

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

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

Petitioners,
-against-
APEX BEAM TECHNOLOGIES, INC.,

Patent Owner.

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Case: IPR2023-00598
U.S. Patent No. 10,462,767

- - -

REMOTE PROCEEDING
NOVEMBER 21, 2023
10:14 A.M.

ORAL DEPOSITION OF
HARRY V. BIMS

REPORTED BY:
DANIELLE GRANT
JOB NO.: 6312439

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NOVEMBER 21, 2023

10:14 a.m.

Remote Deposition of HARRY V.
BIMS, held remotely with all parties appearing
from their respective locations, pursuant to
Notice before DANIELLE GRANT, a Stenographic
Reporter and Notary Public of the State of New
York.

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

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1 HARRY V. BIMS

2 H A R R Y V. B I M S, called as a witness,
3 having been first duly sworn by
4 Danielle Grant, a Notary Public within
5 and for the State of New York, was
6 examined and testified as follows:

7 DIRECT EXAMINATION BY

8 MR. PYMENTO:

9 Q Good morning, Dr. Bims.

10 Could you state please state your
11 full name for the record?

12 A Yes. It's Harry Vaughn Bims.

13 Q So I'm Julian Pymonto, counsel for
14 Apex Beam Technologies, LLC, in this
15 proceeding. I'll be taking your deposition
16 today.

17 Have you had your deposition taken
18 before?

19 A Yes.

20 Q How many times about?

21 A Roughly 50 times.

22 Q And were each of these 50 prior
23 depositions in the context of inter partes
24 reviews?

25 A Some of them were, but not all of

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HARRY V. BIMS

them.

Q Approximately what is the split between, I guess, district court proceedings and IPRs?

A Let's see. I would say, between district court, the ITC and IPRs, I would say that IPRs, maybe a half dozen or so IPRs.

Q And generally what technology were you deposed in those IPRs?

A Let's see. I don't recall the individual IPRs. It's been awhile since I've been deposed in an IPR proceeding. But generally speaking, my depositions cover wireless technology ranging from two-way paging to Bluetooth; Wi-Fi; 3GPP technologies such as CDMA or 3G LTE or 4G as well as 5G technology; and also some digital subscriber line as well as DOCSIS, which is the digital cable standard.

Q I'll just go over the ground rules pretty quickly then since you're pretty experienced with depositions. So basically I'll be asking questions; you'll be giving

1 HARRY V. BIMS

2 answers.

3 Do you understand that?

4 A Yes.

5 Q You are required to answer my
6 questions truthfully and fully. If you
7 don't understand my question, maybe I'm
8 speaking too fast or it's just not clear,
9 just ask me to rephrase it and I will be
10 happy to do so.

11 Do you understand that?

12 A Yes.

13 Q And if you do provide me with an
14 answer, I'm going to assume that you
15 understood my question.

16 Do you understand that?

17 A Yes.

18 Q One thing is that, of course, I do
19 need verbal answers, so no head nods or
20 uh-huhs or -- that doesn't really so up well
21 on the record for the court reporter.

22 So is that understood?

23 A Yes.

24 Q Also, I try generally to take
25 breaks about once an hour. But if you want

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HARRY V. BIMS

to take a break at any time prior to me calling a break, you know, withing the hour, please let me know. I'm happy to go off the record either for a bathroom break or get a cup of coffee. The only thing I do request is that if there is a question pending, let's just get an answer to that question on the record before we take the break.

Do you understand that?

A Yes.

Q Dr. Bims, is there any reason you can't testify truthfully today?

A No.

Q Have you taken any drugs or alcohol that could impair your ability to think today?

A No.

Q Where are you located right now physically?

A In the law offices of Finnegan in Washington, DC.

Q Is there anyone in the room with you?

A Yes.

1 HARRY V. BIMS

2 Q Who is in the room with you?

3 A Oh, Joshua Goldberg and Chen Zang,
4 attorneys for Finnegan.

5 Q If that changes, meaning the
6 people in the room, would you please let me
7 know?

8 A Yes.

9 Q Dr. Bims, what programs do you
10 currently have running on your computer
11 aside from the Zoom meeting?

12 A There is Adobe Acrobat.

13 Q Anything else?

14 A No.

15 Q Okay. Great. Do you have
16 physical paper copies of any documents in
17 front of you?

18 A No, but we can get a binder with
19 documents, paper documents, if that's -- if
20 that's required.

21 Q Okay. I mean, that's fine.
22 Hopefully, the court reporter will, you
23 know, stick the thing up on the screen and
24 that might suffice. But, of course, if
25 there is an issue with, you know, seeing

1 HARRY V. BIMS
2 things then, yeah, I would be fine with
3 that. And, you know, it's great. My
4 preference would be if you could close your
5 Internet browser, obviously with the
6 exception of the Zoom conference, which it
7 seems that you have done already, so that's
8 totally fine. I'm just going to read off
9 all the exhibits now just for convenience.

10 MR. PYMENTO: So the first
11 document is going to be Exhibit 1 to
12 this IPR, which is the subject patent
13 in this proceeding, U.S. Patent
14 Number 10462767. Exhibit 2 is going to
15 be your declaration that was submitted
16 in this IPR 2023-598. Exhibit 3 is
17 International --

18 MR. GOLDBERG: Counsel, just --
19 the board prefers that you use the
20 existing exhibit numbers so that the
21 record is clearer, unless you are using
22 new exhibits. We can --

23 (Cross talk.)

24 MR. PYMENTO: That's totally fine.

25 MR. GOLDBERG: -- at the moment,

1 HARRY V. BIMS

2 but it will just make things more
3 confusing later.

4 MR. PYMENTO: Yeah. I'm fine with
5 that. Exhibit 1 is going to be --
6 well, let's say Exhibit 1002 is going
7 to be Exhibit 1 in the -- you know, in
8 the record. Exhibit 1001 is going to
9 be Exhibit 2 -- or actually that's the
10 opposite. Let's see.

11 (Discussion off the record.)

12 MR. PYMENTO: So Exhibit 1 is
13 going to be the subject patent, which
14 is the '767 Patent. Exhibit 2 is going
15 to be the Dr. Bims' declaration that
16 was submitted in this proceeding.
17 Exhibit 3 is going to be International
18 Patent Application Publication
19 Number 2017/052199, which we will call
20 "You;" it's Y-O-U. Exhibit 4 is
21 International Patent Application
22 Publication Number 2018-126401, which
23 we will call "Liu," L-I-U. Exhibit 5
24 is International Patent Application
25 Publication Number 2016-136143 which we

HARRY V. BIMS

will call "Mallick." And last we have
the Institution Decision Paper
Number 10 in this proceeding, which
will be Exhibit 6.

(Whereupon, the Declaration of Harry
Bims was marked as Deposition
Exhibit No. 1 for identification, as
of this date.)

(Whereupon, U.S. Paten No.
10,462,767 was marked as Deposition
Exhibit No. 2 for identification, as
of this date.)

(Whereupon, Exhibit No. 1005
WO2017-052199 You was marked as
Deposition Exhibit No. 3 for
identification, as of this date.)

(Whereupon, Exhibit No. 1006
WO2018-126401 Liu was marked as
Deposition Exhibit No. 4 for
identification, as of this date.)

(Whereupon, Exhibit No. 1007 U.S.
Patent No. WO 2016-136143 Mallick
was marked as Deposition Exhibit No.
5 for identification, as of this

HARRY V. BIMS

date.)

(Whereupon, 20230914 Paper No. 10
PTAB Decision Granting Institution
of IPR was marked as Deposition
Exhibit No. 6 for identification, as
of this date.)

Q Dr. Bims could please open your
declaration in the proceedings, which is
Exhibit 2?

A Okay. It's open.

Q Sitting here today, do you believe
that you considered any other materials
aside from the documents cited in this
declaration?

A Sitting here today, no, I have not
reviewed any other documents in the writing
of the declaration.

Q And Exhibit 6, which is the
decision granting institution in this
proceeding was granted by the patent office
after you submitted your declaration.

Have you reviewed that decision?

A Subsequent to submitting my
declaration, I have looked at a copy of the

1 HARRY V. BIMS

2 institution's decision.

3 Q About how much time did you spend
4 preparing for this deposition?

5 A I have been preparing for this
6 deposition for about a week and a half.

7 Q Approximately how many hours in
8 that week and a half have you been preparing
9 for the deposition?

10 A It's hard to say. I have been
11 working on a number of cases in the past
12 week and a half. This is one of them. So I
13 have been working off and on, over that
14 ten-day period roughly, to prepare for
15 today's deposition. I don't have the exact
16 number of hours committed to memory during
17 that time frame, but I put in enough hours
18 to be prepared.

19 Q Would you say maybe somewhere
20 between 10 and 20 hours; is that fair? Or
21 more than that?

22 A Maybe -- it may be reasonable to
23 consider that as a range given the amount of
24 material. I can't say for sure, but it may
25 be okay.

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HARRY V. BIMS

Q When do you first recall being involved in this case?

A So I was retained for this case a little more than a year ago.

Q About how much time did you spend preparing the declaration, Exhibit 2 in this case?

A So the preparation time spent on the declaration stretched over quite a period of time because, as I mentioned earlier, I have been working on other litigations at the same time as this one. But I would say, from the period in which I was first retained until now, that I have, during that period, off and on, done work related to this litigation. So I would say that the time that I spent reviewing materials, analyzing materials, developing expert opinions and writing those down in the declaration spanned -- you know, it's the better part of a year, so it's hard for me to give you an accurate number.

Q Would you say it was more than 50 hours?

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HARRY V. BIMS

A I would have to double-check. I did put in, you know, enough work to review all of the materials considered and develop my opinions, so I can't really give you a firm number, although I would say that, you know, probably more than 50 hours is probably appropriate.

Q Closer to 50 or closer to a hundred?

A Oh, I'm not sure what the top end number would be, but I would probably say that, as a minimum, at least 50 hours.

Q Dr. Bims, aside from your counsel at Finnegan, did you communicate with anyone else about your deposition today?

A So I mentioned to an IT person that I was having a deposition today.

Q An IT person that was employed by who?

A Finnegan.

Q Did you communicate with anyone at Samsung directly about your deposition today?

A No.)

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HARRY V. BIMS

Q Have you corresponded with Samsung prior to today unrelated to the deposition?

A No.

Q Aside from your attorneys at Finnegan, was anyone else involved in the preparation of your declaration in this action?

A No.

Q Aside from the '767 Patent, which is the patent owned by Apex Beam.

Could you tell me how the prior art documents were located in this proceeding?

A You said how they were located?

Q Yes.

A The prior art documents were made available to me on a server, and I have them on a computer listed by exhibit number. That's where they're located.

Q Yeah. So let me -- let me rephrase that.

Did you personally conduct a search to determine these prior art documents; You, Liu, and Mallick?

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HARRY V. BIMS

A I did not personally conduct a search to discover those prior art references.

Q Did counsel provide you those references prior to drafting your declaration?

A Yes.

Q I would like to talk about your background a little bit. Your CV was attached to your declaration as Exhibit A. That's going to be in, let's see, your declaration, PDF page 156.

A Okay.

Q And on the bottom of the following page, which is PDF page 157, the bottom of that page says "last update December 23, 2022," correct?

A Yes.

Q Do you mind just taking a look at your CV and letting me know if you still think the CV is accurate?

A As of December 23, 2022, this CV looks accurate.

Q Would you have any additions to

1 HARRY V. BIMS

2 the employment history since that time?

3 A No.

4 Q And this December 23, 2022 date,
5 is that the date approximately when you
6 first got involved in this case?

7 A I believed I was retained in this
8 matter prior December 23, 2022.

9 Q And it was specifically for this
10 IPR proceeding that you were retained.

11 A Yes.

12 Q I'm just going to go quickly
13 through each of the positions on the
14 employment history section, and I'll ask you
15 a couple of questions about that. So the
16 first entry under employment history is:
17 CEO and CTO and founder of AirFlow Networks,
18 Inc., LLC.

19 Is the technology related to that
20 position related to 5G technology?

21 A I would say they are related, yes.

22 Q How so?

23 A Through the technology that I
24 developed at Airflow Networks was based on a
25 wireless local area network protocol called

1 HARRY V. BIMS

2 IEEE 802.11, which is commonly referred to
3 as Wi-Fi. The technology was aimed at
4 campus deployments of wireless local area,
5 the networks to provide wireless coverage
6 for consumer electronic devices.

7 5G technology is also developed for
8 use in wireless local area network contexts
9 for delivery of wireless communications with
10 consumer electronic devices. And in so
11 doing, there is overlap in the physical layer
12 and MAC layer technologies implemented in
13 both the Wi-Fi network technology developed
14 at Airflow Networks and the 5G technology at
15 the physical and MAC layers.

16 Q The next entry is:
17 Entrepreneurial residence at Bay Partners,
18 LLC.

19 The same question: Is the
20 technology in that position or related to
21 that position also regarding 5G technology?

22 A The technology related to that
23 position covered a wide variety of start-up
24 companies because my role in that position
25 was to evaluate various wireless start-up

1 HARRY V. BIMS

2 technology in the Bay area including
3 cellular technology as well as Wi-Fi
4 technology.

5 Q The same question for the next
6 entry which is the director of software
7 architecture at Symmetry Communications
8 Systems LLC is that technology related to 5G
9 at that position?

10 A So the technology in that position
11 was developed based on the GPRS protocol,
12 which is commonly known as the 2.5G
13 technology. And as such, this technology at
14 Symmetry Communications was the precursor to
15 what has ultimately become 5G technology.

16 Q And the next entry, member of
17 technical staff at T-SPAN Systems
18 Corporation LLC is the technology for that
19 position related to 5G?

20 A I would say yes because at T-SPAN
21 Systems we were evaluating wireless
22 protocols such as the IEEE 802.11a
23 technology, which is a OFDM-based wireless
24 local area network protocol, and as such,
25 there are technology overlaps between the

1 HARRY V. BIMS

2 technology at T-SPAN Systems and 5G systems
3 in the physical layer.

4 Q And the same question for the next
5 position, member of technical staff, senior
6 member of technical staff, manager of NOC
7 systems at Glenayre Technologies-Wireless
8 Access Group, is the technology there
9 related to 5G?

10 A So the correct pronunciation is
11 Glenayre Technologies. So the technology
12 there was a 2-way paging system developed by
13 Motorola. And given that in 5G technology
14 it encompasses the ability to transmit and
15 receive paging messages. And at Glenayre
16 Technologies the 2-way protocol developed by
17 Motorola had the express purpose of
18 delivering paging messages, I would say that
19 this technology does relate to 5G.

20 Q As CEO of CUPP Cybersecurity LLC,
21 did that technology relate to 5G?

22 A I would say at that position the
23 technology does not relate to 5G.

24 Q And for the next position, the
25 founder of BoughtStuff, Inc., did that

1 HARRY V. BIMS

2 technology relate to 5G.

3 A I would say that the BoughtStuff,
4 Inc., technology did not relate to 5G.

5 Q Thank you. Let's turn to
6 paragraph 94 of your declaration. It's
7 still Exhibit 2.

8 A Okay.

9 Q Do you see where it says: A
10 person of ordinary skill in the art
11 pertinent to the '767 patent (April 19,
12 2017) would have had at least a master's
13 degree in electrical engineering or related
14 field and five years of work/research
15 experience in the field of wireless
16 networking?

17 A You said that was page 94?

18 Q Paragraph 94. Sorry.

19 A Okay. Can you repeat the
20 question.

21 Q Sure. Do you see your description
22 of a person of ordinary skill in the art,
23 and it says: A person of ordinary skill in
24 the art would have had at least a master's
25 degree in electrical engineering or a

1 HARRY V. BIMS

2 related field and 5 years of work/research
3 experience in the field of wireless
4 networking?

5 A I see that, yes.

6 Q Is it safe to say that you well
7 exceed the qualification of a POSITA
8 according to your definition?

9 A At the time of the '767 patent of
10 April 19, 2017, I would say that I would
11 qualify as a person of ordinary skill in the
12 art under this definition.

13 Q Did you draft this section
14 yourself?

15 A This paragraph in my report was
16 created in consultation with the attorneys.

17 Q So in consultation with the
18 attorneys, you drafted this definition of a
19 person of ordinary skill in the art?

20 A Yes.

21 Q What is the basis for this
22 understanding of a person of ordinary skill
23 in the art?

24 A The basis is the materials
25 considered in my expert declaration given

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HARRY V. BIMS

the level of technical complexity in those documents and my experience about the level of expertise required as of April of 2017 to be able to be a person of ordinary skill in the art. Based on that analysis and in consultation with attorneys, I came up with this standard.

MR. PYMENTO: I think now would actually be a good time -- I know it's a little earlier than the one-hour mark, but I think it would be a good time to take a ten-minute break if that's okay with you.

THE WITNESS: That's fine.

(Whereupon, at 10:50 a.m., a recess was taken to 11:02 a.m.)

(The proceeding resumed with all parties present.)

Q Dr. Bims, could you turn to Exhibit 1, which is the '767 patent, and we'll scroll down to Claim 1, which is on PDF page 20.

A Okay.

Q Do you see the part of the claim

1 HARRY V. BIMS

2 that says: Wherein X is a positive integer?

3 A Yes.

4 Q What is your understanding of the
5 term "positive"?

6 A So you're asking that as a general
7 matter?

8 Q Right. Just like what is --
9 (Cross talk.)

10 A Not related to the '767 but just a
11 general question.

12 Q Well, if there is a distinction,
13 I'll ask about both, then.

14 So what is your understanding in a
15 general sense about the term positive?

16 A In a general sense, the term
17 "positive" can have a variety of meanings
18 depending on context. For example, the word
19 "positive" can be used in a sentence to
20 describe the mood of a person. The word
21 "positive" can also be used to describe the
22 voltage being positive or negative. The
23 word "positive" can also be used in a
24 mathematical context to describe a range of
25 numbers. Those are at least three that come

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HARRY V. BIMS

to mind.

Q What is your general understanding of the term or phrase "positive integer"?

A So the term positive integer is typically used in a mathematical sense to refer to a range of numbers.

Q And what would those range of numbers be?

A So typically the range of numbers that are considered to be positive would be numbers that are integer numbers that are of the value one or greater.

Q Does that understanding of the phrase "positive integer" change in the context of the '767 patent?

A So in the context of the '767 patent, I think we have to review the entirety of the specification, which includes multiple embodiments, and in particular what we're looking at is a claim. And as I understand it, the claim scope is not necessarily limited to a particular embodiment or limited to what is expressly disclosed in the specification.

1 HARRY V. BIMS

2 So a person of ordinary skill in
3 the art, looking at the term "positive
4 integer" in the context of Claim 1 would have
5 to rely on their understanding of the
6 entirety of the specification as well as
7 their own understanding as a person of
8 ordinary skill in the art to properly
9 understand the context in which the term
10 "positive integer" is used in the claim and
11 thereby understand it's range.

12 Q So as a person of ordinary skill
13 in the art, based on this specification that
14 you have reviewed, is five a positive
15 integer.

16 A So in the context of Claim 1, a
17 positive integer could be the number five.

18 Q Can two in the context of this
19 claim language be a positive integer?

20 A In the context of Claim 1, the
21 number two could be a positive integer.

22 Q Could zero be a positive integer
23 in the context of Claim 1?

24 A In the context of Claim 1, the
25 number zero would not be a positive integer.

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HARRY V. BIMS

Q In the context of Claim 1, would one be a positive integer?

A So in the context of Claim 1, the number one is not a positive integer.

Q Why not?

A Well, again, a person of ordinary skill in the art would read the entirety of Claim 1 to understand the context in which Claim 1 describes that X is a positive integer, and that entirety of Claim 1 includes other claim limitations such as, for example, monitoring a first signaling in X time intervals.

Q And how does that phrase indicate that X cannot be one?

A So a person of ordinary skill in the art, reviewing Claim 1 and in particular the claim limitation monitoring a first signaling in X time intervals, would apply a plain and ordinary meaning to X time intervals to conclude that X is describing more than one time interval.

Q Is it your testimony that aside from the '767 patent, one is a positive

1 HARRY V. BIMS

2 integer, but in the context of the '767
3 patent, one is not a positive integer; is
4 that your testimony?

5 A No. That mischaracterizes what
6 I'm saying. What I'm saying is that in the
7 context of Claim 1, a person of ordinary
8 skill would understand that X is greater
9 than one based on the reading of the
10 entirety of Claim 1.

11 Q Yeah, I guess what I'm trying to
12 get at is what exactly in Claim 1 would a
13 POSITA say: You know what, that precludes
14 one being a positive integer in the context
15 of this claim?

16 A As I mentioned earlier in the
17 context of Claim 1, one of the claim
18 limitations is monitoring a first signaling
19 in X time intervals, where the word
20 "intervals" is a plural form meaning more
21 than one. So that would tell a person of
22 ordinary skill according to the plain
23 reading of that claim term that X is not
24 one.

25 Scrolling further down in Claim 1,

HARRY V. BIMS

it says X is a positive integer, which provides additional context to the value of X that even though it is greater than one, it is also a positive integer greater than one.

Q So is it your testimony that a person of ordinary skill in the art reading Claim 1 would see the plural, "intervals," and assume that there are more than one time interval?

A Well, again, my testimony is that when a person of ordinary skill in the art reads that claim limitation, monitoring a first signaling in X time intervals, they would not have to assume. They would simply rely on the plain reading of that phrase to understand that the claim is talking about more than one time interval.

Q And as a person of ordinary skill in the art, if it said -- scratch that.

As a person of ordinary skill in the art, would you read that there could be one time interval if it said monitoring a first signaling -- I don't know. Scratch that as well.

1 HARRY V. BIMS

2 Is there any reading of it, of
3 this claim limitation, monitoring a first
4 signaling in X time intervals where you
5 could read in one time interval?

6 A Well, again, as I have said
7 earlier, the plain reading of the claim by a
8 person of ordinary skill in the art would
9 lead them to the conclusion that time
10 intervals, plural, refers to more than one
11 time interval.

12 Q So in order to read in one time
13 interval, a person of ordinary skill in the
14 art would have to see a bracket around the
15 "s"; is that your testimony?

16 MR. GOLDBERG: Objection to form.

17 A No, that is not my testimony. My
18 previous testimony did not mention anything
19 about brackets.

20 Q If I put brackets around the "s,"
21 would a person of ordinary skill in the art
22 interpret that to include one time interval
23 as a positive integer?

24 MR. GOLDBERG: Objection to form.

25 A So that's a hypothetical situation

1 HARRY V. BIMS

2 that I haven't considered. I considered
3 Claim 1 the way it is currently written.

4 Q Right. I understand. I'm asking
5 you to consider it now.

6 MR. GOLDBERG: Repeat the
7 objection.

8 A So you want to modify Claim 1?

9 Q I am saying if it was modified in
10 that way, how would you interpret it?

11 A Well, if there were a different
12 claim as part of the '767 patent that I'm
13 asked to review, then I would have to
14 consider that claim, having read the
15 specification, and then apply what a person
16 of ordinary skill in the art would
17 understand about that claim if that claim
18 was presented to me for analysis.

19 Q And having read the specification
20 as you have, is there any embodiment in the
21 specification that precludes one time
22 interval?

23 MR. GOLDBERG: Objection. Scope.

24 A I would have to go back and take a
25 look at the specification -- it's like 20 --

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HARRY V. BIMS

was it 22 columns long -- to look for the
evidence that would allow me to answer that
question.

Q Let's turn to your declaration
paragraph?

A Okay. I am there.

MR. PYMENTO: I think I lost
sound.

THE WITNESS: Hello. Hello.

Can you hear me? No?

Uh-oh.

COURT REPORTER: All right. Why
don't we go off the record until he
regains his sound?

(Whereupon, at 11:17 a.m., a recess
was taken to 11:19 a.m.)

(The proceeding resumed with all
parties present.)

Q Dr. Bims, are you at paragraph 125
of your declaration?

A I'll scroll down. Okay. I am
there.

Q Do you see in the green
highlighting "X time intervals"?

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HARRY V. BIMS

A Yes.

Q And then subsequently in the paragraph, you map X time intervals to one or more downlink subframes.

Do you see that?

A Yes.

Q Is it still your testimony that X time intervals is disclosed by You's one or more downlink subframes.

A Yes.

(Whereupon, the court reporter requested clarification.)

Q Does this contradict what you said before about there not being one subframe or one time interval as X time intervals?

A No.

Q Could you explain that?

A As I mentioned earlier, a person of ordinary skill in the art reviewing Claim 1 would have the understanding that X time intervals in the context of Claim 1 refers to a positive integer that is greater than one. In paragraph 125, I provide a disclosure of the inventor, You's, patent,

1 HARRY V. BIMS

2 in which in that particular patent, the user
3 equipment is monitoring paging MPDCCHs in
4 one or more downlink subframes of a paging
5 occasion, which means that the You Patent
6 discloses more than one downlink subframe in
7 which the user equipment is monitoring
8 paging MPDCCH.

9 Q So is it your testimony that
10 really it's two or more downlink subframes
11 in You that discloses the claimed X time
12 intervals?

13 A No. That is not what I had stated
14 earlier. What I stated earlier is that, in
15 You, it discloses that the user equipment
16 can monitor paging CCH in one or more
17 downlink subframes of a paging occasion,
18 which means You also discloses, in that same
19 disclosure, more than one downlink subframe
20 in which the user equipment is monitoring a
21 paging MPDCCH.

22 Q So I understand that you may be
23 disclosing more than one downlink subframes.
24 What I'm trying to get at is the whole green
25 highlights here that apparently is mapping

1 HARRY V. BIMS

2 to X time intervals is one or more downlink
3 subframes, and I'm asking -- I mean, it's
4 not really clear to me.

5 But are you saying it's the more
6 downlink subframes excluding the one that is
7 X time intervals?

8 A So what I'm saying is that You's
9 disclosure of one or more downlink subframes
10 satisfies the claim limitation of X time
11 intervals, because the claim limitation for
12 X time intervals requires more than one time
13 interval. And in You, there is the
14 disclosure of monitoring in more than one
15 time interval. Because in You, it discloses
16 one or more downlink subframes that are
17 monitored.

18 Q Right. And the flip side of that
19 appears to be that You also discloses one
20 downlink subframe or, more clearly, paging
21 MPDCCH in one downlink subframe.

22 But that instance is precluded in
23 your opinion from X time intervals, correct?

24 MR. GOLDBERG: Objection. Form.

25 A Certainly, Liu discloses many

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HARRY V. BIMS

things that are not encapsulated within the scope of Claim 1, one of them being monitoring one downlink subframe as a paging location.

Q Okay. Thank you.

What is your understanding of the time interval generally?

A Generally speaking, without the limitations of the '767 patent, the term "time interval" refers to a range of time.

Q And in your opinion, that could be any range of time, correct?

A Without any context, the term "time interval" is generally understood to be a particular range of time.

Q When you say "generally understood," you're referring to the understanding that a person of skill in the art would have?

A No. I'm referring to a common understanding of time interval, even by persons who are not of ordinary skill in the art.

Q Would a person of ordinary skill

1 HARRY V. BIMS

2 in the art have a different understanding of
3 the term "time interval" than a non-person
4 of skill in the art.

5 A I would say that a person of
6 ordinary skill in the art would have a
7 different understanding of time interval
8 when they are reviewing Claim 1.

9 Q And as a person of ordinary skill
10 in the art yourself, what is your
11 understanding of the term "time interval" in
12 the context of Claim 1?

13 A So in the context of Claim 1, time
14 intervals are called "X time intervals" and
15 X time intervals, within the context of
16 Claim 1 -- if I can go back and review
17 Claim 1 -- the X time intervals, for
18 example, are determined using at least one
19 of location of the first subband in
20 frequency domain subcarrier spacing of
21 subcarriers included in the first subband.

22 Q So that is the claim language
23 itself, correct?

24 A That is the claim language itself
25 that a person of ordinary skill in the art

1 HARRY V. BIMS

2 would consider in understanding what an
3 X time interval is within the scope of
4 Claim 1.

5 Q Is there any type of qualitative
6 differentiation that a person of ordinary
7 skill in the art would apply to the term
8 "time interval"?

9 A In the '767 patent, that are
10 many -- there are -- there are many claims
11 associated with that patent. And in various
12 claims, there are claim limitations
13 referring to X time intervals, Y time
14 intervals, Z time intervals. So depending
15 on the claim, there are different types of
16 time intervals.

17 Q So in the context of Claim 1, a
18 person of ordinary skill in the art would
19 not have a different interpretation than a
20 non-person of skill in the art is that
21 correct?

22 MR. GOLDBERG: Objection. Form.
23 And scope.

24 A So as I've mentioned before, a
25 person -- the general understanding of a

HARRY V. BIMS

time interval by people who may not be persons of ordinary skill in the art is that a time interval is simply a range of time. But in the context of the Claim 1, a time interval is, for example, determined based upon at least one of location of the first subband and frequency domain and subcarrier spacing of subcarriers included in the first subband, which replaces a limitation on time intervals.

Q But a non-person of skill in the art would read that same thing, correct.

MR. GOLDBERG: Repeat the objections.

A A non-person of ordinary skill in the art would not review Claim 1 with the same level of understanding as a person of ordinary skill in the art.

Q And what additional understanding would a person of skill in the art have as to specifically the term "time interval" notwithstanding the fact that there is limiting claim language?

MR. GOLDBERG: Objection. Form

1 HARRY V. BIMS

2 and scope.

3 A So a person of ordinary skill in
4 the art would not only rely on the
5 particular wording in Claim 1 or particular
6 wording in the specification and file
7 history, but would also rely on their
8 understanding as a person of ordinary skill
9 in the art that has been acquired based upon
10 their level of skill derived from the fact
11 that a person of ordinary skill in the art
12 has at least a master's degree and five
13 years of work experience.

14 Q Is "time interval" a term of art?

15 MR. GOLDBERG: Objection. Scope.

16 A In what context?

17 Q Does it have a specific meaning to
18 a person who has a master's degree and five
19 years of work experience?

20 MR. GOLDBERG: Objection. Form
21 and scope.

22 A A person of ordinary skill in the
23 art with a master's degree and five years of
24 work experience would apply that skill to
25 understand what X time intervals means in

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HARRY V. BIMS

the context of Claim 1. And that's been what my testimony has been about, not whether the term "time interval" has a particular meaning to a person of ordinary skill.

Q As a person of ordinary skill in the art, what does "time interval" mean to you in the context of this claim and notwithstanding the fact that there is limiting claim language?

MR. GOLDBERG: Objection. Scope. Form.

A So you -- so you want me to provide an opinion on time interval in the scope of Claim 1 without considering certain claim limitations in Claim 1?

Q No, not exactly. I just want your understanding of the term "time interval" without incorporating, within the definition of time interval or your definition or your opinion of what time interval's definition should be, the claim language itself.

MR. GOLDBERG: Repeat the objections.

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A So the understanding a person of ordinary skill in the art would have regarding X time intervals within the scope of Claim 1 would be based on the full context of Claim 1. So it's hard for me to answer that question not considering parts of Claim 1.

Q So -- okay. So just to clarify, I'm not saying you don't have to consider the rest of Claim 1.

I just wanted what is your definition of time interval?

That's all I'm trying to get at.

MR. GOLDBERG: Objection. Scope and form.

A So as a general matter, not within the scope of Claim 1, a time interval would be a range of time.

Q So is it your testimony that a range and interval mean the same thing in this context?

MR. GOLDBERG: Objection. Scope and form.

A No.

1 HARRY V. BIMS

2 Q Okay. So then please help me sort
3 of differentiate them in the context of
4 Claim 1.

5 A In the context of Claim 1, the
6 terms that is used is "X time intervals,"
7 not "time interval."

8 Q Okay. What is your understanding
9 of the term "time intervals"?

10 MR. GOLDBERG: Objection. Scope
11 and form.

12 A Well, to consider an understanding
13 of time intervals, I would have to answer
14 outside the context of Claim 1 since Claim 1
15 refers to "X time interval."

16 Q I -- okay. I'm fine with that.

17 (Discussion off the record.)

18 Q Let me just get an answer to this
19 question.

20 MR. ZANG: There is no pending
21 question.

22 MR. PYMENTO: No. Because he
23 said: I would have to answer outside
24 the context of Claim 1.

25 So I said, Okay, I'm fine with him

1 HARRY V. BIMS
2 answering outside of context of
3 Claim 1.

4 MR. GOLDBERG: Repeat the
5 objections.

6 A And so the pending question is
7 what?

8 Can you repeat that?

9 Q What is your understanding of
10 "time intervals"?

11 A Okay. So --

12 MR. GOLDBERG: Repeat the
13 objections.

14 A Okay. So the term "time
15 intervals" would have an understanding
16 outside the scope of Claim 1 to mean more
17 than one range of time.

18 MR. PYMENTO: All right. We can
19 take a break.

20 (Whereupon, at 11:40 a.m., a recess
21 was taken to 11:52 a.m.)

22 (The proceeding resumed with all
23 parties present.)

24 Q So Dr. Bims, let's keep on
25 paragraph 125 of your declaration, the same

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sentence we were discussing, which is: You discloses that the UE monitors a paging MPDCCH in one or more downlink subframes of a paging occasion.

Do you see that?

A Yes.

Q Is it your testimony that You's subframes disclosed the claim time intervals?

A It's my testimony that You discloses an example -- hello?

It is my opinion that You discloses an example of the X time intervals in Claim 1.

Q Okay. And that example, which is highlighted in green front, is one of more downlink subframes, correct?

A In the example in You of one or more downlink subframes, there is the disclosure of the X time frames in Claim 1.

Q The X time interval, correct?

A X time intervals in Claim 1, yes.

Q Okay. In other words You's subframes is being equated to time interval,

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2 right? Claim time intervals?

3 A That's not what I am saying. What
4 I'm saying is that the disclosure in use of
5 one or more downlink subframes includes
6 within that example the X time intervals of
7 Claim 1.

8 Q Okay. You're going to have to
9 sort of explain that to me.

10 So the subframes are an example of
11 time intervals? Am I understanding that
12 correctly?

13 A The subframes disclosed in You
14 that are used by the user equipment to
15 monitor paging MPDCCHs include within that
16 disclosure as an example the X time
17 intervals of Claim 1.

18 Q So the downlink subframes include
19 time intervals or are time intervals, which
20 one is it?

21 A The downlink subframes in the You
22 reference are used in this context to
23 monitor the paging MPDCCHs. And in that
24 context, one or more of them is used as part
25 of the paging occasion. And one or more

1 HARRY V. BIMS

2 downlink subframes of a paging occasion
3 discloses that the You reference includes
4 the X time intervals of Claim 1.

5 Q Okay. In your declaration -- I'm
6 just going to ask a pretty simple
7 question -- you know, you see how X time
8 intervals are highlighted in green or and
9 the one or more downlink subframes are
10 highlighted in green, and then the first
11 signaling is highlighted in blue, and the
12 paging MPDCCH is also highlighted in blue?
13 Can you explain the similarity in colors;
14 what is that supposed to represent?

15 A That's representing the fact that
16 in the You prior art reference, the paging
17 MPDCCH is an example of first signaling as
18 described in Claim 1 and one or more
19 downlink subframes as described in You in
20 relation to monitoring those paging MPDCCHs
21 includes within it, as an example, the
22 X time intervals of Claim 1.

23 Q So is it your opinion that the
24 subframes include a time interval?

25 A It's my opinion that when You

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refers to one or more downlink subframes of a paging occasion, included within that disclosure is the X time intervals of Claim 1.

Q Except that really, based on what you testified before, it's really not one or more downlink subframes that you're asserting; it's two or more downlink subframes, correct?

MR. GOLDBERG: Objection. Form.

A The disclosure within You of one or more downlink subframes of a paging occasion includes within that disclosure more than one subframe of the paging occasion.

Q And are each of those subframes a time interval in your opinion?

A In the You reference, the downlink subframes are the X time intervals when we're talking about more than one downlink subframe of a paging occasion.

Q Okay. Do the one or more downlink subframes in You have a fixed time line?

MR. GOLDBERG: Objection. Scope.

1 HARRY V. BIMS

2 Q Dr. Bims, I wanted to check, you
3 are a still reviewing You, right?

4 A Yes, I am reviewing You. In
5 particular, we're looking at paragraph 185
6 of You but also looking at other paragraphs
7 in You in reference to the one or more
8 downlink subframes in which the user
9 equipment is monitoring an MPDCCH.

10 So what paragraph 185 in You states
11 is that -- and I believe paragraph 185
12 through 187 and paragraph 199 were the
13 citations that I pointed to and referenced to
14 my opinion in paragraph 125 of my
15 declaration, which is why I'm looking at, for
16 example, paragraph 185.

17 So in paragraph 185, it says that:
18 Each search space within an interval where a
19 UE monitors MPDCCH (CSS and/or USS) may be
20 configured over one or more consecutive or
21 nonconsecutive downlink subframes. That is,
22 a search space for reception of the same
23 MPDCCH may be configured in each of one or
24 more downlink subframes.

25 And then it goes on to provide more

HARRY V. BIMS

explanation of these search spaces in which in paragraph 186, referring to Figure 8, the coverage enhancement can have a repetition level, for example, that equals one.

And then it goes on in paragraph 187 to talk about how the MPDCCH may be transmitted by being repeated once or multiple times. So this, in combination with paragraph 199, which says that: A paging occasion may be defined as an interval where a UE monitors a paging MPDCCH, and it goes on to further talk about the search spaces.

And a person of ordinary skill reading these paragraphs in You would understand that the subframes that You describes as being part of the search space that is monitored by the user equipment make up the time interval within which a UE would monitor an MPDCCH. In other words, a single MPDCCH can comprise one or more subframes. And You also describes that there can be one or more MPDCCHs in a paging occasion.

So putting those two together, an MPDCCH can have one or more subframes. And

HARRY V. BIMS

there can be more than one MPDCCH -- one or more MPDCCH in a paging occasion. And referring back to paragraph 125, I say that You discloses that the UE is monitoring the paging MPDCCH in one or more downlink subframes, which as I just described is disclosed in You, meaning that the monitoring of the paging MPDCCH is not restricted within You to a single fixed time interval.

Q Okay. Do the one or more downlink subframes in You have a fixed time line?

MR. GOLDBERG: Objection. Scope and form.

A To a person of ordinary skill, one or more subframes means that the time interval is not fixed.

Q Does each subframe have a fixed time line in You?

MR. GOLDBERG: Objection. Scope and form.

Q I think maybe it would be more helpful if I point you to paragraph 52 of You beginning with "Referring to Figure 1."

Specifically, do you see where it

1 HARRY V. BIMS

2 says: Each subframe is one millisecond long
3 and is further divided into two slots?

4 A Yes, I saw that embodiment, but
5 I'm just looking through You in its
6 entirety.

7 Q Okay. And just to be clear, I'm
8 not saying that each subframe -- I am not
9 asking if each subframe has to be
10 1 millisecond.

11 I'm just asking if each subframe
12 has a fixed time line?

13 MR. GOLDBERG: Objection. Scope
14 and form.

15 A It looks as though in You it
16 discloses a range of time for a subframe
17 that -- in the embodiment that you mentioned
18 is one millisecond.

19 Q In general would a person of
20 ordinary skill in the art understand
21 subframes to have a fixed time line?

22 MR. GOLDBERG: Objection. Scope.

23 A As a general matter across
24 wireless communications technologies, a
25 subframe is not necessarily fixed in

1 HARRY V. BIMS

2 duration.

3 Q Yeah, so not generally across all
4 systems for all time.

5 For a specific system, would a
6 person of ordinary skill in the art
7 understand subframes to have a fixed time
8 line?

9 MR. GOLDBERG: Objection. Scope.

10 A It depends on the system.

11 Q Would a person of ordinary skill
12 in the art find the system of You to have
13 subframes with a fixed time line?

14 A So within You there is the
15 embodiment that You mentioned in which
16 subframes have a length of one millisecond.

17 Q Okay. Let's take an example of
18 You's downlink subframes where each has a
19 fixed length of one millisecond.

20 So if two paging messages are
21 transmitted within the subframe with two
22 different subcarrier spacings, would the UE
23 detect to paging messages at two different
24 times?

25 MR. GOLDBERG: Objection. Scope

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HARRY V. BIMS

and form.

A I'm trying to contemplate your example. So you're saying within a subframe does You disclose multiple subframe spacings.

Q No, I'm posing a hypothetical. So You's downlink subframes, let's just say, has a fixed link of one millisecond.

(Whereupon, the court reporter requested clarification.)

Q Yeah, I'm posing a hypothetical. And in this hypothetical, You's downlink subframes have a fixed length of one millisecond.

Now, I'm sending two paging messages. One paging message is transmitted over such a subframe with a fixed length of one millisecond, and it has a certain subcarrier spacing. I also send another paging message over another subframe, which also has a fixed length of one millisecond. And that one has a different subcarrier spacing than the first paging message.

Would the UE detect the paging

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HARRY V. BIMS

messages at two different times within that same subframe?

COURT REPORTER: That same subframe?

MR. PYMENTO: Yes.

A So what I describe in my declaration is when a person of ordinary skill in the art combines You with the Liu reference which discloses a DCI configuration parameter specifying subcarrier spacings that in that combination, then, the system would allow for different UEs to receive a -- a PDCCH with different subcarrier spacings as specified by the DCI configuration parameter when you combine You with Liu.

Q Okay. And so for the question would the UE detect the paging messages at two different times? First in the system of You alone and then second in the system, which you just described, where you allege You can be combined with You [sic]?

MR. GOLDBERG: Objection. Scope.

A So let me think: Let me go back

HARRY V. BIMS

to what is in my declaration regarding whether or not You alone discloses more than one subcarrier spacing in the subframe containing the MPDCCH.

So in reference to paragraphs 139 through 144 in my declaration, I describe the specifying of subcarrier spacings in the combination of You in view of Liu but not You alone. So to do an analysis of You alone would require some effort with respect to this issue because, in my opinion, You in view of Liu teaches this limitation. And I have not formed an opinion on whether You by itself teaches this limitation.

Q I get you. But that's not exactly my question.

My question is this hypothetical where I'm sending two messages within the subframe that we discussed which has a fixed length of one millisecond, and the two different messages have different subcarrier spacings.

Would the UE detect the paging messages at two different times, either in

1 HARRY V. BIMS

2 the system of You or in the system of You
3 combined with Liu?

4 MR. GOLDBERG: Objection. Scope
5 and form.

6 A So when you say "at two different
7 times," would those two different times be
8 in the same frequency or not?

9 Q All else being the same, the only
10 thing being different is the subcarrier
11 spacings.

12 MR. GOLDBERG: Repeat the
13 objections.

14 A Right. But you mentioned the
15 subcarrier spacings would be different in
16 different times within the subframe. And so
17 my question is, at those different times,
18 would the UE monitor the same frequency or
19 different frequencies in this hypothetical?

20 Q Same.

21 MR. GOLDBERG: Repeat the
22 objections again.

23 A It depends.

24 Q What does it depend on?

25 A So in this hypothetical, a UE that

1 HARRY V. BIMS

2 is looking for a scheduling message in a
3 control channel with a particular subframe
4 spacing would have to be instructed to
5 receive only that portion of the subframe
6 that was transmitted with the particular
7 subframe spacing, which means that the
8 scheduling of the MPDCCH would not be
9 limited to just a subframe but only a
10 particular portion of a subframe.

11 And that would also mean that there
12 would be some technology to communicate to
13 the UE which portion of the subframe should
14 be monitored, which is not something that You
15 talks about. It talks about subframes but
16 not portions of a subframe such as on a
17 slot-by-slot basis.

18 Q In your opinion, the slot is a
19 portion of a subframe, correct?

20 A A slot can be a portion of a
21 subframe.

22 Q Is there a scenario where a slot
23 is not a portion of a subframe in either You
24 or Liu?

25 A So in the context of You, it

1 HARRY V. BIMS

2 describes two slots in a subframe.

3 Q This is another hypothetical. If
4 two paging messages are transmitted within
5 the subframe with the fixed length of one
6 millisecond but the two paging messages have
7 two different symbol lengths, would the UE
8 detect the paging messages at different
9 times within that subframe, relatively
10 speaking?

11 MR. GOLDBERG: Objection. Scope
12 and form.

13 A So in this hypothetical in which
14 we're describing paging control and
15 scheduling in only particular portions of a
16 subframe and not a search space that is the
17 entirety of a subframe, but a search space
18 that is only a portion of a subframe, which
19 is not something expressly disclosed in You
20 but is possible if you were to be combined
21 with other art such as Liu. But just
22 focusing on You by itself, You is not
23 expressly teaching that a UE should search
24 through only a particular portion of a
25 subframe.

1 HARRY V. BIMS

2 Q Could you explain to me why it is
3 that in this hypothetical the system of You
4 requires searching only a portion of the
5 subframe?

6 A So you mentioned that different
7 portions of a subframe in your hypothetical
8 would have different symbol lengths, which
9 is not something expressly disclosed in you.
10 So this hypothetical is outside the context
11 of You.

12 Nonetheless, for your hypothetical
13 the UE would have to understand which portion
14 of the subframe that it should search.
15 Because if it searches in the wrong portion
16 of the subframe, it would -- it would look
17 for the incorrect subcarrier spacing to be
18 present. And in that scenario of your
19 hypothetical, the UE would not receive the
20 control message.

21 Q Okay. I think I see some -- I
22 think I see that this method -- maybe I'll
23 rephrase my question.

24 So two paging messages are
25 separately transmitted within separate

1 HARRY V. BIMS

2 subframes. Each of the separate subframes
3 are basically the same. They have a fixed
4 length of one millisecond. The two paging
5 messages have two different symbol time
6 lines. That's the only difference between
7 these two signals -- two paging messages
8 that are being transmitted within the two
9 basically equivalent subframes.

10 Would each of the UEs detect the
11 paging messages at different times?

12 MR. GOLDBERG: Objection. Form.
13 And scope.

14 A So in your hypothetical, the 2 UEs
15 are searching through different subframes
16 that are -- have a fixed time interval that
17 is not overlapping. I think that is what
18 your hypothetical is saying.

19 Q Yes. It's two different UEs, two
20 different subframes, but the subframes are
21 basically equal to each other.

22 MR. GOLDBERG: Repeat the
23 objections.

24 A So the -- you said the subframes
25 are equal to each other.

1 HARRY V. BIMS

2 Are you saying the subframes are
3 the same or the subframes are different
4 subframes with different 1 millisecond ranges
5 of time?

6 Q Different subframes, same lengths
7 of 1 millisecond.

8 MR. GOLDBERG: Repeat the
9 objections again.

10 Q Okay. So if those subframes are
11 non-overlapping in time, then the UEs that
12 are receiving in different subframes would
13 be receiving search spaces in different
14 times because the subframes are related to
15 different time intervals.

16 Could you please turn to
17 paragraph 176 of Exhibit 3?

18 That's You. Let when you've
19 reached there.

20 A Okay. I am there.

21 Q Do you see, in paragraph 176, the
22 term "PRB"?

23 A I see the term "PRBs" plural yes.

24 Q I'll represent to you that a You
25 PRB stands for physical resource block, so

1 HARRY V. BIMS

2 therefore PRBs would be physical resource
3 blocks.

4 What is your understanding of the
5 term "physical resource block or blocks"?

6 A You mean within the context of
7 You?

8 Q Yes.

9 A So in You, for example, in
10 Figure 2, it shows a figure of resource
11 blocks, which are time-frequency resources
12 within a slot.

13 Q So is your testimony that the term
14 "PRB, physical resource block" is referring
15 to time and frequency resources within a
16 slot.

17 A So You does not expressly say
18 that. What I'm point out is that there is a
19 figure in You that shows a resource block
20 within a slot, and that resource block is
21 defined within a slot. And slots have a
22 time duration. But within a slot, a
23 resource block is allocated across a range
24 of frequencies and, as such, a resource
25 block in Figure 2 can be described in a

1 HARRY V. BIMS

2 combination of time and frequency.

3 Q Referring back to paragraph 176,
4 do you see the term "MTC"?

5 A Yes.

6 Q I will represent to you here that
7 You describes MTC as machine-type
8 communication.

9 What is your understanding of the
10 term "machine-type communication" in the
11 context of You?

12 A So in the context of this
13 paragraph, the term "MTC" is used in context
14 with Figure 6, which is an example of MTC
15 signals. And as we can see from Figure 6,
16 there is a 6A and 6B. And in 6A there are
17 signals transmitted within a subband.

18 Q Right. So my question is maybe a
19 little bit simpler, right?

20 What is your understanding of that
21 term "MTC," though?

22 What does that mean?

23 A Oh, MTC -- the term "MTC" is used
24 throughout You often alongside other terms
25 such as EDCCH or PDSCH, or UE, all of these

1 HARRY V. BIMS

2 terms coming from the 3GPP standards, given
3 that a person of ordinary skill would
4 reasonably believe that the term "MTC" also
5 comes from the 3GPP standards, which
6 describe machine-type communications or MTC.

7 Q And sticking with paragraph 176,
8 do you see the language which says: At this
9 time, a subband, parentheses, narrow band,
10 for operating the MTC UE may always be
11 located at the center, e.g., six center
12 PRBs, of a cell as shown in Figure 6A.

13 Could you explain your
14 understanding of what that phrase means?

15 A This phrase is describing the
16 current understanding of an MTC, in which,
17 within a subband, an MTC can be located
18 within a range of frequencies in a cell
19 coverage area of a base station.

20 Q What does the phrase mean when it
21 says "six center PRBs"?

22 A So the six center PRBs is an
23 example of the MTC UE operating in a subband
24 and, as an example, the six center PRBs
25 defines a range of contiguous frequencies.

1 HARRY V. BIMS

2 Q And in Figure 6A, the MTC UE, or
3 the subband for operating the MTC UE is at
4 the center shown in Figure 6A?

5 A So Figure 6A shows a subband
6 called the MTC subband and as one example of
7 a single subband.

8 Q And what is the purpose of this
9 subband?

10 A The purpose of the PD -- of the
11 subband in paragraph 176 is to allow the
12 base station to transmit a PDCCH to the UE.

13 Q And what is the basis for that
14 understanding?

15 A For example, in paragraph 174, it
16 says: When considering the usage of the
17 MTC UE, therefore if the e node B, or base
18 station transmits a PDCCH, a PDSCH, et
19 cetera, to the MTC UE using the same scheme
20 as a scheme of transmitting the PDCCH, the
21 PDSCH, et cetera, to the legacy UE, the
22 MTC UE has difficulty in receiving the
23 PDCCH, the PDSCH, et cetera. So therefore
24 the proposed invention of transmitting in a
25 subband is for enhancing the base station's

1 HARRY V. BIMS

2 ability to transmit a PDCCH to a UE.

3 Q Coming to the next phrase in
4 paragraph 176, do you see where it says:
5 Several subbands for MTC may be provided for
6 one subframe to multiplex MTC UEs, as shown
7 in Figure 6B, whereby the UEs may use their
8 respective subbands different from each
9 other, or the UEs use the same subband, not
10 the subband of six center PRBs.

11 Do you see that?

12 A Yes.

13 Q So let's try and break this up.

14 Could you explain your
15 understanding of the phrase "one subframe to
16 multiplex MTC UEs"?

17 A That means that, within one
18 subframe, there can be more than one MTC UE
19 that receives the PDCCH and/or PDSCH
20 transmissions from a base station.

21 Q And when paragraph 176 says
22 "Whereby the UEs may use their respective
23 subbands different from each other," do you
24 understand that to mean that multiple UEs in
25 You each have different subbands from each

1 HARRY V. BIMS

2 other?

3 A So in the middle of this fairly
4 long sentence, the phrase "may use their
5 respective subbands different from each
6 other" refers to different subbands within a
7 subframe.

8 Q And additionally, does it mean
9 that multiple UEs are mapped to each of
10 these different subbands?

11 MR. GOLDBERG: Objection. Form.

12 A What this indicates is that the
13 respective subbands used by the UE are
14 different from each other. It's not clear,
15 in this particular phrase in the middle of
16 this fairly long sentence, is indicating
17 that the different subbands are not at least
18 partially overlapping.

19 Q And then after the "or" in that
20 same phrase in paragraph 176, it says: Or
21 the UEs use the same subband, not the
22 subband of six center PRBs.

23 Do you understand that to mean
24 that multiple UEs in You can use the same
25 subband and not the subband that was

1 HARRY V. BIMS

2 displayed in Figure 6A?

3 MR. GOLDBERG: Objection. Form.

4 A What this portion of this fairly
5 long sentence is conveying to a person of
6 ordinary skill is that Figure 6B is
7 different than Figure 6A because, in
8 Figure 6A, they give an example, within the
9 scope of Figure 6A, in which there could be
10 six center PRBs for a subband. And what the
11 sentence is saying is that, in Figure 6B,
12 this is not necessarily true because 6B is
13 different than 6A.

14 Q I'm sorry.

15 How -- so could you explain
16 further how it is different than Figure 6A
17 based on this phrase?

18 A Well, when the phrase says "use
19 the same subband, not the subband of six
20 center PRBs," that term "six center PRBs" is
21 repeated as an example within the scope of
22 6A. So it's indicating that 6B is different
23 than 6A.

24 Q And is it implying that multiple
25 UEs can use the same subband, just not

1 HARRY V. BIMS
2 necessarily the subband displayed in
3 Figure 6A?

4 MR. GOLDBERG: Objection. Form.

5 A So the six center PRBs in the
6 example of Figure 6A are just that, an
7 example of what Figure 6A covers. And in
8 Figure 6B, what they're saying is that the
9 UEs can use the same subband, but it's
10 expressly allowing for the subband to not be
11 the six center PRBs. In other words, if, in
12 reading this sentence, one were to try and
13 limit Figure 6A to only the example of six
14 center PRBs, then Figure 6B would cover the
15 same subband that is not the subband of the
16 six center PRBs.

17 MR. PYMENTO: Do you think now is
18 a good time to take a break?

19 I mean, Dr. Bims, are you on the
20 East Coast?

21 THE WITNESS: Yes.

22 MR. PYMENTO: It's up to you if
23 you want to take a lunch break now?

24 (Whereupon, at 1:03 p.m., a recess
25 was taken to 1:36 p.m.)

1 HARRY V. BIMS

2 (The proceeding resumed with all
3 parties present.)

4 Q Dr. Bims, let's turn to Figure 2
5 of Liu, which is Exhibit 4.

6 Just let me know when you get
7 there.

8 A Figure 2 of You, right?

9 Q Figure 2 of Liu.

10 A Oh, the other one you've got.
11 Okay.

12 Q So in Figure 2, there are two
13 graphics. The first one, I'll represent,
14 has two slots, Slot Zero and Slot 1, which
15 are divided in subcarrier spacings of
16 15 kilohertz each, correct?

17 A Yes.

18 Q And the second graphic in Figure 2
19 has eight slots, from Slot Zero to Slot 7
20 divided into subcarrier spacings of
21 60 kilohertz each, correct?

22 A Yes.

23 Q Does Figure 2 in either of the
24 graphic limit the 15 kilohertz and
25 60 kilohertz respectively to exist within a

1 HARRY V. BIMS

2 specific frequency band?

3 A So what Liu discloses in
4 paragraphs 53 and 54 is one of its
5 embodiments in which the DCI configuration
6 parameter may compromise at least one of a
7 frequency domain resource unit and a
8 frequency hopping pattern. In figure -- in
9 paragraph 54, it goes on to further describe
10 the frequency domain resource unit, which
11 indicates the resource unit to be used for
12 DCI in the frequency domain that can be a
13 controlled channel element, a subband, a
14 physical resource block or physical resource
15 group. So within this particular embodiment
16 within Liu, the DCI could occupy a subband.

17 Q Is the DCI shown in Figure 2?

18 A In paragraph 22, it says that:
19 Figure 2 schematically illustrates DCI
20 occurrence occasions with different
21 numerologies according to example
22 embodiments in the present disclosure.

23 Q What is your understanding of a
24 DCI occurrence occasion in the context of
25 Liu?

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HARRY V. BIMS

A In paragraph 48, it says that:
DCI occurrence occasions indicate occasions
at which DCI occurs in frames.

Q So referring to Figure 2, is it
your understanding the DCI is occurring in
the frames which have the stripes going
through them?

MR. GOLDBERG: Objection. Form.

A I would say that, for the portions
of the -- of the slot, where you see the
diagonal lines within the box, that a DCI
occurrence occasion is the entirety of that
region.

Q Does that diagonal region of the
DCI occurrence occasion have to occur in a
certain frequency band?

A According to one embodiment --
according to one of the embodiments in Liu,
a DCI configuration parameter may comprise a
frequency domain resource unit, which could
indicate a subband for the DCI occurrence.

Q For the top graphic, does the
existence of 15 kilohertz subcarrier
spacings determine that there will be two

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HARRY V. BIMS

portions of slots -- actually, scratch that.

Does the existence of 15 kilohertz subcarrier spacings determine that there will be two slots in the top graphic of Figure 2?

A So the existence of 15 kilohertz subcarrier spacing shows that, within the context of a single subframe, it is divided into two slots.

Q Can you explain how it does that?

A Well, in the context of Liu, a subframe has a fixed duration of time. And as shown in Figure 3A, for a 15 kilohertz subcarrier spacing, that duration of time is divided into two portions, Slot Zero and Slot 1.

Q Does the 15 kilohertz dictate that it would be divided into two slots?

A So Figure 3A shows an example of what happens in the 15 kilohertz subcarrier spacing in which there are two slots for a subframe.

Q Right. But is that necessarily the case because the subcarrier spacing is

HARRY V. BIMS

15 kilohertz?

A In paragraph 2, 3, and 4, as well as paragraph 5 of Liu, it describes the background of the invention. And in the background of the invention, Liu describes a new radio access system which is called the new RAT or NR system or network for short as the next generation communication system.

It also describes in this set of paragraphs the current LTE system in both the LTE standard and the NR standard. When the subcarrier spacing is 15 kilohertz, there are two slots in a subframe.

Q I'm sorry. Where do you see the 15 kilohertz and two slots in paragraphs two to five?

A Oh, that relationship between the subcarrier spacing and the number of slots in a subframe is in the 3GPP standards that a person of ordinary skill in the art would understand.

So when you read the LTE standard, in the LTE standard there are two subcarrier spacings. For the 15 kilohertz subcarrier

1 HARRY V. BIMS

2 spacing, there are two slots in a subframe.
3 For the NR standard, which is the 5G standard
4 for the 15 kilohertz spacing, there are two
5 slots in a subframe.

6 Q Okay. So that is true based on
7 the standard itself; wherever there is 15
8 kilohertz subcarrier spacing, there are
9 going to be two slots within a subframe?

10 A A person of ordinary skill in the
11 art would understand that that is the case
12 for those two standards.

13 Q And is it also the case that based
14 on that standard, where you have
15 60 kilohertz subcarrier spacings, you would
16 have eight slots?

17 A I would have to take a look at the
18 NR standard or 5G standard to better answer
19 that question. For the LTE standard, I can
20 say that it does not allow for a
21 60 kilohertz spacing.

22 Q Does the existence of 15 kilohertz
23 or 60 kilohertz subcarrier spacings let a
24 person of ordinary skill in the art know
25 what the time length of each slot will be.

1 HARRY V. BIMS

2 A In paragraph 144 [sic] of my
3 declaration, I state that: Liu discloses
4 that the UE may learn the time-frequency
5 resource for the DCI from the DCI
6 configuration parameter, which includes
7 subcarrier spacing information and monitor
8 the DCI within the time-frequency resource.

9 And then I go on to say: As
10 discussed below Liu discloses using the
11 subcarrier spacing to determine three
12 different aspects of the time-frequency
13 resource associated with the X time intervals
14 including time-domain locations, slot
15 locations, of the claimed X time intervals as
16 well as duration of each one of the claimed
17 X time intervals, the duration of each DCI
18 monitoring occasion, and also the number of
19 the claimed X, the number of DCI monitoring
20 occasions in a duration of a DRX cycle, e.g.
21 a paging occasion.

22 Q Okay. So for each of those, I'm
23 kind of going to ask you to flush these
24 paragraphs out a little bit.

25 How do I take the existence of

1 HARRY V. BIMS

2 15 kilohertz or 60 kilohertz and figure out
3 the time length of each slot based on
4 disclosure in Liu?

5 (Whereupon, the court reporter
6 requested clarification.)

7 Q So I think it was based on the
8 existence of 15 kilohertz or 60 kilohertz
9 subcarrier spacings, how can you tell what
10 the time length of each slot would be?

11 A As I was about to say, the person
12 of ordinary skill in the art that is
13 reviewing Liu would have a complete
14 understanding of the LTE and 5G standards
15 that were under development at that time.

16 And a person of ordinary skill in
17 the art would know that there is a
18 relationship between subcarrier spacing and
19 the length of a slot because that
20 relationship is specified for not only the
21 15 kilohertz and 7.5 kilohertz spacings of
22 LTE but also the subcarrier spacings, the
23 plurality of subcarrier spacings, in 5G. And
24 based upon that relationship as specified in
25 the standard, a person of ordinary skill

1 HARRY V. BIMS

2 would know how to implement that
3 relationship.

4 Q And when you describe a
5 relationship, are you referring to an
6 equation or something else.

7 A Well, in the 5G standard, from
8 what I recall, there is a tabulated
9 relationship between subcarrier spacings and
10 the length of a slot because -- and also the
11 length of a symbol within a slot. And those
12 relationships do have a mathematical reason
13 for them. But at a high level, a person of
14 ordinary skill in the art would understand
15 that once a subcarrier spacing is specified,
16 then the length of the monitoring occasion
17 is also specified.

18 Q With respect to Liu, is it your
19 testimony that the slot is the monitoring
20 occasion?

21 A So with respect to You, a single
22 monitoring occasion can occupy one or more
23 slots.

24 Q When I look at Figure 2 in Exhibit
25 4, I see a portion of each slot with

1 HARRY V. BIMS

2 diagonal lines running through it.

3 What are -- those diagonal line
4 represent?

5 A In Figure 4, you said. Right. So
6 in Figure 4A --

7 Q Figure 2?

8 A I'm sorry. In Figure 2. Sorry.
9 In Figure 2 the region that has the diagonal
10 lines through it represents a single DCI
11 monitoring occasion.

12 Q So the monitoring occasion is the
13 portion of the slot in which there are
14 diagonal lines; is that right?

15 A Yes.

16 Q Does the existence of -- well, so
17 we discussed that based on the standard,
18 either 15 kilohertz or 60 kilohertz, there
19 would be a tabulation that lets a POSITA
20 know what the time length of each slot will
21 be.

22 So would it let a POSITA know the
23 percentage of each slot that would be
24 dedicated before DCI monitoring?

25 MR. GOLDBERG: Objection. Scope.

HARRY V. BIMS

A Claim 1 of the '767 patent talks about only the X time intervals, not other time intervals such as the Y time intervals.

So what I described in paragraph 145 with respect to Claim 1 is how the DCI configuration parameter can specify a number of things including the duration of a single DCI. To understand the percentage relationship of the duration for a single DCI and a slot, the system would have to know the duration of the slot. And Claim 1 does not mention Y time intervals.

Q So you just mentioned -- and I'm going to quote you: To understand the percentage relationship of the duration for a single DCI and a slot, the system would have to know the duration of the slot, and Claim one does not mention Y time intervals.

Are you saying that Claim 1 does not require or rather that Liu does not show the duration of the slot?

A No. What I'm saying is that, in doing an analysis of Claim 1 with respect to Liu, that analysis did not include an

HARRY V. BIMS

analysis of the time duration of a slot,
because Claim 1 does not even mention Y time
intervals let alone claim a relationship
between X time intervals and Y time
intervals expressed in the form of a
percentage.

Q Right. But I understood you to
say that you need to know the duration of a
slot in order to figure out the duration of
the DCI monitoring occasion.

Am I misunderstanding?

A Right. That was a
misunderstanding. What I was saying is that
in order to compute the percentage of a slot
occupied by a DCI monitoring occasion, one
would have to know the duration of an X time
interval and a duration of a Y time interval
in order to compute the ratio.

Q What if I wanted only to know the
absolute value of the DCI monitoring
occasion time, do I still need to know the
full-time length of a slot?

A The duration of the DCI monitoring
occasion does not require knowledge of the

1 HARRY V. BIMS

2 duration of a slot.

3 Q What does it require knowledge of?
4 "It" meaning the DCI monitoring occasion
5 time line?

6 A It requires as I mentioned in
7 paragraph 141 the duration of each one of
8 the claimed X time intervals is the duration
9 of the DCI monitoring occasion. And
10 duration is a period of time. So once that
11 period of time is specified, then the
12 duration of the claimed X time intervals is
13 known.

14 Q How is the duration specified?

15 A As one of three aspects of the DCI
16 configuration parameter.

17 Q And what are those three aspects
18 in Liu of the DCI configuration parameter?

19 A So the DCI configuration
20 parameter, as I say in paragraph 141,
21 determines three different aspects of the
22 time-frequency resource associated with the
23 X time intervals, namely the time-domain
24 locations, the duration of each one of the
25 claimed X time intervals, and the number of

1 HARRY V. BIMS

2 the claimed X in the claims.

3 Q Are the subcarrier spacings
4 included in the DCI monitoring parameters --
5 configuration parameters, sorry?

6 A As I say in paragraph 141, the DCI
7 configuration parameter includes subcarrier
8 spacing information which is used to
9 determine the three different aspects that I
10 just mentioned.

11 Q Is the subcarrier spacing
12 information that you mentioned include the
13 actual subcarrier spacing?

14 A In my view, it's reasonable for a
15 person of ordinary skill in the art to
16 understand that subcarrier spacing
17 information is the subcarrier spacing.

18 Q I'm going to take each of these
19 three one at a time. So the first one is
20 time-domain locations, right? So with
21 respect to Figure 2, how do I take
22 15 kilohertz and obtain a time-domain
23 location?

24 A As I describe in 143, Liu
25 discloses that the numerology to be used,

1 HARRY V. BIMS

2 subcarrier spacing, is used for determining
3 the slots in a subframes, and the DCI
4 occurrence occasions, periodicity and
5 offset, are used to determine the
6 time-domain locations of the DCI monitoring
7 occasions with respect to the slots.

8 Q What is the basis for
9 understanding that subcarrier spacing is
10 included in that quotation "numerology to be
11 used"?

12 A The term "numerology," for
13 example, is a term of art that a person of
14 ordinary skill would understand means the
15 identification of subcarrier spacings.

16 Q And is it your testimony that the
17 DCI monitoring occasions in Liu is the
18 disclosed time interval or the claimed time
19 interval?

20 A So it's my opinion that the
21 claimed X time interval defines -- the
22 X time intervals rather -- define the -- the
23 ranges of time in which a DCI monitoring
24 occasion is included in the downlink
25 subframe.

1 HARRY V. BIMS

2 Q So in your opinion, X time
3 intervals is not a direct mapping to DCI
4 monitoring occasions; is that right?

5 A The X time intervals are the
6 ranges of time within a subframe within
7 which a DCI monitoring occasion appears
8 within the subframe.

9 Q And is it your testimony that the
10 subcarrier spacing, whether it's
11 15 kilohertz or 60 kilohertz, determines the
12 DCI monitoring occasions?

13 A The subcarrier spacing determines
14 the time-domain locations of the DCI
15 monitoring occasions.

16 Q And that is in the context of Liu,
17 correct?

18 A Yes.

19 Q Let's turn to paragraph 141, which
20 I think we're close to anyway. You say
21 that: The UE, quote, may learn the
22 time-frequency resource for the DCI from the
23 DCI configuration parameter.

24 Do you see that?

25 A That's what Liu says, yes.

1 HARRY V. BIMS

2 Q Right. Is it your understanding
3 that Liu's DCI configuration parameter
4 precedes the DCI?

5 A What do you mean by "precedes"?

6 Q Is the DCI configuration parameter
7 sent in a signal -- or would a POSITA, a
8 person of ordinary skill in the art,
9 understand from Liu that a DCI configuration
10 parameter is transmitted separately and
11 before the DCI?

12 A From reading Liu, a person of
13 ordinary skill in the art would understand
14 that the DCI configuration parameter is
15 transmitted by the base station prior to the
16 transmission of the related DCI monitoring
17 occasions.

18 Q What do you mean the transmission
19 of the related DCI monitoring occasions?
20 Sorry. When you mention the DCI monitoring
21 occasions, isn't that just referring to a
22 period of time, or is that a separate signal
23 altogether?

24 A The DCI monitoring occasions are a
25 plurality of monitoring occasions, which

HARRY V. BIMS

means in view there are one or more of such occasions. Whereas in the '767 Claim 1, there are more than one such X time intervals. But nonetheless, the -- there are -- there are DCI monitoring occasions that the UE will receive as being transmitted from the base station in the context of a single DCI configuration parameter.

Q DCI stands for "downlink control information," correct?

A In the 3GPP standards for LTE, that's correct, yes.

Q Is the DCI transmitted separately from the monitoring occasion?

A So within a DCI monitoring occasion, there is a search space within which is contained a DCI.

Q So both the DCI configuration parameter and the DCI monitoring occasion are transmitted from the base station to user equipment; is that correct?

A Yes.

Q Let's turn to paragraph 250 of

1 HARRY V. BIMS

2 Exhibit 3, which is You. It's a -- it's a
3 table called Table 13, and we're going to
4 focus on the last row of that page.

5 A Okay. The last row of Table 13.
6 Got it.

7 Q Called "narrow band." So the last
8 row off of the first page of Table 13.

9 A Oh. The first page. Sorry.
10 Okay. I see that.

11 Q And do you see, on the column next
12 to narrow band, it says, quote, Determined
13 by UE ID among paging narrow bands
14 configured by SID?

15 A Yes.

16 Q What is your understanding of that
17 phrase?

18 A In paragraph 255 of You, it says:
19 For still another example, referring to a
20 narrow band parameter of Table 13, a narrow
21 band, hereinafter RAR narrow band, having
22 CSS_RAR may be determined based on a PRACH
23 resource set. In this case, a corresponding
24 RAR narrow band per PRACH resource set is
25 configured by SIB. A default narrow band

1 HARRY V. BIMS

2 location of CSS_others and/or USS may be a
3 narrow band location of CSS_RAR and then a
4 narrow band for CSS_others/USS may be
5 configured per UE by Msg4 and maybe
6 reconfigured by RRC.

7 Q Is it your understanding that the
8 phrase "determined by UE ID among paging
9 narrow bands" implies multiple narrow bands
10 for transmitting a paging message?

11 A Where are you reading that?

12 Q This is the column next to narrow
13 band in Table 13.

14 A So a person of ordinary skill in
15 the art would understand that an SID
16 configures one narrow band for a particular
17 UE ID.

18 Q Right. I'm -- well, I guess it's
19 more of a grammatical question, which is --
20 so the phrase says "among paging narrow
21 bands."

22 A Yes.

23 Q From that phrase, doesn't that
24 imply multiple narrow bands, just from that
25 one phrase "among paging narrow bands"?

HARRY V. BIMS

A I don't believe a person of ordinary skill in the art would read it that way, because the continuation of that phrase says: Paging narrow bands configured by SIB. So if the universe of SIB configuration is only for a single paging narrow band, then the UE ID would determine amongst the single configured paging narrow band in the SIB.

Q Right. But similar to the way you interpreted time intervals with the plural, right?

Here, it's saying "among paging narrow bands configured by SIB," so there are paging narrow bands configured by SIB, right?

So it's -- there are multiple narrow bands -- right? -- based on that plural phrase?

A Well, again, a person of ordinary skill in the art wouldn't read it that way, because a person of ordinary skill in the art would understand that, although it's theoretically possible for an SIB to specify

1 HARRY V. BIMS

2 more than one narrow band in Liu, the SIB is
3 also capable of only configuring one paging
4 narrow band for the entire cell.

5 Q Okay. Let me -- let me rephrase
6 it a different way. So the way I'm reading
7 it is I see the left column says "narrow
8 band" in the singular, right?

9 So a narrow band, Cingular, is,
10 and then the column next to it says
11 determined by UE ID among paging narrow
12 bands configured by SIB.

13 So meaning one narrow band is
14 determined by a UE, user equipment, ID among
15 multiple paging narrow bands configured by
16 SIB.

17 Is that understanding correct?

18 A Well, again, as I said earlier, a
19 person of ordinary skill in the art would
20 understand that the SIB can configure one
21 paging narrow band for the entire cell and,
22 in that scenario, the UE ID is determining,
23 amongst the one paging narrow band that was
24 configured by the SIB, for the entire cell.

25 Q So am I correct in saying that the

1 HARRY V. BIMS

2 number of paging narrow bands could be a
3 positive integer?

4 A I don't see the word "positive" or
5 phrase "positive integer" used anywhere in
6 You. I don't --

7 Q No. I'm using it. I'm using it
8 right now.

9 A Yeah. But again --

10 Q You're saying it could be one,
11 right?

12 You're saying that an SIB could
13 configure one or more paging narrow bands.

14 That's what you are saying,
15 correct?

16 A What I'm trying to convey is the
17 understanding of a person of ordinary skill
18 in the art when they review You. And in
19 Liu, there is no mention of the phrase
20 "positive integer."

21 Q I -- that's -- I understand that.

22 But I'm asking you is, you know,
23 in a regular, you know, conversation -- a
24 conversation which, you know, we're having,
25 I'm saying is -- is the number of paging

1 HARRY V. BIMS

2 narrow bands a positive integer based on
3 what you are describing?

4 A Again, as we've discussed at
5 length earlier, the term "positive integer"
6 appears in the claim language of the
7 '767 Patent within the particular context or
8 example of Claim 1.

9 And so, given that, is your
10 question outside the scope of the '767 Patent
11 or are you asking about positive integer
12 within the context of Claim 1?

13 Q I'm just using it in the context
14 of the plain meaning of the term "positive
15 integer."

16 So in any case, what I'm really
17 trying to say is that you're telling me, if
18 I understand correctly, that it says: Among
19 paging narrow bands configured by SIB. And
20 your pushing back and telling me that, Well,
21 the SIB doesn't necessarily have to
22 configure a plural number of paging narrow
23 bands; it could configure one narrow band
24 and only one narrow band.

25 So all I'm trying to say is I'm

1 HARRY V. BIMS

2 simplifying it and saying that an SIB can
3 configure one or more paging narrow bands,
4 which by definition, you know, one or more,
5 in normal parlance, is a positive number,
6 right?

7 MR. GOLDBERG: Objection. Scope
8 and form.

9 A What I'm saying -- what I'm really
10 trying to convey is that a person of
11 ordinary skill in the art would understand
12 the LTE standard and the 5G standard under
13 development at the time of Liu and, based on
14 that understanding, they would know that,
15 according to the standard, that an SIB can
16 configure a single narrow band for the
17 entire cell that is then used by multiple
18 UEs.

19 Q Right. It can configure one or it
20 can configure --

21 (Whereupon, the court reporter
22 requested clarification.)

23 THE WITNESS: UEs.

24 Q Okay. So I understand that what
25 you are trying to tell me is that an SIB can

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2 configure one narrow band.

3 Can it also configure more than
4 one narrow band based on Liu, based on this
5 one phrase of Liu?

6 A Yes, that is possible according to
7 the 3GPP standard.

8 Q Okay. Based on the 3GPP
9 standards, we're -- I think we're on the
10 same page, that an SIB can configure one or
11 more paging narrow bands.

12 Based on the common definition of
13 term "positive integer" or even "positive
14 number," is one or more paging narrow bands
15 a positive integer of narrow bands?

16 MR. GOLDBERG: Objection. Scope
17 and form.

18 A So what we're talking about is a
19 configuration of the system, which is then
20 talking about the entire cell or even an
21 entire combination of cells across a carrier
22 network. And what this phrase is saying is
23 that the SIB is configuring the system. And
24 as I've said earlier, the person of ordinary
25 skill in the art would understand that the

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2 SIB can configure the system, as a whole, to
3 have only one narrow band. And in that
4 context. Where there is only one narrow
5 band configured by the system by the SIB,
6 there could not be more than one subbands.

7 Q In your opinion, is that usually
8 the case, that the SIB configures one
9 subband?

10 MR. GOLDBERG: Objection. Scope
11 and form.

12 A That depends on the deployment.
13 The standard gives the capability for such
14 configurations, but to understand whether or
15 not a particular network is using a
16 particular configuration, one has to
17 evaluate those products to see how they're
18 used in a particular scenario.

19 Q So I'm going to try and ask this
20 again. And it's just really a simple
21 yes-or-no answer.

22 Based on this column determined by
23 UE ID among paging narrow bands configured
24 by SIB, and the preceding column is narrow
25 band, can an SIB configure multiple paging

1 HARRY V. BIMS

2 narrow bands?

3 MR. GOLDBERG: Objection. Scope
4 and form.

5 A An SIB can configure the system to
6 have one paging narrow band or can configure
7 the system to have multiple paging narrow
8 bands.

9 Q And putting it all together,
10 that's one or more paging narrow bands,
11 correct?

12 MR. GOLDBERG: I repeat the
13 objections.

14 A That wording is a little bit
15 awkward because what I'm trying to convey is
16 that the SIB can configure either one narrow
17 band or the SIB can configure multiple SIBs.
18 So I would say the SIB can configure either
19 one or more than one SIB -- no, sorry --
20 either one or more than one narrow band.

21 Q One or more narrow band, is that a
22 positive integer number of narrow bands?

23 MR. GOLDBERG: Objection. Scope
24 and form.

25 A So, again, how I worded it was

1 HARRY V. BIMS

2 either one narrow band can be configured or
3 more than narrow band can be configured for
4 the system, which is different than one or
5 more.

6 Q All right. Let me rephrase it
7 using your language.

8 One narrow band or more than one
9 narrow band can be configured for the
10 system.

11 Is that a positive integer of
12 narrow bands that can be configured by the
13 SIB?

14 That's a yes or no.

15 MR. GOLDBERG: Objection. Scope
16 and form.

17 A Well, we had this discussion
18 earlier about positive integer within or
19 without the context of the '767 Patent. And
20 I would say that what's described in this
21 column of the table is a inability of the
22 SIB to configure either one narrow band or
23 more than one narrow bands means the SIB can
24 configure, in a general sense -- not within
25 the context of the '767 but in a general

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2 sense, can configure a positive integer
3 number of narrow bands.

4 Q And the part of the phrase that
5 says "determined by UE ID," is that
6 referring to both instances, meaning where
7 one narrow band is configured and where
8 multiple narrow bands are configured or just
9 one case?

10 MR. GOLDBERG: Objection. Scope
11 and form.

12 A So that column is determining --
13 is describing a particular configuration of
14 the system. And in a particular
15 configuration of the system, the SIB may
16 configure the system to have one paging
17 narrow band. That's what it means.

18 Q Okay. And where does the first
19 part of that phrase "determined by UE ID"
20 play into all of this?

21 MR. GOLDBERG: Objection. Scope
22 and form.

23 A So as mentioned in Liu, there are
24 multiple ways of -- there are multiple ways
25 that the UE can receive information. And

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2 the UE ID, as mentioned here and, as I
3 described in my declaration, is related in
4 the scope of the '767 Patent to what the
5 '767 Patent calls a "feature ID." And that
6 feature ID is then used by the UE in making
7 the determination of the narrow band.

8 Q And just for clarification, that's
9 narrow band in the singular, correct?

10 A That's the paging narrow bands
11 configured by the SIB, which concludes in
12 that description the ability of the SIB to
13 configure a single paging narrow band.

14 Q What about if there is a system
15 where the SIB configures multiple narrow
16 bands?

17 MR. GOLDBERG: Objection. Scope
18 and form.

19 A All right. In such a system as
20 described by Liu, then Liu says, in this
21 column of the table, that the UE ID would
22 determine amongst those narrow bands that
23 were configured by the SIB.

24 Q Let's turn to paragraph 194 of
25 You, which is still Exhibit 3. Let me know

1 HARRY V. BIMS

2 when you reach that.

3 A Okay.

4 Q Do you see where it says, quote,
5 For paging message scheduling, multiple
6 narrow bands can be configured by eNB. Then
7 a narrow band location for a paging occasion
8 monitoring is determined by at least UE ID
9 at least for paging records.

10 Is that related to what we just
11 discussed with respect to paragraph 250?

12 A So paragraph 194, that doesn't
13 reference Table 13. And paragraph 194 is
14 one of the embodiments of Liu, but it
15 doesn't say that paragraph 194 is the
16 embodiment of Table 13.

17 (Whereupon, the court reporter
18 requested clarification.)

19 THE WITNESS: 194 is the
20 embodiment of Table 13.

21 Q Would a person of ordinary skill
22 in the art interpret paragraph 194 as not
23 being the embodiment of paragraph 250,
24 Table 13?

25 A In my view it's reasonable to

1 HARRY V. BIMS

2 expect that a person of ordinary skill in
3 reading paragraph 194 would not see it as a
4 limiting disclosure on Table 13.

5 Q This paragraph 194 uses a term
6 "for paging message scheduling."

7 Is there a difference, in your
8 opinion, between paging message scheduling
9 and paging occasion monitoring?

10 A You said paging messaging
11 scheduling appears in paragraph -- oh, there
12 it is, the very beginning. So what was the
13 question again?

14 Q In your opinion, is there a
15 difference between paging message scheduling
16 and paging occasion monitoring?

17 A Paging message scheduling and
18 monitoring of paging occasions are two
19 aspects of the same process. So a paging
20 message scheduling is something that a base
21 station does to schedule the transmission of
22 messages that identify when the paging
23 message will appear. On the flip side, the
24 UE will monitor the transmissions from the
25 base station in order to receive the

1 HARRY V. BIMS

2 locations of the paging message that were
3 scheduled by the base station.

4 Q Let's quickly turn to Exhibit 1
5 which is the '767 patent, and would you mind
6 scrolling to Claim Number 5?

7 A Okay. I am there.

8 Q And I don't want to belabor this
9 again.

10 But in this Claim 5, you see the
11 term "positive integer."

12 Do you interpret positive integer
13 here the same way you interpret positive
14 integer for Claim 1?

15 MR. GOLDBERG: Objection. Form.

16 A Claim 5 is a claim that is
17 dependent on Claim 1. So the claim term
18 "positive integer," which is used in both
19 claims will have the same meaning.

20 Q So therefore in your opinion in
21 both claims, "positive integer" should be
22 more than one?

23 MR. GOLDBERG: Objection. Scope.

24 A The claim term "positive integer"
25 as used in Claim 1 should mean more than one

1 HARRY V. BIMS

2 when it is applied in Claim 5 that
3 more-than-one definition is in the context
4 of Claim 5.

5 Q Could you clarify that? And I'm
6 just going to ask: When you say more than
7 one in the context of Claim 5, you're saying
8 more than one subband, correct?

9 A No. I'm saying that the
10 definition of "positive integer" is
11 consistent between Claim 1 and Claim 5 at a
12 baseline to be more than one. However, and
13 again, I have not had a chance to review
14 Claim 5, but I would say that when Claim 5,
15 which is a dependent claim on Claim 1, uses
16 the term "positive integer," which appears
17 in Claim 1, Claim 5 could provide additional
18 context to further limit the definition of
19 positive integer as defined in Claim 1.

20 My only thing I was trying to
21 convey was that as a baseline when we start
22 to read Claim 5, the definition of positive
23 integer in Claim 1 would carry over to
24 Claim 5 until Claim 5 adds any further, you
25 know, definition or understanding of the term

1 HARRY V. BIMS

2 as used specifically within Claim 5.

3 Q As a person of ordinary skill in
4 the art reading Claim 5, does Claim 5 add
5 any further definition or understanding of
6 the term "positive integer"?

7 A So that is something I have to
8 examine Claim 5 to answer that. That is not
9 a question I considered as to whether or not
10 the definitions might be different. In my
11 reading of Claim 5 in my declaration,
12 Claim 5 relates to what's called Q subbands,
13 which in Claim 5 does not use the term first
14 subband that is described in Claim 1.

15 Q I'll just interject there to make
16 it easier. So it does use the word "first
17 subband" --

18 A Oh, yeah, there it is.

19 Q -- yeah, after the positive
20 interest language.

21 A Okay. So what it says in Claim 5
22 is: The first subband belongs to one of the
23 Q subbands, for Claim 5. So it appears from
24 looking at Claim 5 that the term
25 "Q subbands" is a plural term meaning Q

1 HARRY V. BIMS

2 represents more than one subband.

3 Q Let's turn to Claim 2 of the '767
4 patent. So it's the same exhibit, just a
5 little bit higher.

6 Do you see the term "time window"?

7 A First time window, yes.

8 Q Is it your opinion that a person
9 of ordinary skill in the art would interpret
10 a time window and time interval differently?

11 A In reading Claim 2, I think it's
12 clear that the first time window is
13 different than the X time interval and the
14 Y time interval.

15 Q In your opinion, was the
16 relationship between a time window and time
17 interval?

18 A So as stated in Claim 2, a first
19 time window or an X time intervals, plural,
20 belongs to a first time window, and a first
21 time window is divided into Y time
22 intervals.

23 Q So if I were to look at -- I'm
24 sorry for jumping around. If I look at
25 Figure 2 in Liu, which is Exhibit 4 -- let

1 HARRY V. BIMS

2 me know when you've reached there.

3 A Okay.

4 Q So let's just take the top graphic
5 of Figure 2 as the example.

6 Where are the, one, time windows;
7 two, Y time intervals; and then, three,
8 X time intervals in this graphic?

9 A The X time intervals are the boxes
10 with the slashed diagonal lines going
11 through them. Those are X time intervals or
12 just a, what I would say, a portion of the
13 x time intervals because Figure 2 shows the
14 duration of a single subframe within the
15 entire frame.

16 Q Okay. What are the Y time
17 intervals?

18 A So the Y time intervals would be
19 the individual slots within a frame. And in
20 Figure 2 it shows the slots for one of the
21 subframes within the frame.

22 Q And what are the time windows or
23 time window in Figure 2?

24 A The first time window would be the
25 radio frame.

1 HARRY V. BIMS

2 Q And the radio frame is not
3 completely displayed in Figure 2, correct?

4 A Right. Figure 2 shows one of
5 those ten subframes within the radio frame.

6 Q And a subframe consists, at least
7 in the top graphic of Figure 2, two slots,
8 right?

9 A Right. For that subcarrier
10 spacing, that's correct.

11 Q And each slot is a -- is a Y time
12 interval or is one of Y time intervals?

13 A Each slot is one of the Y time
14 intervals, yes.

15 Q So there are two time -- so Y
16 equals two here is what you are saying?

17 A Y equals 20.

18 Q Y equals 20? I see. So because
19 there are two slots in one subframe and ten
20 subframes, so ten times two equals 20,
21 correct?

22 A Yes.

23 Q And how -- what is X in this
24 Figure 2?

25 A In Figure 2 it shows one of the

1 HARRY V. BIMS

2 X time intervals in each of the slots. So
3 in this scenario, there are 20. X equals
4 20.

5 Q Okay. I'm almost done. I just
6 have a few more questions.

7 (Whereupon, at 3:05 p.m., a recess
8 was taken to 3:10 p.m.)

9 (The proceeding resumed with all
10 parties present.)

11 Q All right. Let's turn to
12 Exhibit 5, which is Mallick.

13 Could you please look at paragraph
14 30, and let me know when you reach there.

15 A Okay. I'm there.

16 Q Do you see where it says:
17 Therefore, for case A and B with NS equals 1
18 and i_s equals zero, the table would yield
19 the subframe number 9 such that the UE for
20 cases A and B would be paged regularly in
21 subframe 9 of radio frame 76 of every paging
22 cycle?

23 Is it your understanding that this
24 description refers to using a feature ID to
25 determine a subframe in which a paging

1 HARRY V. BIMS

2 message is transmitted to the UE?

3 A Paragraph 30 is written in the
4 context of describing a DRX cycle, which
5 paragraph 30 calls a paging cycle. And a
6 paging cycle spans multiple radio frames.

7 So what this is saying is that
8 subframe 9 of radio frame 76, in each and
9 every one of these cycles is what would be
10 the subframe in which the paging scheduling
11 information would be delivered to the UE. So
12 this is not indicating the location of a
13 single subframe but rather the repetition of
14 a subframe in each DRX paging cycle.

15 Q In Mallick, what is the
16 relationship between the subframe that's
17 repeated and any time intervals?

18 MR. GOLDBERG: Objection. Form.

19 A The relationship disclosed in
20 Mallick between X time intervals, Y time
21 intervals, and the first time window is
22 described in my declaration starting at
23 paragraph 206 and continuing through
24 paragraph 214.

25 Q So in paragraph 206 right before

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2 the graphic, the sentence above that states:
3 Mallick discloses that the, quote, "paging
4 occasion," PO, is a subframe in the paging
5 frame.

6 What is the difference between a
7 paging occasion and a DCI monitoring
8 occasion?

9 A A DCI monitoring occasion is what
10 is disclosed in Liu. A paging occasion
11 described in Mallick is describing the -- as
12 shown in Figure 5, the individual instances
13 in which the base station will send paging
14 scheduling information. And the DCI
15 monitoring occasions described in Liu -- the
16 DCI monitoring occasion described in Liu is
17 the time-frequency resource used by the base
18 station to transmit DCI information.

19 Q Okay. You mentioned earlier that
20 you reviewed the institution decision,
21 Exhibit 6, prior to this deposition,
22 correct?

23 A Yes.

24 Q Based on reviewing that decision,
25 Exhibit 6, did you want to revise anything

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HARRY V. BIMS

in your declaration?

A No.

Q Did you want to clarify anything
in your declaration based on reviewing the
institution decision?

A No.

Q Okay. No further questions.

MR. GOLDBERG: Let's take a
ten-minute break.

(Whereupon, at 3:21 p.m., a recess
was taken to 3:29 p.m.)

(The proceeding resumed with all
parties present.)

MR. GOLDBERG: We have no
questions for the witness.

(Time noted: 3:30 p.m.)

HARRY V. BIMS

Subscribed and sworn to before me
this _____ day of _____ 2023.

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-----INDEX-----

WITNESS	EXAMINATION BY	PAGE
HARRY V. BIMS	MR. PYMENTO	4

-----EXHIBITS-----

FOR IDENTIFICATION	DESCRIPTION	PAGE
Exhibit No. 1	Declaration of Harry Bims	11
Exhibit No. 2	U.S. Paten No. 10,462,767	11
Exhibit No. 3	Exhibit No. 1005 WO2017-052199 You	11
Exhibit No. 4	Exhibit No. 1006 WO2018-126401 Liu	11
Exhibit No. 5	Exhibit No. 1007 U.S. Patent No. WO 2016-136143 Mallick	12
Exhibit No. 6	20230914 Paper No. 10 PTAB Decision Granting Institution of IPR	12

-----REQUESTS FOR PRODUCTION-----

DESCRIPTION	PAGE
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-----NONE WERE MADE-----

HARRY V. BIMS

CERTIFICATE

STATE OF NEW YORK)

) ss:

COUNTY OF RICHMOND)

I, DANIELLE GRANT, a Certified
Shorthand Reporter and Notary Public
within and for the State of New
York, do hereby certify:

That HARRY V. BIMS, the witness
whose deposition is hereinbefore set
forth, was duly sworn by me and that
such deposition is a true record of
the testimony given by such witness.
I further certify that I am not
related to any of the parties to
this action by blood or marriage and
that I am in no way interested in
the outcome of this matter.

In witness whereof, I have hereunto
set my hand this 4th day of
December, 2023.

Danielle Grant

DANIELLE GRANT

HARRY V. BIMS
DEPOSITION ERRATA SHEET

DECLARATION UNDER PENALTY OF PERJURY

I declare under penalty of perjury
that I have read the entire transcript of
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or the same has been read to me, and
the same is true and accurate, save and
except for changes and/or corrections, if
any, as indicated by me on the DEPOSITION
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that I offer these changes as if still under
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Signed on the _____ day of
_____, 2023.

HARRY V. BIMS

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Page No. _____ Line No. _____

Change to: _____

Reason for change: _____

Page No. _____ Line No. _____

Change to: _____

Reason for change: _____

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HARRY V. BIMS

&	10,462,767 1:15	145 82:6	73:17,19 74:5
& 3:5	11:11 115:11	15 72:16,24	75:6 76:3
1	1001 10:8	74:24 75:3,7	80:24 81:7,8,9
1 9:11 10:5,7	1002 10:6	75:14,18,21	85:21 108:3,11
10:12 11:8	1005 11:14	76:2,13,16,25	108:18,25
24:21,22 27:4	115:12	77:4,7,22 79:2	109:5,13,20,23
27:16,20,23,24	1006 11:18	79:8,21 81:18	110:3,4,7,24,25
28:2,4,9,10,11	115:14	85:22 87:11	115:10
28:18 29:7,10	1007 11:22	156 17:13	2.5g 20:12
29:12,17,25	115:16	157 17:16	20 13:20 24:23
30:8 32:3,8	10462767 9:14	174 67:15	32:25 110:17
34:21,22 37:3	10580 3:19	176 63:17,21	110:18,20
38:8,12,13,16	10:14 1:19 2:9	65:3 66:7	111:3,4
38:17 39:4,17	10:50 24:16	67:11 68:4,21	20001 3:8
40:5,17 41:5	11 115:8,10,12	69:20	2016-136143
42:2,16,17	115:14	185 50:5,10,11	10:25 11:23
43:5,6,8,11,18	11:02 24:17	50:16,17	115:18
44:4,5,14,14,24	11:17 33:16	186 51:3	2017 22:12
45:3,16 46:15	11:19 33:17	187 50:12 51:7	23:10 24:4
46:21,23 47:7	11:40 45:20	19 22:11 23:10	2017/052199
47:17 48:4,18	11:52 45:21	194 102:24	10:19
48:22 49:5	12 115:16,19	103:12,13,15	2018-126401
52:24 53:10	125 33:20	103:19,22	10:22
63:4,7 72:14	34:24 45:25	104:3,5	2022 17:18,23
75:17 82:2,6	50:14 52:4	199 50:12	18:4,8
82:12,20,24	13 90:3,5,8,20	51:10	2023 1:18 2:8
83:3 89:3 95:8	91:13 103:13	1:03 71:24	114:23 116:22
95:12 105:4,14	103:16,20,24	1:36 71:25	117:16
105:17,25	104:4	2	2023-598 9:16
106:11,15,17	139 57:6	2 9:14 10:9,14	20230914 12:3
106:19,23	141 84:7,20	11:12 12:10	115:19
107:14 111:17	85:6 87:19	14:7 21:12,16	206 3:18
115:8	143 85:24	22:7 62:14	112:23,25
10 11:4 12:3	144 57:7 78:2	64:10,25 72:4	21 1:18 2:8
13:20 115:19		72:8,9,12,18,23	

214 112:24	4a 81:6	60 72:21,25	9
22 33:2 73:18	4g 5:18	77:15,21,23	9 111:19,21
23 17:17,23	4th 116:21	79:2,8 81:18	112:8
18:4,8	5	87:11	901 3:7
250 89:25	5 10:23 11:25	6312439 1:25	94 22:6,17,18
103:11,23	23:2 76:4	6a 65:16,16	a
255 90:18	105:6,10,16	66:12 67:2,4,5	a.m. 1:19 2:9
3	106:2,4,7,11,14	70:2,7,8,9,13	24:16,17 33:16
3 9:16 10:17	106:14,17,22	70:16,22,23	33:17 45:20,21
11:16 63:17	106:24,24	71:3,6,7,13	ability 7:16
76:3 90:2	107:2,4,4,8,11	6b 65:16 68:7	21:14 68:2
102:25 115:12	107:12,13,21	70:6,11,12,22	102:12
30 111:14	107:23,24	71:8,14	able 24:5
112:3,5	111:12 113:12	7	above 113:2
359 116:22	115:16	7 72:19	absolute 83:21
3:05 111:7	50 4:21,22	7.5 79:21	access 21:8
3:10 111:8	14:25 15:7,9	76 111:21	76:7
3:21 114:11	15:13	112:8	accurate 14:23
3:29 114:12	52 52:23	767 10:14	17:22,24 117:9
3:30 114:17	53 73:4	16:10 22:11	acquired 41:9
3a 75:14,20	54 73:4,9	23:9 24:21	acrobat 8:12
3g 5:18	5g 5:19 18:20	25:10 26:16,17	action 16:8
3gpp 5:17 66:2	19:7,14,21	28:25 29:2	116:17
66:5 76:20	20:8,15,19	32:12 37:10	actual 85:13
89:13 97:7,8	21:2,9,13,19,21	39:9 82:2 89:3	actually 10:9
4	21:23 22:2,4	95:7,10 100:19	24:10 75:2
4 10:20 11:20	77:3,18 79:14	100:25 102:4,5	add 107:4
72:5 76:3	79:23 80:7	105:5 108:3	additional 30:3
80:25 81:5	96:12	8	40:20 106:17
108:25 115:4	6	8 51:3	additionally
115:14	6 11:5 12:6,19	802.11 19:2	69:8
411 3:17	65:14,15	802.11a 20:22	additions 17:25
48 74:2	113:21,25		adds 106:24
	115:19		adobe 8:12

ago 14:5 aimed 19:3 airflow 18:17 18:24 19:14 alcohol 7:16 allege 56:22 allocated 64:23 allow 33:3 56:13 67:11 77:20 allowing 71:10 alongside 65:24 altogether 88:23 america 1:6 amount 13:23 analysis 24:6 32:18 57:10 82:24,25 83:2 analyzing 14:19 answer 6:5,14 7:8 33:3 43:7 44:13,18,23 77:18 98:21 107:8 answering 45:2 answers 6:2,19 anyway 87:20 apex 1:10 4:14 16:11 apparently 35:25 appeal 1:3	appear 104:23 appearing 2:13 appears 36:19 87:7 95:6 104:11 106:16 107:23 application 10:18,21,24 applied 106:2 apply 28:20 32:15 39:7 41:24 appropriate 15:8 approximately 5:3 13:7 18:5 april 22:11 23:10 24:4 architecture 20:7 area 18:25 19:4 19:8 20:2,24 66:19 art 16:13,17,24 17:3 22:10,22 22:24 23:12,19 23:23 24:6 27:3,8,13 28:8 28:18 30:7,12 30:20,22 31:8 31:14,21 32:16 34:20 37:20,24 38:2,4,6,10,25 39:7,18,20 40:3,13,17,19	40:21 41:4,9 41:11,14,23 42:8 43:3 48:16 53:20 54:6,12 56:9 60:21 76:21 77:11,24 79:12 79:17 80:14 85:15 86:13 88:8,13 91:15 92:3,22,24 93:19 94:18 96:11 97:25 103:22 107:4 108:9 aside 8:11 12:14 15:14 16:5,10 28:24 asked 32:13 asking 5:25 25:6 32:4 36:3 53:9,11 94:22 95:11 aspects 78:12 84:15,17,21 85:9 104:19 asserting 49:9 associated 39:11 78:13 84:22 assume 6:14 30:9,15 attached 17:11 attorneys 3:6 3:16 8:4 16:5	23:16,18 24:7 available 16:18 avenue 3:17 avnu 3:7 awhile 5:13 awkward 99:15 b b 4:2 67:17 111:17,20 back 32:24 38:16 52:4 56:25 65:3 95:20 background 17:10 76:5,6 band 66:9 73:2 74:17 90:7,12 90:20,21,21,24 90:25 91:3,4 91:13,16 92:8 92:10 93:2,4,8 93:9,13,21,23 95:23,24 96:16 97:2,4 98:3,5 98:25 99:6,17 99:20,21 100:2 100:3,8,9,22 101:7,17 102:7 102:9,13 103:7 bands 90:13 91:9,9,21,24,25 92:5,15,16,19 93:12,15 94:2 94:13 95:2,19 95:23 96:3
---	--	--	--

97:11,14,15 98:23 99:2,8 99:10,22 100:12,23 101:3,8 102:10 102:16,22 103:6 base 66:19 67:12,17,25 68:20 88:15 89:8,22 104:20 104:25 105:3 113:13,17 based 18:24 20:11,23 24:6 27:13 29:9 40:6 41:9 43:5 49:6 70:17 77:6,13 79:3,7 79:24 81:17 90:22 92:19 95:2 96:13 97:4,4,8,12 98:22 113:24 114:5 baseline 106:12 106:21 basically 5:24 62:3,9,21 basis 23:21,24 59:17 67:13 86:8 bathroom 7:5 bay 19:17 20:2	beam 1:10 4:14 16:11 beginning 52:24 104:12 belabor 105:8 believe 12:12 50:11 66:4 92:2 believed 18:7 belongs 107:22 108:20 better 14:22 77:18 bims 1:22 2:13 4:1,9,12 5:1 6:1 7:1,12 8:1 8:9 9:1 10:1,15 11:1,7 12:1,8 13:1 14:1 15:1 15:14 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1,20 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 33:20 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1,24 46:1 47:1 48:1 49:1 50:1,2 51:1 52:1 53:1 54:1 55:1 56:1	57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 71:19 72:1,4 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1,19 115:1 115:4,9 116:1 116:10 117:1 117:18 118:1 119:1,22 binder 8:18 bit 17:10 65:19 78:24 99:14 108:5 block 63:25 64:5,14,19,20 64:23,25 73:14	blocks 64:3,5 64:11 blood 116:17 blue 48:11,12 bluetooth 5:17 board 1:3 9:19 bottom 17:15 17:16 boughtstuff 21:25 22:3 box 74:12 boxes 109:9 bracket 31:14 brackets 31:19 31:20 break 7:2,3,5,9 24:13 45:19 68:13 71:18,23 114:10 breaks 6:25 browser 9:5
			c
			c 3:2 cable 5:21 call 10:19,23 11:2 called 4:2 18:25 38:14 67:6 76:7 90:3,7 107:12 calling 7:3 calls 102:5 112:5 campus 19:4

capability 98:13 capable 93:3 captioned 117:7 carrier 97:21 carry 106:23 case 1:14 14:3 14:4,8 18:6 75:25 77:11,13 90:23 95:16 98:8 101:9 111:17 cases 13:11 111:20 cch 35:16 cdma 5:18 cell 66:12,18 93:4,21,24 96:17 97:20 cells 97:21 cellular 20:3 center 66:11,11 66:21,22,24 67:4 68:10 69:22 70:10,20 70:20 71:5,11 71:14,16 ceo 18:17 21:20 certain 42:16 55:19 74:17 certainly 36:25 certificate 116:2	certified 116:6 certify 116:9,15 cetera 67:19,21 67:23 chance 106:13 change 26:15 118:4,5,7,8,10 118:11,13,14 118:16,17,19 118:20,22,23 119:4,5,7,8,10 119:11,13,14 119:16,17,19 119:20 changes 8:5 117:10,13 channel 59:3 73:13 check 15:2 50:2 chen 3:11 8:3 chen.zang 3:12 cingular 93:9 citations 50:13 cited 12:14 claim 24:22,25 26:21,22 27:4 27:10,16,19,20 27:23,24 28:2 28:4,9,10,11,12 28:18,19 29:7 29:10,12,15,17 29:17,23,25 30:8,13,17 31:3,7 32:3,8 32:12,14,17,17	34:21,22 36:10 36:11 37:3 38:8,12,13,16 38:17,22,24 39:4,12,15,17 40:5,17,24 41:5 42:2,9,11 42:16,17,17,23 43:5,6,8,11,18 44:4,5,14,14,24 45:3,16 46:9 46:15,21,23 47:2,7,17 48:4 48:18,22 49:5 82:2,6,12,19,20 82:24 83:3,4 89:3 95:6,8,12 105:6,10,14,16 105:16,17,17 105:24,25 106:2,4,7,11,11 106:14,14,15 106:15,17,17 106:19,22,23 106:24,24 107:2,4,4,8,11 107:12,13,14 107:21,23,24 108:3,11,18 claimed 35:11 78:15,16,19 84:8,12,25 85:2 86:18,21 claims 39:10,12 85:2 105:19,21	clarification 34:13 55:11 79:6 96:22 102:8 103:18 clarify 43:9 106:5 114:4 clear 6:8 36:4 53:7 69:14 108:12 clearer 9:21 clearly 36:20 close 9:4 87:20 closer 15:9,9 coast 71:20 coffee 7:6 colors 48:13 column 90:11 91:12 93:7,10 98:22,24 100:21 101:12 102:21 columns 33:2 combination 51:9 56:13 57:9 65:2 97:21 combine 56:17 combined 56:23 58:3 60:20 combines 56:9 come 25:25 comes 66:5 coming 66:2 68:3
---	--	---	---

committed 13:16	conference 9:6	configuring 93:3 97:23	38:15 39:17
common 37:21 97:12	configuration 56:11,16 73:5	confusing 10:3	40:5 41:16
commonly 19:2 20:12	74:20 78:6	consecutive 50:20	42:2,9 43:6,22
communicate 15:15,22 59:12	82:7 84:16,18	consider 13:23	44:3,5,14,24
communication 65:8,10 76:9	84:19 85:5,7	32:5,14 39:2	45:2 47:22,24
communicati... 19:9 20:7,14	87:23 88:3,6,9	43:10 44:12	59:25 61:10
53:24 66:6	88:14 89:9,20	considered 12:13 15:4	64:6 65:11,12
companies 19:24	92:7 97:19	23:25 26:11	65:13 73:24
complete 79:13	98:16 101:13	32:2,2 107:9	75:9,12 87:16
completely 110:3	101:15	considering 42:16 43:7	89:9 95:7,12
complexity 24:2	configurations 98:14	67:16	95:13 98:4
comprise 51:21 74:20	configure 93:20 94:13	consistent 106:11	100:19,25
compromise 73:6	95:22,23 96:3	consists 110:6	106:3,7,18
compute 83:15 83:19	96:16,19,20	consultation 23:16,17 24:7	112:4
computer 8:10 16:19	97:2,3,10 98:2	consumer 19:6 19:10	contexts 19:8
conclude 28:22	98:25 99:5,6	contained 89:19	contiguous 66:25
concludes 102:11	99:16,17,18	containing 57:5	continuation 92:4
conclusion 31:9	100:22,24	contemplate 55:3	continuing 112:23
conduct 16:23 17:2	101:2,16	context 4:23	contradict 34:14
	102:13	25:18,24 26:16	control 59:3
	configured 50:20,23 90:14	26:17 27:4,9	60:14 61:20
	90:25 91:5	27:16,18,20,23	89:11
	92:5,9,15,16	27:24 28:2,4,9	controlled 73:13
	93:12,15,24	29:2,7,14,17	convenience 9:9
	95:19 98:5,23	30:3 34:22	conversation 94:23,24
	100:2,3,9,12	37:14 38:12,13	convey 94:16
	101:7,8 102:11		96:10 99:15
	102:23 103:6		106:21
	configures 91:16 98:8		
	102:15		

conveying 70:5 copies 8:16 copy 12:25 corporation 20:18 correct 17:18 21:10 36:23 37:13 38:23 39:21 40:13 46:18,22 49:10 59:19 72:16,21 87:17 89:12,14 89:23 93:17,25 94:15 99:11 102:9 106:8 110:3,10,21 113:22 corrections 117:10 correctly 47:12 95:18 corresponded 16:2 corresponding 90:23 counsel 3:20 4:13 9:18 15:14 17:5 county 116:5 couple 18:15 course 6:18 8:24 court 5:4,7 6:21 8:22 33:13 34:12	55:10 56:4 79:5 96:21 103:17 cover 5:15 71:14 coverage 19:5 51:4 66:19 covered 19:23 covers 71:7 created 23:16 cross 9:23 25:9 css 50:19 90:22 91:2,3,4 cto 18:17 cup 7:6 cupp 21:20 current 66:16 76:11 currently 8:10 32:3 cv 17:10,21,22 17:23 cybersecurity 21:20 cycle 78:20 111:22 112:4,5 112:6,14 cycles 112:9	18:4,5 119:21 day 13:14 114:23 116:21 117:15 dc 7:22 dci 56:10,16 73:5,12,16,17 73:19,24 74:3 74:4,6,12,16,20 74:22 78:5,5,8 78:17,19 81:10 81:24 82:6,9 82:10,17 83:11 83:16,21,24 84:4,9,15,18,19 85:4,6 86:3,6 86:17,23 87:3 87:7,12,14,22 87:23 88:3,4,6 88:9,11,14,16 88:19,20,24 89:6,9,11,15,17 89:19,20,21 113:7,9,14,16 113:18 december 17:17,23 18:4 18:8 116:22 decision 11:3 12:4,20,23 13:2 113:20,24 114:6 115:20 declaration 9:15 10:15 11:6 12:9,15	12:18,22,25 14:7,10,21 16:7 17:7,11 17:13 22:6 23:25 33:5,21 45:25 48:5 50:15 56:8 57:2,7 78:3 102:3 107:11 112:22 114:2,5 115:8 117:4 declare 117:5 dedicated 81:24 default 90:25 define 86:22 defined 51:11 64:21 106:19 defines 66:25 86:21 definition 23:8 23:12,18 42:20 42:21,22 43:13 96:4 97:12 106:3,10,18,22 106:25 107:5 definitions 107:10 degree 22:13 22:25 41:12,18 41:23 delivered 112:11 delivering 21:18
	d		
	d.c. 3:8 danielle 1:25 2:15 4:4 116:6 116:23 date 11:9,13,17 11:21 12:2,7		

delivery 19:9 depend 58:24 dependent 105:17 106:15 depending 25:18 39:14 depends 54:10 58:23 98:12 deployment 98:12 deployments 19:4 deposed 5:11 5:14 deposition 1:21 2:12 4:15,17 11:7,11,16,20 11:24 12:5 13:4,6,9,15 15:16,18,23 16:3 113:21 116:11,13 117:2,7,11 118:2 119:2 depositions 4:23 5:15,24 derived 41:10 describe 25:20 25:21,24 56:7 57:7 66:6 73:9 80:4 85:24 described 48:18,19 52:7 56:22 64:25 82:5 100:20	102:3,20 107:14 112:22 113:11,15,16 describes 28:10 51:17,22 60:2 65:7 76:4,6,10 describing 28:22 60:14 66:15 95:3 101:13 112:4 113:11 description 22:21 102:12 111:24 115:7 115:24 detect 54:23 55:25 56:19 57:24 60:8 62:10 determination 102:7 determine 16:24 74:25 75:4 78:11 85:9 86:5 92:8 102:22 111:25 determined 38:18 40:6 90:12,22 91:8 93:11,14 98:22 101:5,19 103:8 determines 84:21 87:11,13 determining 86:2 93:22	101:12 develop 15:4 developed 18:24 19:7,13 20:11 21:12,16 developing 14:19 development 79:15 96:13 devices 19:6,10 diagonal 74:12 74:15 81:2,3,9 81:14 109:10 dictate 75:18 difference 62:6 104:7,15 113:6 different 32:11 38:2,7 39:15 39:19 54:22,23 55:23 56:2,14 56:15,20 57:22 57:22,25 58:6 58:7,10,15,16 58:17,19 60:7 60:8 61:6,8 62:5,11,15,19 62:20 63:3,4,6 63:12,13,15 68:8,23,25 69:5,6,10,14,17 70:7,13,16,22 73:20 78:12 84:21 85:9 93:6 100:4 107:10 108:13	differentiate 44:3 differentiation 39:6 differently 108:10 difficulty 67:22 digital 5:19,21 direct 4:7 87:3 directly 15:23 director 20:6 disclose 55:5 disclosed 26:25 34:9 46:9 47:13 52:8 60:19 61:9 86:18 112:19 113:10 discloses 35:6 35:11,15,18 36:15,19,25 46:3,12,13 48:3 52:5 53:16 56:10 57:3 73:3 78:3 78:10 85:25 113:3 disclosing 35:23 disclosure 34:25 35:19 36:9,14 46:21 47:4,16 49:4 49:12,14 73:22 79:4 104:4
--	---	---	---

discover 17:3 discussed 57:20 78:10 81:17 95:4 103:11 discussing 46:2 discussion 10:11 44:17 100:17 displayed 70:2 71:2 110:3 distinction 25:12 district 5:4,7 divided 53:3 72:15,20 75:9 75:16,19 108:21 docsis 5:20 document 9:11 documents 8:16,19,19 12:14,17 16:13 16:17,25 24:3 doing 19:11 82:24 domain 38:20 40:8 73:7,10 73:12 74:21 78:14 84:23 85:20,22 86:6 87:14 double 15:2 downlink 34:5 34:10 35:4,6 35:10,17,19,23	36:2,6,9,16,20 36:21 37:4 46:4,18,20 47:5,18,21 48:2,9,19 49:2 49:8,9,13,19,21 49:23 50:8,21 50:24 52:6,11 54:18 55:8,13 86:24 89:11 dozen 5:8 dr 4:9 7:12 8:9 10:15 12:8 15:14 24:20 33:20 45:24 50:2 71:19 72:4 draft 23:13 drafted 23:18 drafting 17:6 drugs 7:15 drx 78:20 112:4,14 duly 4:3 116:12 dunner 3:5 duration 54:2 64:22 75:13,15 78:16,17,20 82:8,10,12,16 82:18,22 83:2 83:9,10,17,18 83:24 84:2,7,8 84:10,12,14,24 109:14	e e 3:2,2 67:17 e.g. 66:11 78:20 earlier 14:12 24:11 29:16 31:7 34:19 35:14,14 93:18 95:5 97:24 100:18 113:19 easier 107:16 east 71:20 edcch 65:25 effort 57:11 eight 72:19 77:16 either 7:5 57:25 59:23 72:23 81:18 99:16,18 99:20 100:2,22 electrical 22:13 22:25 electronic 19:6 19:10 electronics 1:5 1:6 element 73:13 embodiment 26:24 32:20 53:4,17 54:15 73:15 74:18 103:16,20,23 embodiments 26:20 73:5,22 74:19 103:14	employed 15:19 employment 18:2,14,16 enb 103:6 encapsulated 37:2 encompasses 21:14 engineering 22:13,25 enhancement 51:4 enhancing 67:25 entire 93:4,21 93:24 96:17 97:20,21 109:15 117:6 entirety 26:19 27:6 28:8,11 29:10 53:6 60:17 74:13 entrepreneurial 19:17 entry 18:16 19:16 20:6,16 equal 62:21,25 equals 51:5 110:16,17,18 110:20 111:3 111:17,18 equated 46:25 equation 80:6
--	---	---	--

equipment 35:3,7,15,20 47:14 50:9 51:18 89:23 93:14 equivalent 62:9 errata 117:2,12 118:2 119:2 esq 3:9,11,20 et 67:18,21,23 evaluate 19:25 98:17 evaluating 20:21 evidence 33:3 exact 13:15 exactly 29:12 42:18 57:16 examination 4:7 115:3 examine 107:8 examined 4:6 example 25:18 28:13 38:18 40:6 46:12,14 46:16,19 47:6 47:10,16 48:17 48:21 50:16 51:5 54:17 55:4 64:9 65:14 66:23,24 67:6,15 70:8 70:21 71:6,7 71:13 73:21 75:20 86:13	90:19 95:8 109:5 exceed 23:7 except 49:6 117:10 exception 9:6 excluding 36:6 exhibit 9:11,14 9:16,20 10:5,6 10:7,8,9,12,14 10:17,20,23 11:5,8,12,14,16 11:18,20,22,24 12:6,10,19 14:7 16:19 17:11 22:7 24:21 63:17 72:5 80:24 90:2 102:25 105:4 108:4,25 111:12 113:21 113:25 115:8 115:10,12,12 115:14,14,16 115:16,19 exhibits 9:9,22 115:6 exist 72:25 existence 74:24 75:3,7 77:22 78:25 79:8 81:16 existing 9:20 expect 104:2	experience 22:15 23:3 24:3 41:13,19 41:24 experienced 5:24 expert 14:20 23:25 expertise 24:4 explain 34:18 47:9 48:13 61:2 66:13 68:14 70:15 75:11 explanation 51:2 express 21:17 expressed 83:6 expressly 26:24 60:19,23 61:9 64:17 71:10 f fabricant 3:15 fabricantllp.c... 3:21 fact 40:23 41:10 42:10 48:15 fair 13:20 fairly 69:3,16 70:4 farabow 3:4 fast 6:8 feature 102:5,6 111:24	fi 5:17 19:3,13 20:3 field 22:14,15 23:2,3 figure 51:3 52:24 64:10,10 64:19,25 65:14 65:15 66:12 67:2,4,5 68:7 70:2,6,7,8,9,11 70:16 71:3,6,7 71:8,13,14 72:4,8,9,12,18 72:23 73:8,17 73:19 74:5 75:6,14,20 79:2 80:24 81:5,6,7,8,9 83:10 85:21 108:25 109:5 109:13,20,23 110:3,4,7,24,25 113:12 file 41:6 find 54:12 fine 8:21 9:2,8 9:24 10:4 24:15 44:16,25 finnegan 3:4 7:21 8:4 15:15 15:21 16:6 finnegan.com 3:10,12 firm 15:6
--	---	--	--

first 4:3 9:10 14:2,15 18:6 18:16 28:13,19 29:18 30:14,24 31:3 38:19,21 40:7,9 48:10 48:17 55:24 56:20 72:13 85:19 90:8,9 101:18 107:13 107:16,22 108:7,12,18,20 108:20 109:24 112:21 five 22:14 27:14,17 41:12 41:18,23 76:17 fixed 49:24 52:10,12,17,18 53:12,21,25 54:7,13,19 55:9,14,18,22 57:20 60:5 62:3,16 75:13 flip 36:18 104:23 flush 78:23 focus 90:4 focusing 60:22 following 17:15 follows 4:6 form 29:20 31:16,24 36:24 39:22 40:25 41:20 42:13	43:16,24 44:11 49:11 52:14,21 53:14 55:2 58:5 60:12 62:12 69:11 70:3 71:4 74:9 83:6 96:8 97:17 98:11 99:4,24 100:16 101:11,22 102:18 105:15 112:18 formed 57:14 forth 116:12 founder 18:17 21:25 frame 13:17 109:15,19,21 109:25 110:2,5 111:21 112:8 113:5 frames 46:21 74:4,7 112:6 fremd 3:17 frequencies 58:19 64:24 66:18,25 frequency 38:20 40:8 58:8,18 64:11 64:15 65:2 73:2,7,8,10,12 74:17,21 78:4 78:8,12 84:22 87:22 113:17	front 8:17 46:17 full 4:11 43:5 83:23 fully 6:6 further 29:25 51:13 53:3 70:16 73:9 106:18,24 107:5 114:8 116:15 g garrett 3:5 general 25:6,11 25:15,16 26:3 39:25 43:17 53:19,23 100:24,25 generally 5:10 5:15 6:24 37:8 37:9,15,17 54:3 generation 76:9 give 14:23 15:5 70:8 given 13:23 21:13 23:25 66:2 95:9 116:14 gives 98:13 giving 5:25 glenayre 21:7 21:11,15	go 5:22 7:4 18:12 32:24 33:14 38:16 56:25 78:9 goes 50:25 51:6 51:12 73:9 going 6:14 9:8 9:11,14 10:5,6 10:8,13,14,17 17:12 18:12 47:8 48:6 74:7 77:9 78:23 82:15 85:18 90:3 98:19 106:6 109:10 goldberg 3:9 8:3 9:18,25 31:16,24 32:6 32:23 36:24 39:22 40:14,25 41:15,20 42:12 42:24 43:15,23 44:10 45:4,12 49:11,25 52:13 52:20 53:13,22 54:9,25 56:24 58:4,12,21 60:11 62:12,22 63:8 69:11 70:3 71:4 74:9 81:25 96:7 97:16 98:10 99:3,12,23 100:15 101:10 101:21 102:17
---	---	---	---

105:15,23 112:18 114:9 114:15 good 4:9 24:10 24:12 71:18 gprs 20:11 grammatical 91:19 grant 1:25 2:15 4:4 116:6,23 granted 12:21 granting 12:4 12:20 115:20 graphic 72:18 72:24 74:23 75:5 109:4,8 110:7 113:2 graphics 72:13 great 8:15 9:3 greater 26:13 29:8 30:4,5 34:23 green 33:24 35:24 46:17 48:8,10 ground 5:22 group 21:8 73:15 guess 5:4 29:11 91:18	hand 116:21 happens 75:21 happy 6:10 7:4 hard 13:10 14:22 43:6 harry 1:22 2:12 4:1,12 5:1 6:1 7:1 8:1 9:1 10:1 11:1,6 12:1 13:1 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1	90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1,19 115:1,4,8 116:1,10 117:1 117:18 118:1 119:1,22 head 6:19 hear 33:11 held 2:13 hello 33:10,10 46:12 help 44:2 helpful 52:23 henderson 3:4 hereinafter 90:21 hereinbefore 116:11 hereof 117:12 hereunto 116:20 high 80:13 higher 108:5 highlighted 46:17 48:8,10 48:11,12	highlighting 33:25 highlights 35:25 history 18:2,14 18:16 41:7 hopefully 8:22 hopping 73:8 hour 6:25 7:3 24:11 hours 13:7,16 13:17,20 14:25 15:7,13 huhs 6:20 hundred 15:10 hypothetical 31:25 55:7,12 55:13 57:18 58:19,25 60:3 60:13 61:3,7 61:10,12,19 62:14,18
h			i
h 4:2 half 5:8 13:6,8 13:12			identification 11:8,12,17,21 11:25 12:6 86:15 115:7 identify 104:22 ieee 19:2 20:22 illustrates 73:19 impair 7:16 implement 80:2 implemented 19:12

implies 91:9	101:25 112:11	10:24	34:4,9,16,22
imply 91:24	113:14,18	internet 9:5	35:12 36:2,7
implying 70:24	instance 36:22	interpret 31:22	36:11,12,23
inability	instances 101:6	32:10 103:22	38:14,14,15,17
100:21	113:12	105:12,13	39:13,14,14,16
include 31:22	institution 11:3	108:9	40:11 41:25
47:15,18 48:24	12:4,20 113:20	interpretation	43:4 44:6,9,13
82:25 85:12	114:6 115:21	39:19	45:10,15 46:10
included 38:21	institution's	interpreted	46:14,23 47:2
40:9 49:3 85:4	13:2	92:12	47:6,11,17,19
86:10,24	instructed 59:4	interval 28:23	47:19 48:4,8
includes 26:20	integer 25:2	30:10,18,23	48:22 49:4,20
28:12 47:5	26:4,5,12,15	31:5,11,13,22	63:15 78:13,15
48:3,21 49:14	27:4,10,15,17	32:22 34:16	78:17 82:3,4,4
78:6 85:7	27:19,21,22,25	36:13,15 37:8	82:13,19 83:4
including 20:2	28:3,5,11 29:2	37:11,15,22	83:5,6 84:8,12
78:14 82:8	29:3,14 30:2,5	38:3,7,11 39:3	84:23,25 86:22
incorporating	31:23 34:23	39:8 40:2,4,6	87:3,5 89:5
42:20	94:3,5,20 95:2	40:22 41:14	92:12 108:19
incorrect 61:17	95:5,11,15	42:4,8,15,19,21	108:22 109:7,8
index 115:2	97:13,15 99:22	43:13,18,21	109:9,11,13,17
indicate 28:15	100:11,18	44:7,15 46:22	109:18 110:12
74:3,22	101:2 105:11	46:25 48:24	110:14 111:2
indicated	105:12,14,18	49:18 50:18	112:17,20,21
117:11	105:21,24	51:11,19 52:10	invention 67:24
indicates 69:12	106:10,16,19	52:17 62:16	76:5,6
73:11	106:23 107:6	83:18,18 86:18	inventor 34:25
indicating	inter 4:23	86:19,21	involved 14:3
69:16 70:22	interest 107:20	108:10,13,14	16:6 18:6
112:12	interested	108:17 110:12	ipr 5:14 9:12
individual 5:13	116:18	interval's 42:22	9:16 12:5
109:19 113:12	interject	intervals 28:14	18:10 115:21
information	107:15	28:20,22 29:19	ipr2023-00598
78:7 85:8,12	international	29:20 30:8,14	1:14
85:17 89:12	9:17 10:17,21	31:4,10 33:25	

iprs 5:5,7,8,9 5:11,13 issue 8:25 57:12 itc 5:7	72:6 77:24 79:17 80:2 81:20,22 82:11 82:18 83:9,17 83:20,22 94:22 94:23,24 96:4 96:14 102:25 106:25 109:2 111:14 knowledge 83:25 84:3 known 20:12 84:13	81:20 83:23 95:5 lengths 60:7 61:8 63:6 letting 17:21 level 24:2,3 40:18 41:10 51:5 80:13 limit 71:13 72:24 106:18 limitation 28:19 30:13 31:3 36:10,11 40:10 57:13,15 limitations 28:12 29:18 37:10 39:12 42:17 limited 26:23 26:24 59:9 limiting 40:24 42:11 104:4 line 5:20 49:24 52:12,19 53:12 53:21 54:8,13 81:3 84:5 118:3,6,9,12,15 118:18,21 119:3,6,9,12,15 119:18 lines 62:6 74:12 81:2,10,14 109:10 link 55:9	listed 16:19 litigation 14:17 litigations 14:13 little 14:5 17:10 24:11 65:19 78:24 99:14 108:5 liu 10:23 11:19 16:25 36:25 56:9,17 57:9 57:13 58:3 59:24 60:21 72:5,9 73:3,16 73:25 74:19 75:12 76:4,6 78:3,10 79:4 79:13 80:18 82:21,25 84:18 85:24 86:17 87:16,25 88:9 88:12 93:2 94:19 96:13 97:4,5 101:23 102:20,20 103:14 108:25 113:10,15,16 115:15 liu's 88:3 llc 4:14 18:18 19:18 20:8,18 21:20 llp 3:5,15 local 18:25 19:4,8 20:24
j			
job 1:25 joshua 3:9 8:3 joshua.goldb... 3:10 jpymeto 3:21 julian 3:20 4:13 jumping 108:24	l l 3:9 10:23 language 27:19 38:22,24 40:24 42:11,23 66:8 95:6 100:7 107:20 law 7:21 layer 19:11,12 21:3 layers 19:15 lead 31:9 learn 78:4 87:21 left 93:7 legacy 67:21 length 54:16,19 55:14,18,22 57:21 60:5 62:4 77:25 79:3,10,19 80:10,11,16		
k			
keep 45:24 kilohertz 72:16 72:21,24,25 74:24 75:3,7 75:14,18,21 76:2,13,16,25 77:4,8,15,21,22 77:23 79:2,2,8 79:8,21,21 81:18,18 85:22 87:11,11 kind 78:23 know 7:3,4 8:7 8:23,25 9:3 10:7 14:21 15:3,7 17:21 24:10 29:13 30:24 48:7			

located 7:19 16:13,15,20 66:11,17 location 37:5 38:19 40:7 85:23 91:2,3 103:7 112:12 locations 2:14 78:14,15 84:24 85:20 86:6 87:14 105:2 long 33:2 53:2 69:4,16 70:5 look 17:20 32:25 33:2 61:16 77:17 80:24 108:23 108:24 111:13 looked 12:25 looking 26:21 27:3 50:5,6,15 53:5 59:2 107:24 looks 17:24 53:15 lost 33:8 lte 5:18 76:11 76:12,23,24 77:19 79:14,22 89:13 96:12 lunch 71:23	machine 65:7 65:10 66:6 made 16:17 115:25 make 10:2 51:18 107:15 making 102:6 mallick 11:2,23 16:25 111:12 112:15,20 113:3,11 115:18 manager 21:6 map 34:4 mapped 69:9 mapping 35:25 87:3 mark 24:12 marked 11:7 11:11,15,19,24 12:5 marriage 116:17 master's 22:12 22:24 41:12,18 41:23 material 13:24 materials 12:13 14:19,19 15:4 23:24 mathematical 25:24 26:6 80:12 matter 18:8 25:7 43:17	53:23 116:19 117:7 mean 8:21 36:3 42:8 43:21 45:16 59:11 64:6 65:22 66:20 68:24 69:8,23 71:19 88:5,18 105:25 meaning 8:5 28:21 29:20 41:17 42:5 52:8 84:4 93:13 95:14 101:6 105:19 107:25 meanings 25:17 means 35:5,18 41:25 52:16 59:7 66:14 68:17 86:14 89:2 100:23 101:17 meeting 8:11 member 20:16 21:5,6 memory 13:16 mention 31:18 82:13,19 83:3 88:20 94:19 mentioned 14:11 15:17 29:16 34:19 39:24 53:17	54:15 58:14 61:6 82:14 84:6 85:10,12 101:23 102:2 113:19 message 55:17 55:21,24 59:2 61:20 91:10 103:5 104:6,8 104:15,17,20 104:23 105:2 112:2 messages 21:15 21:18 54:20,23 55:17 56:2,19 57:19,22,25 60:4,6,8 61:24 62:5,7,11 104:22 messaging 104:10 method 61:22 middle 69:3,15 millisecond 53:2,10,18 54:16,19 55:9 55:15,19,22 57:21 60:6 62:4 63:4,7 mind 17:20 26:2 105:5 minimum 15:13 minute 24:13 114:10
m			
m 4:2 mac 19:12,15			

mischaracteri... 29:5 misunderstan... 83:12,14 modified 32:9 modify 32:8 moment 9:25 monitor 35:16 47:15,23 51:20 58:18 78:7 104:24 monitored 36:17 51:18 59:14 monitoring 28:13,19 29:18 30:13,23 31:3 35:3,7,20 36:14 37:4 48:20 50:9 52:5,8 78:18 78:19 80:16,19 80:22 81:11,12 81:24 83:11,16 83:21,24 84:4 84:9 85:4 86:6 86:17,23 87:4 87:7,12,15 88:16,19,20,24 88:25 89:6,16 89:17,21 103:8 104:9,16,18 113:7,9,15,16 monitors 46:3 50:19 51:12	mood 25:20 morning 4:9 motorola 21:13 21:17 mpdcch 35:8 35:21 36:21 46:4 48:12,17 50:9,19,23 51:7,12,20,21 51:25 52:2,3,6 52:9 57:5 59:8 mpdcchs 35:3 47:15,23 48:20 51:23 msg4 91:5 mtc 65:4,7,13 65:14,21,23,23 66:4,6,10,16,17 66:23 67:2,3,6 67:17,19,22 68:5,6,16,18 multiple 26:20 51:9 55:5 68:24 69:9,24 70:24 91:9,24 92:18 93:15 96:17 98:25 99:7,17 101:8 101:24,24 102:15 103:5 112:6 multiplex 68:6 68:16	n n 3:2 name 4:11 narrow 66:9 90:7,12,13,20 90:20,21,24,25 91:3,4,9,9,12 91:16,20,24,25 92:5,8,9,15,16 92:19 93:2,4,7 93:9,11,13,15 93:21,23 94:2 94:13 95:2,19 95:22,23,24 96:3,16 97:2,4 97:11,14,15 98:3,4,23,24 99:2,6,7,10,16 99:20,21,22 100:2,3,8,9,12 100:22,23 101:3,7,8,17 102:7,9,10,13 102:15,22 103:6,7 necessarily 26:23 53:25 70:12 71:2 75:24 95:21 need 6:19 83:9 83:22 negative 25:22 network 18:25 19:8,13 20:24 76:8 97:22	98:15 networking 22:16 23:4 networks 18:17 18:24 19:5,14 new 2:16 3:7,19 4:5 9:22 76:7,8 116:3,8 noc 21:6 node 67:17 nods 6:19 non 38:3 39:20 40:12,16 63:11 nonconsecuti... 50:21 normal 96:5 notary 2:16 4:4 114:24 116:7 noted 114:17 notice 2:15 notwithstandi... 40:23 42:10 november 1:18 2:8 nr 76:8,12 77:3 77:18 ns 111:17 number 9:14 10:19,22,25 11:4 13:11,16 14:23 15:6,12 16:19 27:17,21 27:25 28:5 76:19 78:18,19 82:7 84:25
--	---	--	--

94:2,25 95:22 96:5 97:14 99:22 101:3 105:6 111:19 numbers 9:20 25:25 26:7,9 26:10,12,12 numerologies 73:21 numerology 85:25 86:10,12 nw 3:7	45:5,13 58:13 58:22 62:23 63:9 99:13 obtain 85:22 obviously 9:5 occasion 35:5 35:17 46:5 47:25 48:2 49:3,14,16,22 51:11,23 52:3 73:24 74:13,16 78:18,21 80:16 80:20,22 81:11 81:12 83:11,16 83:22,25 84:4 84:9 86:24 87:7 89:16,18 89:21 103:7 104:9,16 113:4 113:7,8,9,10,16 occasions 73:20 74:3,3 78:20 86:4,7,17 87:4 87:12,15 88:17 88:19,21,24,25 89:3,6 104:18 113:15 occupied 83:16 occupy 73:16 80:22 occur 74:16 occurrence 73:20,24 74:3 74:13,16,22 86:4	occurring 74:6 occurs 74:4 ofdm 20:23 offer 117:13 office 1:2 12:21 offices 7:21 offset 86:5 oh 8:3 15:11 33:12 65:23 72:10 76:18 90:9 104:11 107:18 okay 8:15,21 12:11 13:25 17:14 22:8,19 24:14,24 33:7 33:22 37:6 43:9 44:2,8,16 44:25 45:11,14 46:16,24 47:8 48:5 49:23 52:11 53:7 54:17 56:18 61:21 63:10,20 72:11 77:6 78:22 90:5,10 93:5 96:24 97:8 101:18 103:3 105:7 107:21 109:3 109:16 111:5 111:15 113:19 114:8 once 6:25 51:8 80:15 84:10	open 12:8,11 operating 66:10,23 67:3 opinion 36:23 37:12 42:15,22 46:13 48:23,25 49:18 50:14 57:12,14 59:18 86:20 87:2 98:7 104:8,14 105:20 108:8 108:15 opinions 14:20 15:5 opposite 10:10 oral 1:21 order 31:12 83:10,15,19 104:25 ordinary 22:10 22:22,23 23:11 23:19,22 24:5 27:2,8,12 28:7 28:17,21 29:7 29:22 30:7,12 30:19,21 31:8 31:13,21 32:16 34:20 37:23,25 38:6,9,25 39:6 39:18 40:3,16 40:19 41:3,8 41:11,22 42:5 42:7 43:3 51:14 52:15 53:20 54:6,11
o			
o 10:20 oath 117:14 objection 31:16 31:24 32:7,23 36:24 39:22 40:25 41:15,20 42:12 43:15,23 44:10 49:11,25 52:13,20 53:13 53:22 54:9,25 56:24 58:4 60:11 62:12 69:11 70:3 71:4 74:9 81:25 96:7 97:16 98:10 99:3,23 100:15 101:10,21 102:17 105:15 105:23 112:18 objections 40:15 42:25			

56:8 66:3 70:6 76:21 77:10,24 79:12,16,25 80:14 85:15 86:14 88:8,13 91:14 92:3,21 92:23 93:19 94:17 96:11 97:24 103:21 104:2 107:3 108:9 outcome 116:19 outside 44:14 44:23 45:2,16 61:10 95:10 overlap 19:11 overlapping 62:17 63:11 69:18 overlaps 20:25 own 27:7 owned 16:11 owner 1:11 3:6 3:16	118:9,12,15,18 118:21 119:3,6 119:9,12,15,18 paged 111:20 paging 5:17 21:12,15,18 35:3,4,8,16,17 35:21 36:20 37:4 46:3,5 47:15,23,25 48:2,12,16,20 49:3,13,15,22 51:10,12,23 52:3,6,9 54:20 54:23 55:16,17 55:21,24,25 56:19 57:24 60:4,6,8,14 61:24 62:4,7 62:11 78:21 90:13 91:8,10 91:20,25 92:5 92:7,9,14,16 93:3,11,15,21 93:23 94:2,13 94:25 95:19,22 96:3 97:11,14 98:23,25 99:6 99:7,10 101:16 102:10,13 103:5,7,9 104:6,8,9,10,15 104:16,17,18 104:19,22 105:2 111:21	111:25 112:5,6 112:10,14 113:3,4,7,10,13 paper 8:16,19 11:3 12:3 115:19 paragraph 22:6,18 23:15 33:6,20 34:4 34:24 45:25 50:5,10,11,12 50:14,16,17 51:3,6,10 52:4 52:23 63:17,21 65:3,13 66:7 67:11,15 68:4 68:21 69:20 73:9,18 74:2 76:3,4 78:2 82:5 84:7,20 85:6 87:19 89:25 90:18 102:24 103:11 103:12,13,15 103:22,23 104:3,5,11 111:13 112:3,5 112:23,24,25 paragraphs 50:6 51:15 57:6 73:4 76:11,16 78:24 parameter 56:11,16 73:6 74:20 78:6	82:7 84:16,18 84:20 85:7 87:23 88:3,6 88:10,14 89:10 89:21 90:20 parameters 85:4,5 parentheses 66:9 parlance 96:5 part 14:22 24:25 32:12 47:24 51:17 101:4,19 partes 4:23 partially 69:18 particular 26:21,23 28:18 35:2 37:16 41:5,5 42:5 50:5 59:3,6,10 60:15,24 69:15 73:15 91:16 95:7 98:15,16 98:18 101:13 101:14 parties 2:13 24:19 33:19 45:23 72:3 111:10 114:14 116:16 partners 19:17 parts 43:7 past 13:11
p			
p 3:2,2 p.m. 71:24,25 111:7,8 114:11 114:12,17 page 17:13,16 17:16,17 22:17 24:23 90:4,8,9 97:10 115:3,7 115:24 118:3,6			

paten 11:10 115:10 patent 1:2,3,11 1:15 3:16 9:12 9:13 10:13,14 10:18,21,24 11:23 12:21 16:10,11 22:11 23:9 24:21 26:16,18 28:25 29:3 32:12 34:25 35:2,5 37:10 39:9,11 82:2 95:7,10 100:19 102:4,5 105:5 108:4 115:17 pattern 73:8 pd 67:10 pdccch 56:14 67:12,18,20,23 68:2,19 pdf 17:13,16 24:23 pdsch 65:25 67:18,21,23 68:19 penalty 117:4,5 pending 7:7 44:20 45:6 people 8:6 40:2 percentage 81:23 82:9,16 83:7,15	period 13:14 14:11,14,16 84:10,11 88:22 periodicity 86:4 perjury 117:4,5 person 15:17 15:19 22:10,22 22:23 23:11,19 23:22 24:5 25:20 27:2,7 27:12 28:7,17 29:7,21 30:7 30:12,19,21 31:8,13,21 32:15 34:19 37:19,25 38:3 38:5,9,25 39:6 39:18,20,25 40:12,16,18,21 41:3,8,11,18,22 42:5,7 43:2 51:14 52:15 53:19 54:6,11 56:8 66:3 70:5 76:21 77:10,24 79:11,16,25 80:13 85:15 86:13 88:8,12 91:14 92:2,21 92:23 93:19 94:17 96:10 97:24 103:21 104:2 107:3 108:8	personally 16:23 17:2 persons 37:23 40:3 pertinent 22:11 petitioner 3:6 petitioners 1:8 phrase 26:4,15 28:15 30:16 66:14,15,20 68:3,15 69:4 69:15,20 70:17 70:18 90:17 91:8,20,23,25 92:4,20 94:5 94:19 97:5,22 101:4,19 physical 8:16 19:11,15 21:3 63:25 64:2,5 64:14 73:14,14 physically 7:20 plain 28:21 29:22 30:16 31:7 95:14 play 101:20 please 4:10 7:4 8:6 12:8 44:2 63:16 111:13 plural 29:20 30:8 31:10 63:23 92:12,20 95:22 107:25 108:19	plurality 79:23 88:25 po 113:4 point 52:23 64:18 pointed 50:13 portion 59:5,10 59:13,19,20,23 60:18,24 61:4 61:13,15 70:4 80:25 81:13 109:12 portions 59:16 60:15 61:7 74:10 75:2,16 posing 55:7,12 posita 23:7 29:13 81:19,22 88:7 position 18:20 19:20,21,23,24 20:9,10,19 21:5,22,24 positions 18:13 positive 25:2,5 25:15,17,19,21 25:22,23 26:4 26:5,11,15 27:3,10,14,17 27:19,21,22,25 28:3,5,10,25 29:3,14 30:2,5 31:23 34:23 94:3,4,5,20 95:2,5,11,14
--	--	---	---

96:5 97:13,13 97:15 99:22 100:11,18 101:2 105:11 105:12,13,18 105:21,24 106:10,16,19 106:22 107:6 107:19 possible 60:20 92:25 97:6 prach 90:22,24 prb 63:22,25 64:14 prbs 63:23 64:2 66:12,21,22,24 68:10 69:22 70:10,20,20 71:5,11,14,16 precedes 88:4,5 preceding 98:24 precluded 36:22 precludes 29:13 32:21 precursor 20:14 preference 9:4 prefers 9:19 preparation 14:9 16:7 prepare 13:14 prepared 13:18	preparing 13:4 13:5,8 14:7 present 24:19 33:19 45:23 61:18 72:3 73:22 111:10 114:14 presented 32:18 pretty 5:23,23 48:6 previous 31:18 prior 4:22 7:2 16:3,12,17,24 17:3,6 18:8 48:16 88:15 113:21 probably 15:7 15:8,12 proceeding 1:17 4:15 5:14 9:13 10:16 11:4 12:21 16:14 18:10 24:18 33:18 45:22 72:2 111:9 114:13 proceedings 5:4 12:9 process 104:19 production 115:23 products 98:17 programs 8:9	pronunciation 21:10 properly 27:8 proposed 67:24 protocol 18:25 20:11,24 21:16 protocols 20:22 provide 6:13 17:5 19:5 34:24 42:15 50:25 106:17 provided 68:5 provides 30:3 ptab 12:4 115:20 public 2:16 4:4 114:24 116:7 publication 10:18,22,25 purpose 21:17 67:8,10 pursuant 2:14 pushing 95:20 put 13:17 15:3 31:20 putting 51:24 99:9 pymento 3:20 4:8,13 9:10,24 10:4,12 24:9 33:8 44:22 45:18 56:6 71:17,22 115:4	q qualification 23:7 qualify 23:11 qualitative 39:5 question 6:7,15 7:7,8 19:19 20:5 21:4 22:20 25:11 33:4 43:7 44:19,21 45:6 48:7 56:18 57:17,18 58:17 61:23 65:18 77:19 91:19 95:10 104:13 107:9 questions 5:25 6:6 18:15 111:6 114:8,16 quickly 5:23 18:12 105:4 quite 14:10 quotation 86:10 quote 82:15 87:21 90:12 103:4 113:3 r r 3:2 4:2,2 radio 76:7 109:25 110:2,5 111:21 112:6,8
---	--	--	---

range 13:23 25:24 26:7,8 26:10 27:11 37:11,13,16 40:4 43:19,21 45:17 53:16 64:23 66:18,25 ranges 63:4 86:23 87:6 ranging 5:16 rar 90:21,22,24 91:3 rat 76:8 rather 82:21 86:22 112:13 ratio 83:19 reach 103:2 111:14 reached 63:19 109:2 read 9:8 28:8 30:22 31:5,12 32:14,19 40:13 76:23 92:3,22 106:22 117:6,8 reading 29:9,23 30:7,16 31:2,7 51:15 71:12 88:12 91:11 93:6 104:3 107:4,11 108:11 reads 30:13 really 6:20 15:5 35:10 36:4	49:6,7 95:16 96:9 98:20 reason 7:12 80:12 118:5,8 118:11,14,17 118:20,23 119:5,8,11,14 119:17,20 reasonable 13:22 85:14 103:25 reasonably 66:4 recall 5:12 14:2 80:8 receive 21:15 56:14 59:5 61:19 89:7 101:25 104:25 receives 68:19 receiving 63:12 63:13 67:22 reception 50:22 recess 24:16 33:16 45:20 71:24 111:7 114:11 reconfigured 91:6 record 4:11 6:21 7:5,9 9:21 10:8,11 33:14 44:17 116:13 records 103:9	refer 26:7 reference 47:22 48:3,16 49:19 50:7 56:10 57:6 103:13 referenced 50:13 references 17:4 17:6 referred 19:2 referring 37:18 37:21 39:13 51:3 52:4,24 64:14 65:3 74:5 80:5 88:21 90:19 101:6 refers 31:10 34:23 37:11 44:15 49:2 69:6 111:24 regains 33:15 regarding 19:21 43:4 57:2 region 74:14,15 81:9 regular 94:23 regularly 111:20 relate 21:19,21 21:23 22:2,4 related 14:17 18:19,20,21 19:20,22 20:8	20:19 21:9 22:13 23:2 25:10 63:14 88:16,19 102:3 103:10 116:16 relates 107:12 relation 48:20 relationship 76:18 79:18,20 79:24 80:3,5,9 82:10,16 83:4 108:16 112:16 112:19 relationships 80:12 relatively 60:9 rely 27:5 30:16 41:4,7 remote 1:17 2:12 remotely 2:13 repeat 22:19 32:6 40:14 42:24 45:4,8 45:12 58:12,21 62:22 63:8 99:12 repeated 51:8 70:21 112:17 repetition 51:4 112:13 rephrase 6:9 16:22 61:23 93:5 100:6
---	---	--	--

replaces 40:10 report 23:15 reported 1:24 reporter 2:16 6:21 8:22 33:13 34:12 55:10 56:4 79:5 96:21 103:17 116:7 represent 48:14 63:24 65:6 72:13 81:4 representing 48:15 represents 81:10 108:2 request 7:6 requested 34:13 55:11 79:6 96:22 103:18 requests 115:23 require 57:11 82:21 83:25 84:3 required 6:5 8:20 24:4 requires 36:12 61:4 84:6 research 22:14 23:2 residence 19:17	resource 63:25 64:2,5,10,14,19 64:20,23,24 73:7,10,11,14 73:14 74:21 78:5,8,13 84:22 87:22 90:23,24 113:17 resources 64:11,15 respect 57:11 80:18,21 82:6 82:24 85:21 86:7 103:11 respective 2:14 68:8,22 69:5 69:13 respectively 72:25 rest 43:11 restricted 52:9 resumed 24:18 33:18 45:22 72:2 111:9 114:13 retained 14:4 14:15 18:7,10 review 15:3 26:18 32:13 38:16 40:17 94:18 106:13 reviewed 12:17 12:23 27:14 113:20	reviewing 14:18 28:18 34:20 38:8 50:3,4 79:13 113:24 114:5 reviews 4:24 revise 113:25 richmond 116:5 right 7:19 25:8 32:4 33:13 36:18 45:18 47:2 50:3 58:14 65:18,19 72:8 75:24 81:5,14 83:8 83:13 85:20 87:4 88:2 91:18 92:11,13 92:17,19 93:8 94:8,11 96:6 96:19 100:6 102:19 110:4,8 110:9 111:11 112:25 role 19:24 room 7:23 8:2 8:6 roughly 4:21 13:14 row 90:4,5,8 rrc 91:6 rules 5:22 running 8:10 81:2	rye 3:19
			s s 3:2 4:2 31:15 31:20 111:18 safe 23:6 samsung 1:5,5 15:23 16:2 satisfies 36:10 save 117:9 saw 53:4 saying 29:6,6 32:9 36:5,8 43:10 47:3,4 53:8 55:4 62:18 63:2 70:11 71:8 82:20,23 83:14 92:14 93:25 94:10,12,14,25 96:2,9 97:22 106:7,9 110:16 112:7 says 17:17 22:9 22:23 25:2 30:2 50:17 51:10 53:2 66:8,21 67:16 68:4,21 69:20 70:18 73:18 74:2 87:25 90:12,18 91:20 92:5 93:7,10 95:18 101:5 102:20 103:4 107:21 111:16

scenario 59:22 61:18 93:22 98:18 111:3 schedule 104:21 scheduled 105:3 scheduling 59:2,8 60:15 103:5 104:6,8 104:11,15,17 104:20 112:10 113:14 schematically 73:19 scheme 67:19 67:20 scope 26:22 32:23 37:3 39:3,23 41:2 41:15,21 42:12 42:16 43:4,15 43:18,23 44:10 45:16 49:25 52:13,20 53:13 53:22 54:9,25 56:24 58:4 60:11 62:13 70:9,21 81:25 95:10 96:7 97:16 98:10 99:3,23 100:15 101:10,21 102:4,17 105:23	scratch 30:20 30:24 75:2 screen 8:23 scroll 24:22 33:22 scrolling 29:25 105:6 search 16:24 17:3 50:18,22 51:2,13,17 60:16,17,23 61:14 63:13 89:18 searches 61:15 searching 61:4 62:15 second 56:21 72:18 section 18:14 23:13 see 5:6,12 10:10 17:12 22:9,21 23:5 24:25 30:8 31:14 33:24 34:6 46:6 48:7 52:25 61:21,22 63:21,23 65:4 65:15 66:8 68:4,11 74:11 76:15 80:25 87:24 90:10,11 93:7 94:4 98:17 103:4 104:3 105:10	108:6 110:18 111:16 seeing 8:25 seems 9:7 send 55:20 113:13 sending 55:16 57:19 senior 21:5 sense 25:15,16 26:6 100:24 101:2 sent 88:7 sentence 25:19 46:2 69:4,16 70:5,11 71:12 113:2 separate 61:25 62:2 88:22 separately 61:25 88:10 89:15 server 16:18 set 76:10 90:23 90:24 116:11 116:21 several 68:5 sheet 117:2,12 118:2 119:2 short 76:8 shorthand 116:7 show 82:21 shown 66:12 67:4 68:6	73:17 75:14 113:12 shows 64:10,19 67:5 75:8,20 109:13,20 110:4,25 sib 90:25 92:6,6 92:10,15,16,25 93:2,12,16,20 93:24 94:12 95:19,21 96:2 96:15,25 97:10 97:23 98:2,5,8 98:24,25 99:5 99:16,17,18,19 100:13,22,23 101:15 102:11 102:12,15,23 sibs 99:17 sic 56:23 78:2 sid 90:14 91:15 side 36:18 104:23 signal 88:7,22 signaling 28:13 28:20 29:18 30:14,24 31:4 48:11,17 signals 62:7 65:15,17 signature 116:22 119:21 signed 117:15 similar 92:11
--	--	--	---

similarity 48:13	38:4,6,9,25 39:7,18,20	75:2,5,10,19,22 76:14,16,19	58:15 72:15,20 74:25 75:4
simple 48:6 98:20	40:3,12,16,19 40:21 41:3,8	77:2,5,9,16 80:23 86:3,7	76:25 77:15,23 79:9,21,22,23
simpler 65:19	41:10,11,22,24	109:19,20	80:9 85:3
simplifying 96:2	42:6,7 43:3 51:14 52:15	110:7,19 111:2	86:15
simply 30:15 40:4	53:20 54:6,11 56:9 66:3 70:6	software 20:6 sorry 22:18	span 20:17,20 21:2
single 51:20 52:10 67:7	76:21 77:10,24 79:12,16,25	70:14 76:15 81:8,8 85:5	spanned 14:21 spans 112:6
75:9 80:21 81:10 82:8,10	80:14 85:15 86:14 88:8,13	88:20 90:9 99:19 108:24	speaking 5:15 6:8 37:9 60:10
82:17 89:9 92:7,9 96:16	91:14 92:3,22 92:23 93:19	sort 44:2 47:9 sound 33:9,15	specific 41:17 54:5 73:2
102:13 109:14 112:13	94:17 96:11 97:25 103:21	south 3:18 space 50:18,22	specifically 18:9 40:22
singular 93:8 102:9	104:2 107:3 108:9	51:17 60:16,17 89:18	52:25 107:2
sitting 12:12,16	slashed 109:10	spaces 51:2,13 63:13	specification 26:19,25 27:6
situation 31:25	slot 59:17,17,18 59:20,22 64:12	spacing 38:20 40:9 55:20,24	27:13 32:15,19 32:21,25 41:6
six 66:11,21,22 66:24 68:10	64:16,20,21,22 72:14,14,19,19	57:4 59:4,7 61:17 75:8,15	specified 56:16 79:20,24 80:15
69:22 70:10,19 70:20 71:5,11	74:11 75:16,17 77:25 78:14	75:22,25 76:13 76:19 77:2,4,8	80:17 84:11,14
71:13,16	79:3,10,19 80:10,11,19,25	77:21 78:7,11 79:18 80:15	specify 82:7 92:25
skill 22:10,22 22:23 23:11,19	81:13,20,23 82:11,12,17,18	85:8,11,13,16 85:17 86:2,9	specifying 56:11 57:8
23:22 24:5 27:2,8,12 28:8	82:22 83:2,10 83:15,23 84:2	87:10,13 110:10	spend 13:3 14:6
28:17 29:8,22 30:7,12,19,21	110:11,13	spacings 54:22 55:6 56:12,15	spent 14:9,18 split 5:3
31:8,13,21 32:16 34:20	slots 53:3 60:2 64:21 72:14,19	57:8,23 58:11	ss 116:4 staff 20:17 21:5
37:19,23,25			21:6

standard 5:21 24:8 76:12,12 76:23,24 77:3 77:3,7,14,18,18 77:19 79:25 80:7 81:17 96:12,12,15 97:7 98:13 standards 66:2 66:5 76:20 77:12 79:14 89:13 97:9 stands 63:25 89:11 start 19:23,25 106:21 starting 112:22 state 2:16 4:5 4:10,10 78:3 116:3,8 stated 35:13,14 108:18 states 1:2 50:10 113:2 station 66:19 67:12,18 68:20 88:15 89:8,22 104:21,25 105:3 113:13 113:18 station's 67:25 stenographic 2:15 stick 8:23	sticking 66:7 stretched 14:10 stripes 74:7 subband 38:19 38:21 40:8,10 65:17 66:9,17 66:23 67:3,5,6 67:7,9,11,25 68:9,10 69:21 69:22,25,25 70:10,19,19,25 71:2,9,10,15,15 73:13,16 74:22 98:9 106:8 107:14,17,22 108:2 subbands 68:5 68:8,23,25 69:5,6,10,13,17 98:6 107:12,23 107:25 subcarrier 38:20 40:8 54:22 55:20,23 56:12,15 57:4 57:8,22 58:10 58:15 61:17 72:15,20 74:24 75:4,8,15,21,25 76:13,19,24,25 77:8,15,23 78:7,11 79:9 79:18,22,23 80:9,15 85:3,7 85:11,13,16,17	86:2,9,15 87:10,13 110:9 subcarriers 38:21 40:9 subframe 34:15 35:6,19 36:20,21 37:4 49:15,22 52:18 53:2,8,9,11,16 53:25 54:21 55:4,5,18,21 56:3,5 57:4,20 58:16 59:3,5,7 59:9,10,13,16 59:19,21,23 60:2,5,9,16,17 60:18,25 61:5 61:7,14,16 68:6,15,18 69:7 75:9,13 75:23 76:14,20 77:2,5,9 86:25 87:6,8 109:14 110:6,19 111:19,21,25 112:8,10,13,14 112:16 113:4 subframes 34:5 34:10 35:4,10 35:17,23 36:3 36:6,9,16 46:4 46:9,18,20,25 47:5,10,13,18 47:21 48:2,9 48:19,24 49:2	49:8,10,13,17 49:20,24 50:8 50:21,24 51:16 51:21,25 52:7 52:12,16 53:21 54:7,13,16,18 55:8,14 59:15 62:2,2,9,15,20 62:20,24 63:2 63:3,4,6,10,12 63:14 86:3 109:21 110:5 110:20 subject 9:12 10:13 submitted 9:15 10:16 12:22 submitting 12:24 subscribed 114:22 subscriber 5:20 subsequent 12:24 subsequently 34:3 suffice 8:24 suite 3:18 supposed 48:14 sure 13:24 15:11 22:21 sworn 4:3 114:22 116:12 symbol 60:7 61:8 62:5
--	--	---	---

80:11 symmetry 20:7 20:14 system 21:12 54:5,10,12 56:13,20,21 58:2,2 61:3 76:7,8,9,11 82:11,17 97:19 97:23 98:2,5 99:5,7 100:4 100:10 101:14 101:15,16 102:14,19 systems 20:8,17 20:21 21:2,2,7 54:4	taken 4:17 7:15 24:17 33:17 45:21 71:25 111:8 114:12 117:7 talk 9:23 17:9 25:9 51:7,13 talking 30:17 49:21 97:18,20 talks 59:15,15 82:2 teaches 57:13 57:15 teaching 60:23 technical 20:17 21:5,6 24:2 technologies 1:10 4:14 5:18 19:12 21:7,11 21:16 53:24 technology 5:10,16,19 18:19,20,23 19:3,7,13,14,20 19:21,22 20:2 20:3,4,8,10,13 20:13,15,18,23 20:25 21:2,8 21:11,13,19,21 21:23 22:2,4 59:12 tell 16:12 29:21 79:9 96:25 telling 95:17,20	ten 13:14 24:13 110:5,19,20 114:10 term 25:5,15,16 26:4,5 27:3,9 29:23 37:10,14 38:3,11 39:7 40:22 41:14 42:4,19 44:9 45:14 63:22,23 64:5,13 65:4 65:10,13,21,23 66:4 70:20 86:12,13 95:5 95:14 97:13 104:5 105:11 105:17,24 106:16,25 107:6,13,24,25 108:6 terms 44:6 65:24 66:2 testified 4:6 49:7 testify 7:13 testimony 28:24 29:4 30:6,11 31:15 31:17,18 34:8 35:9 42:3 43:20 46:8,11 64:13 80:19 86:16 87:9 116:14	thank 22:5 37:6 theodore 3:17 theoretically 92:25 thing 6:18 7:6 8:23 40:13 43:21 58:10 106:20 things 9:2 10:2 37:2 82:8 think 7:17 17:22 24:9,12 26:18 33:8 52:22 56:25 61:21,22 62:17 71:17 79:7 87:20 97:9 108:11 three 25:25 78:11 84:15,17 84:21 85:9,19 109:7 time 7:2 13:3 13:17 14:6,9 14:11,13,18 18:2 23:9 24:10,13 28:14 28:20,21,23 29:19 30:9,14 30:18,23 31:4 31:5,9,11,12,22 32:21 33:25 34:4,9,16,16,22 35:11 36:2,7 36:10,12,12,15
t			
t 20:17,20 21:2 table 90:3,3,5,8 90:20 91:13 100:21 102:21 103:13,16,20 103:24 104:4 111:18 tabulated 80:8 tabulation 81:19 take 6:24 7:2,9 24:13 32:24 45:19 54:17 71:18,23 77:17 78:25 85:18,21 109:4 114:9			

36:23 37:8,11 37:11,13,15,16 37:22 38:3,7 38:11,13,14,15 38:17 39:3,8 39:13,13,14,16 40:2,4,4,5,10 40:22 41:14,25 42:4,8,15,19,21 42:22 43:4,13 43:18,19 44:6 44:7,9,13,15 45:10,14,17 46:9,14,21,22 46:23,25 47:2 47:6,11,16,19 47:19 48:4,7 48:22,24 49:4 49:18,20,24 51:19 52:10,12 52:16,19 53:12 53:16,21 54:4 54:7,13 62:5 62:16 63:5,11 63:15 64:11,15 64:22 65:2 66:9 71:18 75:13,15 77:25 78:4,8,12,13,14 78:15,17 79:3 79:10,15 81:20 82:3,4,4,13,19 83:2,3,5,5,17 83:18,22,23 84:5,8,10,11,12	84:22,23,23,25 85:19,20,22 86:6,18,18,21 86:22,23 87:2 87:5,6,14,22 88:22 89:4 92:12 96:13 108:6,7,10,10 108:12,13,14 108:16,16,19 108:19,20,21 108:21 109:6,7 109:8,9,11,13 109:16,18,22 109:23,24 110:11,12,13 110:15 111:2 112:17,20,20 112:21 113:17 114:17 times 4:20,21 51:9 54:24 56:2,20 57:25 58:7,7,16,17 60:9 62:11 63:14 110:20 today 4:16 7:13 7:17 12:12,16 15:16,18,24 16:3 today's 13:15 together 51:24 99:9 top 15:11 74:23 75:5 109:4	110:7 totally 9:8,24 trademark 1:2 transcript 117:6 transmission 88:16,18 104:21 transmissions 68:20 104:24 transmit 21:14 67:12 68:2 113:18 transmits 67:18 transmitted 51:8 54:21 55:17 59:6 60:4 61:25 62:8 65:17 88:10,15 89:8 89:15,22 112:2 transmitting 67:20,24 91:10 trial 1:3 true 70:12 77:6 116:13 117:9 truthfully 6:6 7:13 try 6:24 68:13 71:12 98:19 trying 29:11 35:24 43:14 55:3 94:16 95:17,25 96:10	96:25 99:15 106:20 turn 22:5 24:20 33:5 63:16 72:4 87:19 89:25 102:24 105:4 108:3 111:11 two 5:16 27:18 27:21 35:10 49:9 51:24 53:3 54:20,21 54:23 55:16 56:2,20 57:19 57:21,25 58:6 58:7 60:2,4,6,7 61:24 62:4,5,7 62:7,8,19,19 72:12,14 74:25 75:5,10,16,19 75:22 76:14,16 76:16,24 77:2 77:4,9,12 104:18 109:7 110:7,15,16,19 110:20 type 39:5 65:7 65:10 66:6 types 39:15 typically 26:6 26:10
			u
			u 10:20,23 u.s. 1:15 9:13 11:10,22

115:10,16 ue 46:3 50:19 51:12,19 52:5 54:22 55:25 56:19 57:24 58:18,25 59:13 60:7,23 61:13 61:19 65:25 66:10,23 67:2 67:3,12,17,19 67:21,22 68:2 68:18 69:13 78:4 87:21 89:7 90:13 91:5,8,17 92:8 93:11,14,22 98:23 101:5,19 101:25 102:2,6 102:21 103:8 104:24 111:19 112:2,11 ues 56:14 62:10 62:14,19 63:11 68:6,7,9,16,22 68:24 69:9,21 69:24 70:25 71:9 96:18,23 uh 6:20 33:12 ultimately 20:15 under 18:16 23:12 79:15 96:12 117:4,5 117:13	understand 6:3 6:7,11,16 7:10 26:22 27:9,11 28:9 29:8 30:17 32:4,17 35:22 41:25 51:16 53:20 54:7 61:13 68:24 69:23 76:22 77:11 80:14 82:9,15 85:16 86:14 88:9,13 91:15 92:24 93:20 94:21 95:18 96:11,24 97:25 98:14 understanding 23:22 25:4,14 26:3,14 27:5,7 34:21 37:7,19 37:22 38:2,7 38:11 39:2,25 40:18,20 41:8 42:19 43:2 44:8,12 45:9 45:15 47:11 64:4 65:9,20 66:14,16 67:14 68:15 73:23 74:6 79:14 86:9 88:2 90:16 91:7 93:17 94:17 96:14 106:25	107:5 111:23 117:12 understood 6:15,22 37:15 37:18 83:8 unit 73:7,10,11 74:21 united 1:2 universe 92:6 unrelated 16:3 update 17:17 usage 67:16 use 9:19 19:8 47:4 68:7,9,22 69:4,21,24 70:18,25 71:9 107:13,16 used 25:19,21 25:23 26:6 27:10 44:6 47:14,22,24 65:13,23 69:13 73:11 85:8,25 86:2,5,11 94:5 96:17 98:18 102:6 105:18 105:25 107:2 113:17 user 35:2,7,15 35:20 47:14 50:8 51:18 89:23 93:14 uses 104:5 106:15	using 9:21 38:18 67:19 78:10 94:7,7 95:13 98:15 100:7 111:24 uss 50:19 91:2 91:4 usually 98:7
v			
v 1:22 2:12 4:1 4:2 5:1 6:1 7:1 8:1 9:1 10:1 11:1 12:1 13:1 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1			

80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1,19 115:1 115:4 116:1,10 117:1,18 118:1 119:1,22 value 26:13 30:3 83:21 variety 19:23 25:17 various 19:25 39:11 vaughn 4:12 verbal 6:19 view 57:9,13 85:14 89:2 103:25 voltage 25:22	wanted 43:12 50:2 83:20 washington 3:8 7:22 way 5:16 21:12 21:16 32:3,10 92:4,11,22 93:6,6 105:13 116:18 ways 101:24,24 we've 95:4 week 13:6,8,12 whereof 116:20 wi 5:17 19:3,13 20:3 wide 19:23 window 108:6 108:7,10,12,16 108:19,20,21 109:23,24 112:21 windows 109:6 109:22 wireless 5:16 18:25 19:4,5,8 19:9,25 20:21 20:23 21:7 22:15 23:3 53:24 withing 7:3 witness 4:2 24:15 33:10 71:21 96:23 103:19 114:16 115:3 116:10	116:14,20 wo 11:23 115:17 wo 2017-052... 11:15 115:13 wo 2018-126... 11:19 115:15 word 25:18,20 25:23 29:19 94:4 107:16 worded 99:25 wording 41:5,6 99:14 words 46:24 51:20 71:11 work 14:16 15:3 22:14 23:2 41:13,19 41:24 working 13:11 13:13 14:12 writing 12:17 14:20 written 32:3 112:3 wrong 61:15	38:14,15,17 39:3,13 41:25 43:4 44:6,15 46:14,21,22,23 47:6,16 48:4,7 48:22 49:4,20 78:13,15,17,19 82:3 83:5,17 84:8,12,23,25 85:2 86:21,22 87:2,5 89:4 108:13,19 109:8,9,11,13 110:23 111:2,3 112:20
			y
			y 4:2 10:20 39:13 82:4,13 82:19 83:3,5 83:18 108:14 108:21 109:7 109:16,18 110:11,12,13 110:15,17,18 112:20 yeah 9:2 10:4 16:21 29:11 54:3 55:12 94:9 107:18,19 year 14:5,22 years 22:14 23:2 41:13,19 41:23 yield 111:18
w		x	
want 6:25 32:8 42:14,18 71:23 105:8 113:25 114:4		x 1:4,12 25:2 28:10,14,16,20 28:21,22 29:8 29:19,23 30:2 30:3,14 31:4 33:25 34:4,9 34:16,22 35:11 36:2,7,10,12,23	

york 2:17 3:7 3:19 4:5 116:3 116:9 you's 34:9,25 36:8 46:8,24 54:18 55:8,13
z
z 39:14 zang 3:11 8:3 44:20 zero 27:22,25 72:14,19 75:16 111:18 zoom 8:11 9:6