZIP 72:25 76:12, 15 77:7, 9, 22 84:20		
---	--	--	--