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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMScope TECHNOLOGIES LLC.

Petitioner

v.

BELDEN INC.

Patent Owner

Case No. IPR2023-01061, IPR2023-01062

U.S. Patent No. 6,998,537

U.S. Patent No. 6,570,095

REMOTE VIDEOTAPED DEPOSITION OF KENNETH CORNELISON

March 6, 2024

9:00 a.m. (Central Time)

Reported by: Eileen Mulvenna, CSR/RMR/CRR/RDR

DIGITAL EVIDENCE GROUP

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CommScope v. Belden
IPR2023-01061, -01062

Belden EX-2004

1 REMOTE VIDEOTAPED DEPOSITION of
2 KENNETH CORNELISON, expert witness on behalf of
3 Petitioner in the above-titled action, held on
4 Wednesday, March 6, 2024, commencing at
5 approximately 9:00 a.m. (Central Time), before
6 Eileen Mulvenna, CSR/RMR/CRR/RDR, Certified
7 Shorthand Reporter, Registered Merit Reporter,
8 Certified Realtime Reporter, Registered Diplomate
9 Reporter, and Notary Public of the State of New
10 York.

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

2

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21 ALSO PRESENT: Henry Marte, Videographer/Exhibit Tech

22

1 I N D E X

2 WITNESS EXAMINATION BY PAGE

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1 THE VIDEOGRAPHER: We are now on the
2 record.

3 My name is Henry Marte, videographer
4 with Digital Evidence Group.

5 Today's date is March 6, 2024, and the
6 time is 9 a.m.

7 This deposition is being held in the
8 matter of CommScope Technologies LLC versus
9 Belden, Inc.

10 The deponent today is Mr. Kenneth
11 Cornelison.

12 All parties to this deposition are
13 appearing remotely and have agreed to the
14 witness being sworn in remotely.

15 Counsel, please identify themselves
16 for the record, after which the court
17 reporter will administer the oath to the
18 witness.

19 MR. HOEHNER: Thomas Hoehner with
20 Barclay Damon for Patent Owner, Belden, Inc.

21 MR. KOHLHEPP: Peter Kohlhepp of the
22 law firm Carlson Caspers for Petitioner,

1 CommScope Technologies LLC. Also with me
2 today is Ryan Rypka of the Carlson Caspers
3 firm.

4 THE WITNESS: And Ken Cornelison being
5 deposed today on the declaration.

6 KENNETH CORNELISON,

7 having been duly sworn by Eileen Mulvenna,
8 a Notary Public of the State of New York,
9 was examined and testified as follows:

10 EXAMINATION

11 BY MR. HOEHNER:

12 Q. Good morning, Mr. Cornelison.

13 A. Good morning.

14 Q. You were deposed last Friday,
15 March 1st, in relation to inter partes review,
16 IPR 2023-10156; correct?

17 A. That is correct.

18 Q. So you're familiar with how the
19 deposition process works; correct?

20 A. Yes, I am.

21 Q. Great. So I'll just review a few
22 basic ground rules before we get started.

1 Do you understand that you are
2 testifying under oath today?

3 A. Yes, I do.

4 Q. Do you understand that it's very
5 important for you to answer my questions truthfully,
6 accurately, and to the best of your ability?

7 A. Yes, I do.

8 Q. If you do not understand a question,
9 please ask for clarification. Okay?

10 A. Yes.

11 Q. Otherwise, I will assume that you
12 understand the question. Okay?

13 A. Yes.

14 Q. Because the court reporter is
15 recording our conversation today, I need you to give
16 audible, verbal responses when answering rather than
17 a gesture or a head nod. Okay?

18 A. Yes.

19 Q. And since this deposition is being
20 transcribed, I will do my best not to talk over your
21 responses, and I just ask that you do your best not
22 to talk over my questions. Okay?

1 A. Yes.

2 Q. If you need to take a break, just let
3 me know. However, I ask that we answer any pending
4 questions before taking a break. Okay?

5 A. Yes.

6 Q. Is there any reason that you're not
7 able to testify truthfully and to the best of your
8 ability today?

9 A. No, there is not.

10 Q. Where are you located today,
11 Mr. Cornelison?

12 A. I'm located in Minneapolis, Minnesota.

13 Q. And is that at CommScope's counsel's
14 office?

15 A. That is correct.

16 Q. Did you speak with anyone other than
17 CommScope's lawyers in preparing for today's
18 deposition?

19 A. No, I have not.

20 Q. What did you do to prepare for today's
21 deposition?

22 A. Reviewed the patents at issue,

1 background information. Met this morning, had some
2 coffee. I mean, various things I did to prepare.

3 Q. Which documents in particular did you
4 review?

5 A. Today or during the preparation or
6 what time frame?

7 Q. During your preparation for the
8 deposition.

9 A. They are -- to clarify the question,
10 you're talking about just the documents for this
11 deposition to prepare the depositions [sic] that are
12 in front of me -- the documents that I reviewed to
13 prepare those?

14 Q. It's a basic question. Which
15 documents did you review to prepare for today's
16 deposition?

17 A. I reviewed documents that are in the
18 list of exhibits and the patent themselves.

19 Q. And who did you meet with to prepare
20 for today's deposition?

21 A. I met with Peter Kohlhepp and Ryan
22 Rypka.

1 Q. Do you understand that today's
2 deposition is in relation to two separate IPRs,
3 namely IPR 2023-01061 and IPR 2022-01062?

4 A. Yes, I'm aware of that.

5 Q. IPR 2023-1061 was filed in relation to
6 U.S. Patent No. 6,998,537; correct?

7 A. Yes, I see that on the title page.

8 Q. Throughout this deposition, for
9 simplicity, I may refer to U.S. Patent No. 6,998,537
10 as the '537 patent. Okay?

11 A. Yes, that is correct.

12 Q. And during today's deposition, for
13 simplicity, I may refer to IPR 2023-01061 as the
14 1061 IPR. Is that okay?

15 A. Yes, that's okay.

16 Q. IPR 02023-1062 was filed in relation
17 to U.S. Patent No. 6,570,095; correct?

18 A. Yes, that is correct.

19 Q. And throughout the deposition today, I
20 may refer to U.S. Patent No. 6,570,095 as the '095
21 patent. Okay?

22 A. That's okay.

1 Q. And during today's deposition, I may
2 refer to IPR 2023-1062 as the 1062 IPR. Okay?

3 A. Okay.

4 Q. Great. So that's getting the
5 terminology out the way for today.

6 Is it your understanding that except
7 for the claims, the specifications of the
8 '537 patent and the '095 patent are the same?

9 A. Would you repeat the question, please?

10 Q. Sure.

11 Is it your understanding that except
12 for the claims, and focusing just on the
13 specification, the specifications of the '537 patent
14 and the '095 patent are the same?

15 A. I can review those. I don't have the
16 patents in front of me, but I don't believe they're
17 identical, no.

18 Q. And you can't testify today as to what
19 the differences between the two patents are?

20 A. I've not memorized the patents to --
21 if there are differences, I believe there are, to
22 quote those differences.

1 Q. Okay. Although this deposition is
2 taking place remotely, CommScope's counsel received
3 a sealed box containing copies of the various
4 documents that I'll be using as exhibits today.

5 Do you have that box with you?

6 A. It's on the table here.

7 Q. Great. Have you reviewed any of the
8 documents in the box?

9 A. No, the box is still taped shut.

10 Q. Great. Could you please open the box
11 and remove the documents inside?

12 A. The box is being opened.

13 I have the stack of documents at my
14 side here.

15 Q. Okay. So you should have three
16 separate rubber bound band sets of documents;
17 correct?

18 A. That is correct.

19 Q. One of the sets of documents should
20 have the cover page labeled "Declarations"; correct?

21 A. Yes.

22 Q. This stack contains what I will

1 represent are true and correct copies of your
2 declarations filed in the 1061 and 1062 IPRs.

3 Another set of documents should be
4 labeled "Marked IPR Exhibits"; correct?

5 A. Yes, correct.

6 Q. That stack contains what I'll
7 represent are true and correct copies of various
8 exhibits in relation to the 1061 and 1062 IPRs?

9 MR. HOEHNER: And I'll note for the
10 reporter that many of the exhibits we'll be
11 using today were filed with the US Patent and
12 Trademark Office and have already been
13 marked. So I'll note when we need to mark
14 any new exhibits at the time.

15 BY MR. HOEHNER:

16 Q. We have the situation today in this
17 combined deposition where we have the same exhibit
18 numbers being used in two separate IPR proceedings.
19 Fortunately, with the exception of Exhibits EX1007,
20 which are Mr. Cornelison's declarations in the 1061
21 and 1062 IPRs, the other marked exhibits for the
22 1061 and 1062 IPRs are marked with the same exhibit

1 numbers and are identical documents.

2 So with the exception of EX1007,
3 which, again, are your two declarations in the 1061
4 and 1062 IPRs and which are different, the documents
5 themselves are different, when I refer to a marked
6 IPR exhibit, the exhibit numbers and the contents
7 are the same for both the 1061 and 1062 IPRs. Okay?

8 A. Okay.

9 Q. And the last set of documents in the
10 box should be labeled "New Exhibits"; correct?

11 A. That is not correct.

12 Q. What does the cover page on the last
13 set of documents state?

14 A. "Unmarked Exhibits."

15 Q. Okay.

16 MR. HOEHNER: I'll note for the
17 reporter that those exhibits have not been
18 marked to date, and when we do mark them,
19 I'll raise that.

20 BY MR. HOEHNER:

21 Q. Outside of the materials I provided in
22 the box we just opened, did you bring any documents

1 or materials with you today?

2 A. I have a clean copy of my declarations
3 with me.

4 Q. Are there any notes or other markings
5 on those documents?

6 A. No. It's clean, right off the
7 printer. It does include a table of contents.

8 Q. So a table of contents was added to
9 your declarations that are in front of you?

10 A. Yes.

11 Q. Are there any other documents that you
12 brought with you today?

13 A. No, sir.

14 MR. HOEHNER: Okay. Could we pull up
15 marked Exhibit EX1007 from IPR 2023-01061.

16 (Exhibit 1007, Previously Marked.)

17 BY MR. HOEHNER:

18 Q. And, Mr. Cornelison, you can also find
19 that and refer to that document from the stack of
20 documents labeled "Declarations" that were in the
21 box.

22 And I'm going to state for the record,

1 until I note otherwise, when I refer to EX1007, I'm
2 referring to EX1007 that you have in front of you
3 now, which was filed in the 1061 IPR. Okay?

4 A. Okay.

5 Q. Who wrote the declaration in EX1007?

6 A. It was a collaboration effort with
7 myself and the legal counsel here to put together
8 the declaration.

9 Q. So who else was involved in drafting
10 EX1001?

11 A. 1001?

12 Q. Correct, in the 1061 IPR -- sorry,
13 EX1007 in the 1061 IPR.

14 A. There was -- most of the discussion
15 was with -- by far most of the discussion was with
16 Peter Kohlhepp and Ryan Rypka. I had an occasional
17 conversation on the subject with Dennis Bremer
18 and --

19 Q. Who put the --

20 A. So those are the representatives at
21 Carlson I was working with mostly for this
22 declaration.

1 Q. Who put the first draft of EX1007
2 together?

3 A. I'm pausing, Tom, because "the first
4 draft" is a confusing term to me right now. Because
5 there were parts that were worked on and various
6 segments and different times, et cetera.

7 So it didn't seem like there was a --
8 from my view an entity called "the first draft."
9 There was just progress along the way to come up
10 with the various segments and then finally put those
11 together.

12 Q. In your report, you identify and cite
13 to a number of what you allege are prior art
14 references; correct?

15 A. You mean in my declaration I have a
16 list of exhibits that are listed on page 4. Is that
17 to which you refer?

18 Q. Sure. We can focus on page 4.

19 Did you identify all of the exhibits
20 that are listed in EX1007 on page 4 yourself?

21 A. I don't quite understand the question,
22 Tom.

1 Q. Sure.

2 If we look at Exhibit 1007, starting
3 on -- I'm going to call it marked page 5. When I
4 say "marked page 5," that's referring to the page
5 number that was applied by CommScope to the
6 exhibits, usually on the very bottom of the page on
7 the left side -- left side corner.

8 Do you understand what I mean by
9 "marked page number"?

10 A. Yes.

11 Q. So looking at Exhibit 1007, starting
12 on marked page 5 and continuing on to marked page 8,
13 there are a number of exhibits listed; correct?

14 A. That is correct.

15 Q. Were any of those exhibits provided to
16 you by counsel for CommScope?

17 A. Yes, they were.

18 Q. Which of the exhibits listed on marked
19 pages 5 through 8 of Exhibit 1007 were identified by
20 you?

21 A. I do not remember in some case
22 specific whether -- I forget the -- some of these

1 patents I was aware of before I became involved in
2 this case. However, for instance, an example, Tom,
3 is excerpts of prosecution history or excerpts of
4 inter partes reexaminations of maybe like 1045, 1044
5 would be examples of things I would not have
6 normally known about or seen until provided by
7 CommScope in preparation for this declaration.

8 I would say most of the documents
9 listed here I did not have immediate familiarity
10 with those. So most certainly have been provided by
11 CommScope as part of the review for this
12 declaration.

13 Q. How about EX1009 on marked page 5 of
14 Exhibit 1007, was that provided to you by
15 CommScope's counsel?

16 A. Well, the first time I recollect being
17 really immediately aware of the Exhibit 109 material
18 was in conjunction with the preparation for this
19 declaration.

20 Q. Continuing down the table,
21 Exhibit 1010, was that first provided to you by
22 CommScope's counsel?

1 A. Well, Exhibit 1010, I was not
2 immediately aware or -- you know, immediately aware
3 of this particular patent before preparing for this
4 declaration.

5 Q. How about Exhibit 1012, was that
6 provided to you by CommScope's counsel?

7 A. That was a similar situation, yes. I
8 was not aware of the patent or aware of the patent
9 until brought up by preparation for the declaration.

10 Q. And how about Exhibit 1014, was that
11 provided to you by CommScope's counsel?

12 A. Yes, it was provided by CommScope's
13 counsel in preparation for the declaration.

14 Q. And how about Exhibit 1015, was that
15 provided to you by CommScope's counsel?

16 A. Yes, it was provided by CommScope's
17 counsel.

18 Q. If we turn to what is marked page 40
19 in EX1007, you allege in Ground 1 shown on page 40
20 that the combination of Beggs and Jachimowicz
21 renders Claim 19 of the '537 patent obvious;
22 correct?

1 A. That is correct.

2 Q. Did you come up with that combination
3 independently on your own, or was that combination
4 suggested to you by someone else?

5 MR. KOHLHEPP: Object to form.

6 THE WITNESS: Part of the activity of
7 coming up with the declaration is to review
8 prior art. So in particular -- it's been a
9 few seconds, I don't remember the exact
10 question, but part of the collaboration that
11 we did preparing for the declaration and this
12 Ground 1 was reviewing the prior arts and
13 looking at the teachings of the prior arts,
14 and then in turn from that information form
15 the opinion, which I'm talking about today.

16 BY MR. HOEHNER:

17 Q. Who first suggested that the
18 combination of Beggs and Jachimowicz renders
19 Claim 19 of the '537 patent obvious?

20 A. I guess I don't see -- and the form of
21 your question, you know, it suggested what was
22 happening in the case, and what I'm describing and

1 testifying to is the work that I did in preparation
2 for this declaration, reviewing the various patents,
3 understanding what the various patents teach, and
4 then, from that information, come up with
5 information that would be describing what these
6 patents teach in terms of the patents at issue.

7 So it's not so much being suggested to
8 me as these are prior arts that were out there for
9 review that could be applicable to this review.

10 MR. HOEHNER: Can we bring up
11 Exhibit 1008.

12 (Exhibit 1008, Previously Marked.)

13 BY MR. HOEHNER:

14 Q. And I'll represent that this is a true
15 and correct copy of Exhibit EX1008 filed in the 1061
16 IPR, which is the same as Exhibit 1008 in the 1062
17 IPR.

18 Do you recognize Exhibit 1008?

19 A. So 1008 is in the stack of documents I
20 have here in the marked section, marked group?

21 Q. Correct. You can find a copy of it
22 there. It's also on the screen.

1 A. Okay. I also have it in paper copy
2 here, as well, from your stack.

3 Q. Great. Do you recognize Exhibit 1008?

4 A. Yes, I do recognize the document.

5 Q. Is that your CV?

6 A. Yes, it is. It's a description of
7 my -- it is a description of my work background and
8 work history.

9 Q. You worked for Belden between 1992 and
10 2005; correct?

11 A. Yes, 1992 to 2005.

12 Q. You began as a product development
13 manager; correct?

14 A. That is correct.

15 Q. You say on marked page 3 of EX1008
16 that you were responsible for development activity
17 for a wide range of electronic cable product lines;
18 correct?

19 A. That is correct.

20 Q. What do you mean by "development
21 activity"?

22 A. Development activity included things

1 like working on cable -- on product improvements,
2 working with cable designs, improvements, cost
3 reductions. So it was a technical role for the
4 construction and design for cable products.

5 Q. Were you involved in product
6 engineering in that role?

7 A. It was an engineering function.

8 Q. Did you contribute to product designs?

9 A. I did, to various designs as part of
10 my work history, yes.

11 Q. What product lines did you work with?

12 A. I worked with several product lines;
13 coax cable, flat cables, and was also -- so coax,
14 flat cables, multiconductor cables, et cetera,
15 cables like that. And was also involved at the time
16 with some of the engineers with twisted pair
17 communication cables, as well.

18 Q. So were you involved with data
19 communications cable product lines?

20 A. I was involved with that.

21 Q. Are you familiar with the term
22 "C-A-T-6 cable" or "CAT6 cable"?

1 A. Yes. I am familiar with that term,
2 yes.

3 Q. And what is a CAT6 cable?

4 A. It's a generic notation, but it's
5 described in various industry standards, such as
6 TA568, IEC documents, as well. And within that
7 nomenclature, there's associated requirements for
8 performance for that type of cable.

9 Q. Did your work as product development
10 manager at Belden include working on CAT6 product
11 lines?

12 A. Yes, it did. The product development
13 manager role I had was focused on things like, as I
14 mentioned, flat cables, all the conductor cables.
15 However, also, the group was in a single office that
16 worked with category cables, Category 5 and
17 Category 6.

18 During that time, I was a participant
19 and familiar with the activity going on in the
20 category cable development, as well.

21 Q. And looking back on page -- marked
22 page 3 of Exhibit 1007, what do you mean where you

1 state, Established a new design manufacturing --
2 sorry, let me restate that.

3 What do you mean by the phrase,
4 "Established a new 'Design for Manufacturing'
5 system"?

6 A. Design for manufacturing system was a
7 methodology to understand the consistency and
8 reliability of product designs and one that would be
9 made with -- in particular, one example is
10 consistent performance.

11 So as part of that was a review of
12 trials, activities, product performance, and a
13 statistical manner to evaluate how reliable and
14 effective the various designs that were being tried
15 were against the desired performance targets.

16 Q. And you also state, "Improved quality
17 of key attributes in the substantially reduced
18 first-time failure rates"; correct?

19 A. Yes, I do state that and...

20 Q. What do you mean by "key attributes"?

21 A. Key attributes in this case included,
22 on the category cables and others, the measured

1 performance requirements -- measured performance
2 against the requirements of the cable and data
3 cables. It would be things like crosstalk or
4 insertion loss or return loss. For other cables, it
5 may be some other attributes, either physical or
6 electrical.

7 And so by looking at some of the
8 feedback as it were or evaluations for the products,
9 then where things like CPK or other statistical-type
10 measures were not as desired, then that worked to
11 try to improve those.

12 And the first-time failure rate is
13 also a measure of how consistent the product is
14 which reflects -- reflects rework and those kind of
15 things that would be undesirable in a manufacturing
16 facility.

17 Q. Did anyone report to you in your role
18 as product development manager?

19 A. Yes, I had -- I don't remember how
20 many reports, two or three, something like that,
21 maybe four.

22 Q. Do you recall their names?

1 A. No, not all of them. I think John
2 Johnson was one, as I recollect. May have been -- I
3 know there were others. I just don't remember
4 offhand what the names of them are.

5 Q. Who did you report to in your role as
6 product development manager?

7 A. I reported to a gentleman by the name
8 of Tom Sicerka [ph].

9 Q. And at what point did you become
10 process development manager at Belden?

11 A. I do not remember the year. It was
12 roughly 2002, perhaps, but I don't recollect
13 exactly, but in that time frame.

14 Q. How did you obtain the position of
15 process development manager?

16 A. There was a change in organization a
17 little bit such that the restructuring of the
18 organization responsibilities. And so in the
19 process development role, I became working with
20 manufacturing equipment, as I say in my CV, but that
21 also applied to all areas, including twisted
22 pair-type cables.

1 Q. Going back to Exhibit 1008 at marked
2 page 3, under process development, you state you
3 were responsible for material compounding
4 technology; correct?

5 A. That is correct.

6 Q. What do you mean by material
7 compounding technology?

8 A. Belden, at the time, maybe still, has
9 facilities and equipment to put raw materials
10 together to form compounds and use for wire and
11 cable products. So with that process capability,
12 there was a group that -- or a group of individuals
13 would work with plasticizers, PVC, et cetera, rubber
14 materials, and develop materials specific for use by
15 Belden Wire and Cable of those types of materials,
16 in addition to purchasing materials off the market
17 as it were, compounds off the market.

18 Q. Earlier when we were discussing your
19 roles, you mentioned crosstalk. Is crosstalk a term
20 of art in the field of data communication cables?

21 A. Yes, it is.

22 MR. KOHLHEPP: Object to form.

1 BY MR. HOEHNER:

2 Q. What is crosstalk?

3 A. Crosstalk, in general, is a coupling
4 of electrical energy from one electrical component
5 or transmission line or part to another.

6 Q. And looking at Exhibit 1008, still on
7 marked page 3, you say your work resulted in
8 improved performance in areas such as SRL
9 (structural return loss) and cable attenuation;
10 correct?

11 A. That is correct.

12 Q. Did any of the improved performance
13 that you list here include lowering crosstalk within
14 the cables you worked on?

15 A. Yes, it does. I use the term "such
16 as" to be indicating there are other areas, as well,
17 and crosstalk was one of those.

18 Q. What solutions did you employ to
19 improve performance -- crosstalk performance of the
20 cables you worked on?

21 A. They included things like evaluating
22 the lay lengths of the pairs within a data cable and

1 looking at what lay lengths may make sense. There
2 was some work on equipment to try to come up with a
3 machine that would have more precise lay length
4 control and use that as a -- to improve perhaps the
5 precision of results that would come from trials and
6 experiments that they have with twisted pair cable.

7 So those are some of the things that I
8 was doing to provide performance in various areas of
9 return loss, cable attenuation. And although those
10 are mentioned specifically, I did get involved in
11 things like crosstalk, balance, and those kind of
12 things that are also included in some of the
13 requirements for data cable, such as the TIA that
14 you mentioned before and overall product
15 performance.

16 Q. So you just mentioned looking into
17 varies lay lengths with respect to improving
18 crosstalk performance in cables. Were there any
19 other solutions to improving crosstalk that you
20 looked at or worked on?

21 A. Well, the answer is yes. I don't
22 remember exactly at this point. It's been a few

1 years. But I know I was involved in lay lengths. I
2 believe there was some activity in things like
3 separators for the cables, as well, to provide more
4 spacing between the twisted pairs, et cetera. So...

5 Q. And what time frame would you say you
6 were working on the use of separators to provide
7 further spacing within a cable to improve crosstalk
8 while you were at Belden?

9 A. I do not remember. I just don't
10 remember -- I do not remember a time frame in
11 particular. I know that was a means of providing
12 crosstalk. In this point, Category 6 was coming
13 out. It had improved crosstalk performance. So I
14 just don't remember exact time frames of when I was
15 working on these at this point.

16 Q. Was it before the year 2000?

17 A. I don't remember offhand.

18 Q. You say you worked on component
19 compound development and updates for product
20 performance improvement; correct?

21 A. Yes.

22 Q. Did any of your work relate to the use

1 of dielectric materials?

2 A. Yes, it did.

3 Q. Did any of your work relate to using
4 dielectric material to separate conductors in a
5 cable?

6 A. I do not recollect doing that. I
7 don't remember.

8 What I do remember is that as
9 specified there, the cable jacket in particular was
10 a focus because a lot of the materials that Belden
11 manufactured as materials compounding technology
12 were utilized in cable jackets.

13 Q. So you don't know whether any of your
14 work at Belden related to using dielectric materials
15 to separate conductors in a cable?

16 A. I do not remember.

17 MR. HOEHNER: Can we bring up what's
18 marked as EX1004, please. And can we
19 highlight the names in the upper left corner
20 where it says "Inventors."

21 (Exhibit 1004, Previously Marked.)

22 BY MR. HOEHNER:

1 Q. Mr. Cornelison, I don't think you need
2 to find this in the pile. I think just looking on
3 the screen will be sufficient.

4 A. Okay.

5 Q. During your time at Belden, did you
6 ever see the name or know a William Clark?

7 A. Yes, I did.

8 Q. And how did you know William Clark?

9 A. He was -- I was located in the
10 Richmond, Indiana, facility. I came to know William
11 Clark after the acquisition or consolidation of
12 Belden and CDT, which at that point became Belden
13 CDT. So I met -- I believe I recollect meeting
14 William Clark, but I did not work with him or
15 interface with him as part of my daily activities at
16 Belden.

17 Q. And roughly what time frame did you
18 first meet William Clark or see his name?

19 A. I just know it was after the CDT
20 Belden merge, and I do not remember what timing that
21 was.

22 Q. Did you know or hear of a Joseph

1 Dellagala in your time at Belden?

2 A. Similarly to William Clark, I have met
3 Joseph Dellagala when I visited the CDT facility,
4 but that was after the Belden CDT activity.

5 Q. Okay. And you don't know what --

6 A. We worked at different facilities, and
7 I don't remember working very much at all, except a
8 couple of visits to Massachusetts, working with
9 Joseph Dellagala.

10 Q. And when you visited that facility,
11 what was the purpose of your visit?

12 A. They were also making twisted pair
13 cable, and I was working with twisted pair cable in
14 particular and -- during that visit and looking at
15 testing and data analysis and statistics and those
16 kind of things. And so I visited that facility to
17 review those processes that they had in place.

18 Q. Were you working with Mr. Clark or
19 Mr. Dellagala on those visits?

20 A. We were in the same room talking about
21 some of the product -- the projects they had, some
22 of the data analysis facilities they had developed.

1 So I was doing that. It was a -- that's the kind of
2 things I recollect doing.

3 Q. So were you collaborating with
4 Mr. Clark and Mr. Dellagala regarding various cable
5 products and solutions?

6 MR. KOHLHEPP: Object to form.

7 THE WITNESS: I'm not clear about a
8 definition of "collaborating" that you're
9 using. I know I talked to these individuals
10 on various occasions, not very frequently.

11 CDT and Belden still had their
12 separate operations and separate functions at
13 that time when I was there. And so I know of
14 them. I talked to them on some meetings.
15 That's what I know. I don't know if that
16 qualifies as collaborating from your point of
17 view, but that's what I did.

18 BY MR. HOEHNER:

19 Q. How about Kenneth Consalvo, did you
20 know Mr. Consalvo in your time at Belden?

21 A. I would say not. I met the person, I
22 believe, in one of my visits to the facility and --

1 but we did not interface much at all.

2 Q. Did you ever discuss particular cable
3 designs with Mr. Clark, Mr. Dellagala, or
4 Mr. Consalvo in your time at Belden?

5 A. Again, I'm kind of unclear about
6 particular cable designs that you -- the term you
7 used. I know that we were both making twisted
8 pair-type cable, meaning the two companies were
9 making twisted pair-type cables. It was subject to
10 my visits in particular to the Manchester -- the
11 Massachusetts, whatever, facilities were focused on
12 that subject.

13 I just don't remember specifically
14 about design issues or design opportunities, but
15 what I do recollect in particular was looking at
16 their data system to see what they had for
17 evaluating performance and consistency against the
18 requirements of the cables.

19 Q. You mentioned earlier there was a
20 merger between -- or acquisition by Belden of Cable
21 Design Technologies; correct?

22 A. That is correct.

1 Q. When did you first learn of Cable
2 Design Technologies?

3 A. I do not know when I first learned of
4 CDT, or Cable Design Technologies. Certainly heard
5 of them when they became a -- became a partnership
6 or a merger with Belden at that point, since I was
7 with Belden. The first time, I don't remember.

8 Q. Are you aware that the '095 and '537
9 patents were assigned from Cable Design Technologies
10 to Belden?

11 A. I'm aware of that.

12 Q. Were you involved in any way with
13 Belden's acquisition of either the '095 or '537
14 patents from Cable Design Technologies?

15 A. No, I do not -- no, I do not believe
16 so.

17 Q. Were you involved in any due diligence
18 in relation to the acquisition of the '095 or '537
19 patents from Cable Design Technologies?

20 A. No -- no, I do not believe I was
21 involved in any due diligence.

22 Q. Were you aware of any due diligence

1 being conducted by Belden regarding the Cable Design
2 Technology's acquisition?

3 A. I would say no not directly, meaning I
4 understand due diligence is something companies go
5 through in a merger. But as far as being aware of
6 any particular activity and due diligence or being
7 involved in it, I have no recollection at this point
8 of that direct activity.

9 Q. We touched on this earlier. In your
10 time at Belden, you were involved in developing
11 solutions that reduced crosstalk in data
12 communications cables; correct?

13 A. That is correct, in working with the
14 engineers, working on different ideas for that.

15 Q. And do you know what -- do you know
16 what time frame you worked on reducing crosstalk in
17 data communication cables?

18 MR. KOHLHEPP: Objection, asked and
19 answered.

20 THE WITNESS: I do not remember a
21 specific time frame.

22 BY MR. HOEHNER:

1 Q. Why did you eventually leave Belden?

2 A. Another company. And as described in
3 my r sum is I got a call from General Cable. It
4 may have been through a headhunter. I don't
5 remember that, but I was approached with an
6 opportunity and I decided that was the opportunity
7 that I wanted to do. So I took that opportunity.

8 Q. Was your departure from Belden in any
9 way related to a downsizing effort at Belden?

10 A. It was related to mostly the -- or
11 not -- related to the new position that was being
12 offered and the description of the activity in the
13 new position, and so I took that opportunity.

14 Q. So the opportunity at General Cable
15 came to you, so to speak. You weren't looking for
16 that opportunity; is that correct?

17 A. That is correct.

18 Q. We've been using the term today "data
19 communication cables."

20 What are data communication cables?

21 (Pause.)

22 THE WITNESS: I'm considering the

1 question because data cables -- what are data
2 cable -- data communication cables? I know
3 there to be several different styles and
4 constructions and sort for the actual
5 construction or design of a cable. They're
6 designed for signal transmission, typically
7 data transition.

8 So I don't know how to answer your
9 question well except that -- and with any
10 kind of specificity in that the data
11 communication cables have different
12 constructions, designs, looks, et cetera. So
13 it's difficult to pin down a data
14 communication cable to any one particular
15 look or construction.

16 BY MR. HOEHNER:

17 Q. Well, what makes a cable a data
18 communications cable versus some other type of
19 cable?

20 MR. KOHLHEPP: Object to form.

21 THE WITNESS: Well, one distinction,
22 not to be exclusive or all other

1 distinctions, could be that it's designed to
2 transmit digital signal where other cables
3 might be more designed to transmit an analog
4 signal. So that could be one distinction of
5 a data cable, data communications cable.

6 BY MR. HOEHNER:

7 Q. Okay. So what types of applications
8 are data communication cables used in?

9 A. The form of transmission medium for
10 data communication, what their applications are.

11 Q. And what frequency ranges are
12 typically transmitted over data communications
13 cables?

14 MR. KOHLHEPP: Object to form.

15 THE WITNESS: Different applications
16 that would all be data communications would
17 have different frequency ranges. So it does
18 depend upon the application at which the --
19 is being supported by the cable and by the
20 transmission. So there is a wide range of
21 frequencies that could be considered,
22 depending on the type of data.

1 BY MR. HOEHNER:

2 Q. What frequency ranges are typically
3 used on data communications cables? What is the
4 start and end point of that frequency range?

5 MR. KOHLHEPP: Objection, asked and
6 answered.

7 THE WITNESS: There's a wide range of
8 frequencies possible depending upon the
9 application.

10 BY MR. HOEHNER:

11 Q. So can you put a number to that wide
12 range? From what frequency to what frequency?

13 MR. KOHLHEPP: Same objections.

14 THE WITNESS: No, I cannot, because
15 there's such a wide range of applications
16 that may have different frequency ranges.
17 There are certain applications that have some
18 specified frequency ranges, but in general,
19 there's no particular frequency range that
20 would be descriptive of data communication
21 cables in general.

22 BY MR. HOEHNER:

1 Q. So any frequency can be transmitted
2 over a data communications cable; correct?

3 MR. KOHLHEPP: Object to form.

4 THE WITNESS: I take the question as
5 vague and ambiguous because of the word
6 "any."

7 In a way, I don't understand the
8 question because "any" is certainly a wide --
9 it's just a vague and undescript topic to
10 consider, "any."

11 BY MR. HOEHNER:

12 Q. Well, I'm asking a pretty simple
13 question. I have a data communications cable,
14 something that's classified as a data communications
15 cable in the industry. And I'd like to know what
16 range of frequencies can I transmit over that data
17 communications cable?

18 A. It depends upon the application of the
19 cable and the type of data communication being
20 transmitted.

21 Q. Can any frequency range be transmitted
22 over that data communications cable?

1 MR. KOHLHEPP: Object to form.

2 THE WITNESS: I think you've asked the
3 question, and I've answered the question.

4 BY MR. HOEHNER:

5 Q. You're not answering the question.

6 You said that you don't understand can any frequency
7 be transmitted over the cable. And then in the next
8 question you said, Well, it depends on the
9 circumstance, that certain frequencies can't be
10 transmitted over that cable.

11 So I guess my question is: Is there a
12 general range of frequencies that are transmitted
13 over a data communications cable in the industry?
14 What qualifies a data communications cable, and what
15 frequency range can it carry?

16 MR. KOHLHEPP: Object to form.

17 THE WITNESS: The frequency range of
18 transmission would depend upon the
19 application, and we're not talking about a
20 specific application here. So without an
21 application, it would be actually not
22 possible for me to talk about the frequency

1 range at which they would transmit.

2 My sentences I speak may not be
3 entirely consistent and robotic an answer,
4 but the point remains that I don't understand
5 or how to answer a question any -- would a
6 data cable be able to transmit at any
7 frequency. I see it as being determined by
8 the application at which the cable is being
9 employed.

10 BY MR. HOEHNER:

11 Q. What do you mean by "application"?

12 A. The data rate, distance being
13 transmitted, a number of different things that in
14 the structure of the data as it starts out and be
15 transmitted along the length of cable and the
16 encoding system and all that, a number of different
17 things.

18 So it's a very vague type of a
19 question, and I don't understand it fully how to
20 come up with an answer. So that I see it as a very
21 vague question.

22 Q. What levels of current do data

1 communication cables typically carry?

2 A. Again, it depends on the application.

3 Q. Can they carry multiple amps?

4 A. It depends on the application.

5 Q. I'm just asking is it possible? Can
6 they carry multiple amps?

7 A. That's kind of a global statement, and
8 I don't think it's practical to say they can do this
9 or can do that. It depends on the application in
10 cable construction.

11 Q. Can a data communications cable be
12 designed to carry multiple amps?

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

15 THE WITNESS: I understand -- I just
16 see the question as somewhat vague unless I
17 have some more specifics about multiple amps,
18 what that means. The application in a
19 situation, it's a nebulous question. I don't
20 know how to answer a nebulous question like
21 that.

22 BY MR. HOEHNER:

1 Q. In your experience have you ever
2 utilized a data communications cable to transmit
3 multiple amps?

4 A. Once again, if you're referring to a
5 particular application or a particular situation or
6 a document or specification that would describe the
7 kind of amps and the amount of amps and et cetera
8 and along with the data, I would have something with
9 which to form an opinion or an answer to your
10 question.

11 Q. No, you're not answering that
12 question.

13 I asked in your experience, have you
14 ever utilized a data communications cable to
15 transmit multiple amps?

16 A. I'm still struck by the general scope
17 of your question and could be -- leads me to perhaps
18 guess or hypothesize, et cetera. So that's not -- I
19 can say if I turn that into a specific example, that
20 there is such a thing as Category 5/Category 6-type
21 cables.

22 There is such a document that talks

1 about POE, or power over ethernet, where there is a
2 direct current -- not data, but a direct current
3 superimposed of several amps, several meaning
4 single-digital amperes, where they would be
5 superimposed upon the digital signal in that
6 category-type cable.

7 There may be other examples, as well,
8 that have different kinds of amps, either lower or
9 higher, and different kind of data rates. I happen
10 to know that one particular example where it could
11 be described as a data cable wherein the conductors
12 have a small number of amperes being placed on the
13 conductor conducted through the cable.

14 Q. Are data communications cables
15 typically high voltage cables?

16 MR. KOHLHEPP: Object to form.

17 THE WITNESS: I don't understand
18 your -- I don't have a particular point in my
19 mind that makes a voltage high in your
20 question. So I find it difficult, actually
21 impossible, to answer your question, not
22 knowing your view of what "high" means.

1 BY MR. HOEHNER:

2 Q. Are data communications cables
3 typically used to transmit voltages more than
4 5 volts?

5 A. Would you repeat the question, please,
6 sir?

7 Q. Are data communications cables
8 typically used to transmit voltages higher than
9 5 volts?

10 A. I see that as a vague question without
11 a distinct -- well, certainly the question has vague
12 answers because it's not very clear about the
13 various options. Again, I'm going to refer to one
14 example I happen to know where in Category 5 cable,
15 the data portion, meaning that there's a data
16 segment that's being transmitted over the twisted
17 pairs and there's a superimposed direct current,
18 typically, typically the voltages for the data
19 signal is less than 5 volts.

20 And, typically, the voltage
21 superimposed on the conductor -- direct current
22 superimposed on the conductors are more than 5 volts

1 in that one example. There may be other examples I
2 do not know about.

3 Q. What is a shield in the context of a
4 data communications cable?

5 A. Well, on page 25, on my declaration, I
6 do talk about shielding, where I describe as
7 "Material with one or more conductible layers often
8 was (and is) used in data communications cables and
9 at the time was referred to as a shield or
10 shielding."

11 Q. So what purpose does shielding serve
12 in a data communications cable?

13 A. A shielding is between -- so such
14 shielding between twisted pairs or groups of twisted
15 pairs was known to help reduce crosstalk, for
16 instance.

17 Q. Is that the only purpose that
18 shielding is used for?

19 A. I do talk about shielding in page 25,
20 paragraph 49, where I describe shielding, what its
21 function is, and which added to a twisted pair of
22 insulated conductors to confine its electric and

1 magnetic fields and reduce electromagnetic
2 interference. Those are the kind of things that I
3 see as shielding.

4 Q. How does the shield perform those
5 functions?

6 A. The shielding, as described in
7 paragraph 4 and perhaps others, I don't remember,
8 was conductive layers, and the conductive layers
9 provide this shielding and containment of electrical
10 field of whatever's inside the shielding. And,
11 therefore, the term "shield" is being conductive.

12 Q. And can you think of any benefits to
13 using shielding within a data communications cable?

14 A. Well, depending on the application and
15 requirements, it would be a function of
16 separating -- of isolating crosstalk between twisted
17 pairs or perhaps crosstalk between groups of pairs.

18 Q. Do you see any drawbacks to using
19 shielding in a data communications cable?

20 A. I would not see -- I would not see
21 drawbacks, no.

22 Q. What is a dielectric?

1 A. It is a -- I discuss dielectrics in
2 paragraph 44, page 23, briefly. And it's used as --
3 a dielectric material is used as an insulator.
4 Dielectrics have very poor or very low electrical
5 conductivity. And I did include an industry
6 dictionary definition in my declaration.

7 Q. How are dielectrics used in data
8 communications cable?

9 A. Dielectrics are used to typically --
10 they were used to typically separate electrical
11 components in a cable, for instance, and used -- in
12 particular used as insulation around conductors,
13 jackets for cables. And there are different
14 applications for dielectrics in a cable product.

15 Q. And what is it about a dielectric that
16 makes it suitable for that -- performing those
17 functions?

18 A. Because it has poor electrical
19 conductivity, or very low electrical conductivity.

20 Q. How does that differ from a pure
21 insulator?

22 A. By the term "pure," do you mean

1 perfect?

2 Q. Not perfect, just something that's
3 kept -- that qualifies as an insulator versus
4 something that qualifies a dielectric, how do they
5 differ?

6 MR. KOHLHEPP: Object to form.

7 THE WITNESS: So I'm thinking about
8 dielectric insulator. In some ways I see
9 those as somewhat synonymous. Could you
10 repeat the question so I understand the
11 wording of the question? Yeah.

12 BY MR. HOEHNER:

13 Q. What's the difference between an
14 insulator and a dielectric?

15 MR. KOHLHEPP: Object to form.

16 THE WITNESS: So insulator and
17 dielectric are both descriptions of very
18 poor, very low conductivity. And I say in
19 paragraph 44, as well, that someone skilled
20 in the art would understand an insulator is a
21 dielectric material and that plastic polymer
22 is a dielectric material.

1 BY MR. HOEHNER:

2 Q. So are all insulators dielectrics?

3 MR. KOHLHEPP: Object to form.

4 THE WITNESS: Well, one industry
5 dictionary defines "dielectric" as another
6 term for an insulator or material that has
7 poor electrical conductivity. So the
8 industry dictionary defines "dielectric" as
9 another term. Not so much that they're
10 different things, but a different term.

11 BY MR. HOEHNER:

12 Q. So in your opinion, are all electrical
13 insulator materials dielectric materials?

14 MR. KOHLHEPP: Object to form.

15 THE WITNESS: So someone skilled in
16 the art like myself would understand that an
17 insulator is a dielectric material.

18 BY MR. HOEHNER:

19 Q. So your answer is yes?

20 MR. KOHLHEPP: Object to form.

21 THE WITNESS: I would understand that
22 an insulator is a dielectric material.

1 BY MR. HOEHNER:

2 Q. Can you think of any benefits to using
3 dielectric separators in a data communications
4 cable?

5 A. So in paragraph 42, page 21, I do talk
6 about the physical barriers, buffers, separators
7 between twisted pairs or groups of -- between
8 twisted pairs or groups of twisted pairs. And I do
9 say the separators were often made of dielectric
10 materials or dielectric-coated materials.

11 And I give some examples in referring
12 to various exhibits. And I do say that, "It was
13 known that separators worked to reduce -- for
14 instance, it was known that separators worked to
15 reduce crosstalk to acceptably low levels even
16 without completely surrounding the twisted pair."

17 So there is an advantage -- there is a
18 function of separators within cables to reduce
19 crosstalk between twisted pairs.

20 Q. Are you aware of any drawbacks of
21 using dielectric separators in a data communications
22 cable?

1 A. I would say no.

2 Q. Does placing a dielectric between two
3 conductors reduce crosstalk between those conductors
4 in a data communications cable?

5 A. You've asked me about drawbacks twice
6 now, and I answered there would not be drawbacks.
7 But you also have to understand in the same context
8 that inclusion of a shield in a cable does alter
9 some electrical fields inside the cable, and it's
10 not so much a drawback as it would be a design
11 accommodation to accommodate the type of materials
12 that are used in the cable.

13 And then, also, on this current
14 discussion with the drawbacks of putting a separator
15 into a cable, I don't see the drawback. However,
16 the inclusion of a dielectric -- of the dielectric
17 separator in a cable, for instance, would have to be
18 used in conjunction with a design that accommodated
19 the inclusion of such a separator.

20 But in neither case I would call them
21 drawbacks. They would be something you have to
22 consider in coming up with a cable design.

1 Q. Okay. Does placing a dielectric
2 between two conductors reduce crosstalk between
3 those conductors in a data communications cable?

4 A. So placing -- so the question, if I
5 paraphrase or maybe try to repeat, bear with me a
6 second here, is basing insulation over conductor
7 is -- the question is: Will that reduce crosstalk?
8 Is that the question? Or repeat the question so I
9 may understand it.

10 Q. Is placing a dielectric between two
11 conductors reduce crosstalk between those
12 conductors?

13 A. There cannot be a yes-or-no answer to
14 that question. The reason is the crosstalk between
15 two conductors depends upon their shape and their
16 length and their spacing and even the frequency of
17 which it's being transmitted on the conductors.

18 So the presence or absence of an
19 insulation to me would not necessarily be a factor
20 in the crosstalk between the conductors when there's
21 a lot of other factors involved in a question as you
22 phrase it.

1 Q. So it's your opinion today that
2 placing a dielectric between two conductors doesn't
3 necessarily reduce crosstalk between those two
4 conductors; correct?

5 MR. KOHLHEPP: Objection, asked and
6 answered.

7 THE WITNESS: I think it has -- I
8 think the answer to your question about does
9 it reduce crosstalk between conductors
10 requires assumptions about a lot of things
11 about the conductors and even the insulation
12 that you refer -- to which you refer.

13 So I see it as a question that -- I
14 don't understand how to answer yes or no to
15 such a question because of the lack of
16 definition of the terms.

17 BY MR. HOEHNER:

18 Q. So is it your opinion that that
19 question is not answerable because there are too
20 many factors involved in determining the answer?

21 MR. KOHLHEPP: Object to form.

22 THE WITNESS: I believe I have

1 answered the question. I could have the
2 court reporter read back my answers to you
3 again, whatever, but I believe I've answered
4 the question.

5 BY MR. HOEHNER:

6 Q. So your answer is you can't answer the
7 question; is that correct?

8 MR. KOHLHEPP: Object to form.

9 THE WITNESS: It is not correct that I
10 can't answer the question. I believe the
11 question's unanswerable, given the lack of
12 definition of the question.

13 BY MR. HOEHNER:

14 Q. Why is the question unanswerable?

15 A. Because -- I just said that.

16 Q. What lacks definition in my question?

17 A. I did mention already in one of my
18 answers about the conductor shape, and I don't
19 remember verbatim what I said, but I did mention
20 those factors, and those would be some of the facts.
21 I do not have information, and I'm sure there are
22 more that -- I'm not sure. I believe there are more

1 that I don't know about yet.

2 So I don't know how to answer the
3 question. And more particularly, I don't know how
4 to say yes or no in particular, as well as I don't
5 agree with I can't answer the question. I do
6 believe the question as phrased without that detail
7 is not answerable.

8 Q. And what additional detail do you need
9 to answer the question?

10 MR. KOHLHEPP: Objection, asked and
11 answered.

12 THE WITNESS: I already stated a
13 couple of examples of what I would need that
14 I don't have in the question. And I don't
15 know how to predict what else I would need.

16 BY MR. HOEHNER:

17 Q. I have a cable in which the conductors
18 are separated by a shield, and I replace that shield
19 with a dielectric separator instead. Does crosstalk
20 between the conductors increase?

21 A. Someone -- to me someone skilled in
22 the art would know that such a question would need

1 and understand the dimensions and shape and size of
2 the shield and dimensions and shape -- dimensions,
3 shape, and size of the dielectric.

4 So, again, the question without
5 sufficient background or detail, again, is an
6 unanswerable question.

7 Q. Well, if the size and shape of the
8 shield and the size and shape of the dielectric are
9 identical and the two cables are identical in every
10 other way, would replacing the shield with a
11 dielectric increase crosstalk between the
12 conductors?

13 MR. KOHLHEPP: Object to form.

14 THE WITNESS: I still don't have the
15 elements I need to form an opinion about
16 whether it would affect crosstalk without
17 understanding the context, and what I have is
18 the context of insufficient context to answer
19 the question at this point.

20 BY MR. HOEHNER:

21 Q. What else would you need to answer the
22 question?

1 A. I believe I've answered that question.

2 Q. Not for this question, no, you
3 haven't.

4 MR. KOHLHEPP: Object to form. I
5 don't think there's a question pending.

6 BY MR. HOEHNER:

7 Q. There is a question pending.

8 The question is: What additional
9 information would you need to know to determine
10 whether two identical cables in every way except
11 that one has a shield between conductors and one has
12 a dielectric between conductors, which shield --
13 which cable has less crosstalk between the
14 conductors?

15 I'm trying to understand what
16 additional information you need in that context to
17 answer that question.

18 MR. KOHLHEPP: Object to form, asked
19 and answered.

20 THE WITNESS: Well, I don't remember
21 my exact wording. So I can't robo answer
22 what I said before, but I did include things

1 like the shape of the conductor, the shape of
2 the materials we're talking about, relative
3 sizes surrounding -- not surrounding, just to
4 list a few examples of information I do not
5 have to answer the question.

6 BY MR. HOEHNER:

7 Q. And there are additional variables
8 that you would need to know that you just can't
9 think of right now, as well?

10 A. Yes, there would be additional
11 variables which I'm not thinking of yet at this
12 point.

13 Q. In the context of communications
14 cables, does the term "twisted pair" mean anything?

15 A. So on page 16, in paragraph 33 of my
16 declaration, I talk about twisted pairs.

17 Q. So what does the term "twisted pair"
18 mean to you?

19 A. Well, reading part of my declaration
20 into the record, "Twisted pairs were (and are)
21 commonly referred to simply as [sic] 'pairs' in the
22 industry." I cite an example 1017 at line 18.

1 "Each cable pair consists of two
2 twisted insulator conductors."

3 That's not a complete statement of
4 that paragraph, but that's an excerpt from.

5 Q. Why are twisted pairs used in data
6 communications cables?

7 A. In paragraph 35 on page 17 of my
8 declaration, I do talk about when comparing twisted
9 versus untwisted pairs and twisted pairs have
10 improved crosstalk and decreased unbalanced mutual
11 capacitance, citing example -- an exhibit, I should
12 say, and -- which quotes, "The two main reasons for
13 twisting pairs of conductors are to minimize or
14 eliminate crosstalk and decrease unbalance mutual
15 capacitance."

16 So I do go through in paragraph 35 and
17 33, in continuing this section called Twisted Pairs,
18 A, describe twisted pairs and some of the
19 motivations and advantages of the twisted pair.

20 Q. And how do twisted pairs accomplish
21 those benefits you just described?

22 A. As included in paragraph 35 of my

1 declaration, page 18...

2 Q. I'm sorry, is that your answer, or are
3 you looking?

4 A. Well, I took my statements about -- in
5 35, where I discuss this, yes, I took that as an
6 answer to your question.

7 Q. Well, I'd like you to describe to me
8 in your words how do twisted pairs accomplish the
9 benefits you described and you read to me earlier?

10 A. Okay. Well, my words are in the
11 declaration. And so, for instance, twisting the two
12 conductors maintains consistent spacing between the
13 two conductors along the length of the pair. And
14 the twisting also causes periodic reversals in the
15 electrical field that surrounds the pair.

16 So in turn, these reversals also
17 result in improved isolation from electrical fields
18 produced by adjacent pairs or outside electrical
19 fields. And that's a portion of what I -- of my
20 words I used in my declaration.

21 Q. You can have an untwisted pair of
22 conductors in a data communications cable, as well;

1 correct?

2 MR. KOHLHEPP: Object to form.

3 THE WITNESS: There are -- there are
4 cables, such as twinax or other types of
5 cables that may have two wires that are
6 untwisted to be used as a data cable, but,
7 however, those types of cables are not within
8 the scope of construction outlined in the
9 patents at issue or in the prior arts that
10 have been reviewed in light of the
11 declaration.

12 It's a different type -- what I'm
13 describing is not twisted, but it's a
14 different type of cable altogether and
15 different type of profile, drawing,
16 et cetera.

17 BY MR. HOEHNER:

18 Q. So if I had a data communication cable
19 containing several untwisted pairs of conductors and
20 I had another cable that's the same in all respects
21 except that it contains twisted pairs of conductors,
22 which cable would have lower crosstalk between the

1 pairs?

2 A. The intent of twisting the pair, and
3 I'm answering the question, does cause periodic
4 reversals. And as I state in the declaration, these
5 reversals would also result in improved isolation
6 from electrical fields produced by adjacent pairs or
7 outside electrical fields. Therefore, the signal or
8 crosstalk would be reduced.

9 In the cable example I used where the
10 pairs are not twisted, there is only two wires. And
11 so there are cable designs such that have one pair
12 of parallel wire, if you want to call it a pair, but
13 they are -- the ones I'm thinking of are shielded.
14 So -- isolated.

15 So the art that I see in the patents
16 and the art I've referenced consistently actually
17 have a twisted pair design where the two wires are
18 twisted together.

19 Q. And that's because the use of the
20 twisted pairs reduces crosstalk in the data
21 communications cable?

22 A. Compared to nontwisted.

1 Q. Twisted pair consists of two
2 conductors that are insulated from one another;
3 correct?

4 A. This is correct.

5 Q. Are those insulation layers
6 surrounding the conductors of a twisted pair
7 typically in contact with one another?

8 MR. KOHLHEPP: Object to form.

9 THE WITNESS: So I do say twisting the
10 two conductors maintains consistent spacing
11 between the two conductors along the length
12 of the pair. And that is also -- my
13 understanding is when you twist the two pairs
14 to two wires together to form a twisted pair,
15 that the insulations would be in contact with
16 each other.

17 BY MR. HOEHNER:

18 Q. So one of the goals in manufacturing a
19 twisted pair is to keep the individual conductors of
20 the pair as close together as possible to prevent
21 them from becoming untwisted; is that right?

22 MR. KOHLHEPP: Object to form.

1 THE WITNESS: No, that is not right.

2 BY MR. HOEHNER:

3 Q. Why isn't that right?

4 A. Repeat the question, please.

5 Something about as close -- you said something about
6 as close together as possible, and that seems
7 inconsistent with what I see.

8 Q. So is one of the goals in
9 manufacturing a twisted pair to keep the individual
10 conductors in contact with one another and prevent
11 them from becoming untwisted?

12 MR. KOHLHEPP: Object to form.

13 THE WITNESS: You changed your
14 terminology in the question from as close
15 together as possible or something like that
16 to in contact with each other. So I'm
17 curious, do you mean -- did you mean to the
18 same thing, or did you have a different
19 question?

20 BY MR. HOEHNER:

21 Q. I asked a different question because
22 you didn't seem to understand the first question.

1 A. Okay. So twisting the two conductors
2 does maintain consistent spacing, and for someone
3 skilled in the art, would -- that would mean and the
4 insulation of the two conductors would be in contact
5 along the length of the pair.

6 Question, is that an answer to your
7 question, or did it not answer it?

8 Q. That answers it.

9 What would be the impact if there was
10 space between the two conductors of a twisted pair?

11 A. I say in paragraph 35 again, Certain
12 electrical parameters, such as wave impedance,
13 sometimes known as impedance on the cable, is
14 dependent upon spacing of the two conductors.
15 Therefore, when the pair is twisted together,
16 insulation touching each other along the length of
17 the cable, then such parameters such as wave
18 impedance would be expected to be controlled.

19 Q. When you say that a twisted pair
20 involves two conductors that are twisted together,
21 does that mean each of the two individual conductors
22 is twisted entirely around the other conductor?

1 MR. KOHLHEPP: Object to form.

2 THE WITNESS: I understand your
3 question to -- if I were to, quote-unquote,
4 draw a picture in my mind as it were and
5 describe that to you, I saw your question as
6 one of the two wires would be essentially
7 straight, and the other wire would be
8 essentially wrapped around the other
9 conductor.

10 Is that an accurate depiction of the
11 question that you're asking, is that what a
12 twisted pair is?

13 BY MR. HOEHNER:

14 Q. No, that's not correct.

15 We've been talking about the wires of
16 a twisted pair being twisted together, and I'm
17 trying to understand what that twisting means. And
18 my question is: Does the twisting require each wire
19 to circumscribe the outer surface of the other wire
20 in a twisted pair?

21 MR. KOHLHEPP: Object to form.

22 THE WITNESS: Your question brings to

1 my mind the mental picture circumscribed the
2 other conductor, or circumscribe word in
3 particular. Again, it depicts in my mind a
4 wire essentially straight around which
5 another wire is twisted. So I have a
6 straight conductor and a twisted conductor.
7 That's my mental image of the question that
8 you posed.

9 And so, once again, the question to
10 you is: Is that the kind of a mental image
11 you understand when asking the question?

12 BY MR. HOEHNER:

13 Q. Well, what you just described, would
14 that be a twisted pair?

15 A. One skilled in the art, that would not
16 be a twisted pair.

17 Q. So describe for me what you mean by
18 "twisted" in a twisted pair.

19 A. They were -- I'm asked to describe a
20 twisted pair --

21 Q. No, that's actually not the question.
22 I'm asking you -- we've been using the word

1 "twisted."

2 A. Yes.

3 Q. Focusing just on the "twisted," what
4 is the twisted -- when you say, We twist two wires
5 together, what does that mean to you?

6 A. Well, I provided references in my
7 declaration, such as Exhibit 1016 and some others,
8 that would describe the kind of -- a twisted pair I
9 believe in better terms than I could come up with
10 ad hoc trying to address a question from you and,
11 yet, answer your question in that I would be
12 describing and point to something, this is what I
13 see as a twisted pair.

14 Q. You can't tell me what to you the
15 twisting in a twisted pair means?

16 MR. KOHLHEPP: Object to form.

17 THE WITNESS: You used the terms
18 "circumferential" and "one wire around
19 another" and words I can't remember
20 distinctly or recollect, but I do know
21 that -- defined a twisted pair, I can show
22 you examples I would call a twisted pair so

1 you can see the example of what I call a
2 twisted pair.

3

4 BY MR. HOEHNER:

5 Q. I looked at all the exhibits that you
6 cite in your expert report. I'm trying to
7 understand in your opinion what you believe a
8 twisted pair is, and in particular, I'm trying to
9 understand what the twisting of two conductors is
10 when you have a twisted pair. I'd like you to
11 describe that for me.

12 You didn't like my word
13 "circumferential" or anything earlier. So I'm
14 trying to let you use your words to describe what
15 the twisting in a twisted pair is.

16 MR. KOHLHEPP: Object to form, asked
17 and answered.

18 MR. HOEHNER: Most certainly not
19 answered.

20 THE WITNESS: To answer your question,
21 I do believe it would be very helpful to
22 refer to Exhibit 1016.

1 THE VIDEOGRAPHER: You want me to
2 bring it up on the screen?

3 MR. HOEHNER: Sure.

4 (Exhibit 1016, Previously marked.)

5 THE WITNESS: The reference page
6 number is 48, and the exhibit number page is
7 7. Please return to that.

8 So in the paragraph called "Twisted
9 Pair Cables," that would be a pictorial
10 representation of two wires twisted together,
11 and that would be a twisted pair in that
12 example.

13 BY MR. HOEHNER:

14 Q. I understand the picture shows a
15 twisted pair, but in words, how would you describe
16 what those two conductors are doing with respect to
17 one another?

18 A. I also refer you to page 8 in the
19 exhibit and page 49 in the document. So this is
20 also an example of a twisted pair. So longer twists
21 can become flattened or deformed as they are
22 impacting the cables, whereas shorter, tighter

1 twists are less likely to deform.

2 So a twisted pair may indeed have a
3 shape something like what you see on page 8 of the
4 exhibit, if the pairs happen to be long. If the
5 pair -- and if the pair lay happens to be short, it
6 would tend to look more like what's on page 7.

7 So you're asking me to come up with a
8 bunch of words that describe these pictures in some
9 kind of precise way. I want to answer your
10 question. To my best ability, I'm answering your
11 question that you're asking by showing these
12 pictures to depict what I would see as a twisted
13 pair and various examples of a twisted pair, as
14 well.

15 Q. What characteristics to the twisting
16 are necessary in order for a pair of conductors to
17 be considered a twisted pair?

18 MR. KOHLHEPP: Object to form.

19 THE WITNESS: On page 7, the
20 characteristics shown is that the wires tend
21 to be twisted around each other as opposed to
22 one conductor being essentially straight and

1 the other wrapping around it.

2 And on page 8, you also see example of
3 twisted pairs, where you do see the one wire
4 around the other -- I mean, not one wire
5 around the other, the twisting together
6 effect in that diagram. But you also see
7 that with longer lay lengths, they can be
8 deformed and not form a particular rigor or
9 pattern.

10 So the construction appearance of a
11 twisted pair can vary depending on the lay
12 length of the cable, the pair, the cable
13 design, et cetera, and these are two examples
14 of what I would call a twisted pair that do
15 not look the same. And to try to explain
16 that merely in words is difficult to the
17 point at the moment I don't know how to do
18 that in words.

19 MR. KOHLHEPP: Counsel, we've been
20 going for over two hours here. Can we take a
21 break soon?

22 MR. HOEHNER: Just a little bit

1 further on this, and we'll take a break in a
2 minute. I just want to finish this line of
3 questioning.

4 BY MR. HOEHNER:

5 Q. You mentioned that the two conductors
6 twist around each other; correct?

7 A. Yes, I did.

8 Q. And the two conductors twist around
9 each other 360 degrees; is that correct?

10 A. Well, they twist around each other for
11 a lot of degrees, depending on how long the cable is
12 and how many lengths of -- how long the cable is
13 compared to the twist length of the conductors.

14 Q. If two conductors don't twist around
15 each other completely 360 degrees, is that still a
16 twisted pair?

17 MR. KOHLHEPP: Object to form.

18 THE WITNESS: In my experience, a
19 twisted pair would have a -- what's typically
20 called a lay length, much shorter than the
21 length of cable in which it is used.

22 So in my experience, a pair would have

1 a lot of degrees, if you want to call it
2 rotation, along the length of the cable. So
3 that's why I'm not too clear about the 360
4 part where a pair and a cable would be
5 rotating around each other. And if you
6 attempted to describe that in degrees, it
7 would be a lot more than 360, multiples of
8 360.

9 BY MR. HOEHNER:

10 Q. If two wires rotate less than
11 360 degrees around each other, is that a twisted
12 pair?

13 MR. KOHLHEPP: Object to form.

14 THE WITNESS: It could be part of a
15 twisted pair. It could be.

16 BY MR. HOEHNER:

17 Q. Well, is that segment of a wire that's
18 less than 360 degrees a twisted pair?

19 MR. KOHLHEPP: Same objection. Object
20 to form.

21 THE WITNESS: I don't understand -- I
22 don't know in what context we're talking or

1 examples of what you might be thinking about.
2 The two wires are not twisted 360 degrees to
3 form one lay as it were, as shown in page 8
4 of the exhibit -- or -- yeah, page 8 of the
5 exhibit.

6 Therefore, it would be a very short
7 cable by cable standards, data transmission
8 cable standards. It would be difficult to
9 say if that's a twisted pair or not if it
10 only had X number of degrees rotation.

11 BY MR. HOEHNER:

12 Q. Well, several times you've used the
13 term "lay." Can you define for me what the term
14 "lay length" means in terms of a twisted pair?

15 A. So the twisting would be causes
16 periodic reversals in the electrical field that
17 surrounds the pair. So as shown in the two figures
18 on page 7 and 8 of the example here, the pairs
19 would -- would have -- relative positions of the
20 conductors would simply change place or reverse in
21 terminology in my declaration.

22 So the lay length is a length at which

1 the two -- I think a reverse -- a lay length is a
2 length at which the reversals happen in relative
3 position of the conductors.

4 Q. Can you rephrase that? I'm not sure I
5 understand that.

6 A. Lay length, as looking at a prong on
7 page 8 in the picture we're now looking at, as I
8 understand it in this drawing, it's trying -- it's
9 attempting to predict -- attempting to depict, I'm
10 sorry, a lay length, one lay length.

11 So if you notice that if you look at
12 the left -- the right side of the drawing and you
13 use the -- what I would call the top conductor, at
14 the left of the drawing, the top conductor has
15 resumed its original position and -- within the two
16 wires, and that would be what I would call a lay
17 length.

18 Q. So would you define "lay length" as
19 the axial distance necessary for one pair of
20 insulated conductors to complete a full 360-degree
21 rotation when twisting about one another?

22 A. It would be the length at which the --

1 go back to the original position relative to the
2 other conductor, as viewed as rotation -- it could
3 be viewed as 360 degrees of rotation.

4 Q. So the definition I just said, which
5 is the axial distance necessary for one pair of
6 insulated conductors to complete a full 360-degree
7 of rotation when twisting about one another, is that
8 an accurate definition for "lay length"?

9 MR. KOHLHEPP: Objection, asked and
10 answered.

11 THE WITNESS: So the point -- the
12 point of the twisting conductors is to
13 provide those reversals that I mentioned in
14 my reversals in the electrical field. So the
15 reversal happened periodically at the lay
16 length. So that's really how I see a lay
17 length is the reversal -- the point of the
18 reversals.

19 BY MR. HOEHNER:

20 Q. So was there something wrong with the
21 definition I gave you for "lay length"? You
22 disagree with it?

1 A. Going back to my declaration, I talk
2 about the conductors -- twisting the two conductors
3 maintains consistent spacing. I go on to say that
4 the twisting also causes periodic reversals in the
5 electrical field that surrounds the pair. And the
6 reversals result in improved isolation from
7 electrical fields produced by adjacent pairs or
8 outside electrical fields.

9 So it is the periodic reversals that I
10 refer to in describing a pair of lay is where did
11 the reverse -- how -- at what distance along the
12 length of the twisted pair do the reversals happen,
13 is the way I review it and the way I've described it
14 in the declaration.

15 Q. And why do those periodic reversals
16 occur? What is it about those points that the
17 reversals occur?

18 MR. KOHLHEPP: Object to form.

19 THE WITNESS: Because a reversal
20 points -- repeat the question, please, sir.

21 BY MR. HOEHNER:

22 Q. You say that the twisting causes

1 periodic reversals in the electric field that
2 surround the pair. And you defined "lay length" as
3 those points where the actual distance between which
4 those reversals occur; correct?

5 A. Yes, I do.

6 Q. And my question is: Why do the
7 electrical fields reverse at those points?

8 A. Because the orientation of the
9 conductors within a pair change position, and
10 they're opposite each other. So they change
11 relative position within the cable or within space
12 at a periodicity defined by the lay length. And
13 that reversal reverses the electrical field and
14 leads to the improvements in electrical isolation.

15 Q. And then going back to the definition
16 I provided for "lay length," which is the axial
17 distance necessary for one pair of insulated
18 conductors to complete a full 360-degree rotation
19 when twisting about one another, correct, what do
20 you feel is incorrect or wrong about that
21 definition?

22 MR. KOHLHEPP: Object to form.

1 THE WITNESS: I discussed in my
2 declaration twisting two conductors maintains
3 consistent spacing, causing periodic
4 reversals. I've talked about the periodic
5 reversals happen at periods of the lay
6 length.

7 So you're asking me, I guess, to
8 rephrase my definition. I believe I've
9 described twisted pair. I've shown you
10 diagrams of twisted pair to be more
11 pictorial, and I've described twisted pair
12 and reversals in my declaration.

13 BY MR. HOEHNER:

14 Q. You're not answering my question. I
15 asked what's wrong with the definition I gave you
16 for "lay length." If you want, I can repeat it.

17 It's the axial distance necessary for
18 one pair of insulated conductors to complete the
19 full 360-degree rotation when twisting about one
20 another.

21 MR. KOHLHEPP: Object to form, asked
22 and answered.

1 THE WITNESS: If you -- if you believe
2 that 360 degrees is the point at which the
3 reversals in the electrical field that
4 surrounds the pair are correlated, then your
5 words would be consistent with my
6 declaration.

7 BY MR. HOEHNER:

8 Q. So is it your opinion that my
9 definition is consistent with your declaration?

10 MR. KOHLHEPP: Object to form, asked
11 and answered.

12 THE WITNESS: It wasn't -- my view is
13 not that it would be consistent for my view.
14 It may be consistent with yours, based on
15 your understanding of what 360 degrees is.

16 MR. KOHLHEPP: Counsel, can we take a
17 break? We've been going two hours and
18 20 minutes here, which is quite a long time.

19 MR. HOEHNER: I also wanted to take
20 breaks, and the witness isn't answering my
21 question.

22 BY MR. HOEHNER:

1 Q. I'm asking a really simple question
2 here. I'm giving you a definition of "lay length,"
3 which is a term that you introduced in this
4 deposition. And I'm giving you what I believe is a
5 definition of "lay length" and asking you if it's a
6 correct definition of "lay length," and you're not
7 answering whether or not it's a correct definition
8 of "lay length."

9 MR. KOHLHEPP: Object to form.

10 BY MR. HOEHNER:

11 Q. I can repeat the definition one more
12 time, and you can tell me whether or not you believe
13 that is a correct definition of what a lay length
14 is.

15 It is the axial distance necessary for
16 one pair of insulated conductors to complete a full
17 360-degree rotation when twisting about one another.

18 MR. KOHLHEPP: Object to form.

19 THE WITNESS: I provided my views of
20 wording. I've provided pictures, diagrams,
21 and external documents that describe twisted
22 pairs. At this point, I'm not able to answer

1 your question. Not that I can't or won't.
2 I'm not able to do that at this point and
3 review whether the different terminology
4 would be appropriate that you choose how to
5 describe it and come up with -- try to
6 attempt to come up with an answer to your
7 question that's not just kind of
8 off-the-cuff.

9 BY MR. HOEHNER:

10 Q. Okay. So your testimony under oath
11 here today is that you can't answer that question?

12 MR. KOHLHEPP: Object to form.

13 THE WITNESS: I do object to form.

14 It's not that I can't. It's not -- I can't
15 at this particular time without further
16 review.

17 MR. HOEHNER: All right. Why don't we
18 take a break.

19 THE VIDEOGRAPHER: All right. The
20 time is 11:19 a.m. Off the record.

21 (Recess from the record.)

22 THE VIDEOGRAPHER: The time is

1 11:30 a.m. We are back on the record.

2 BY MR. HOEHNER:

3 Q. So we've been talking about twisted
4 pairs. If I took two conductors, each of which is
5 covered with insulation, and I twisted them together
6 into a ball, like a ball of yarn, would that form a
7 twisted pair?

8 A. Your question has some ambiguity, but
9 if I did take two wires, twisted them together as a
10 twisted pair, and then balled that up into a ball, I
11 would have a ball of twisted pairs -- a ball of a
12 twisted pair -- excuse me, a ball of a twisted pair.

13 Q. That's not what I asked.

14 If I had two conductors, straight
15 conductors covered in insulation, and I just twisted
16 them together into a ball, like you would wrap a
17 ball of yarn, would that form a twisted pair?

18 A. That would not. Because in your
19 example, as I understand it, the conductors --
20 insulator conductors are not twisted together.

21 Q. What is it about the twisting that
22 they are not doing, in your opinion?

1 MR. KOHLHEPP: Object to form.

2 THE WITNESS: Back to my example of --
3 in 1016, Exhibit 1016, going with page 7 in
4 the exhibit and 48 in the document, of which
5 is referenced, the twisting of pairs is
6 described and is in that figure, so if I had
7 straight wires, I believe is the assumption
8 you're asking me to try to envision, and took
9 those straight wires and twisted them into a
10 ball, then I would not have a configuration
11 of two wires, like is shown in the exhibit.

12 Again, my assumption about your
13 question as phrased is that that would --
14 then the ball would not be considered to be a
15 twisted pair or twisted together around.

16 BY MR. HOEHNER:

17 Q. If we go back to Exhibit 1007 from the
18 1061 IPR and turn to marked page 16, paragraph 31.

19 A. Yes.

20 Q. The last sentence on the page, which
21 you had read earlier, said it's your opinion that --
22 it is your opinion that "Twisted pairs were (and

1 are) commonly referred to as simply 'pairs' in the
2 industry"; correct?

3 A. That was -- I lost you on the
4 reference. Okay.

5 Q. Sure. It's a simple question. You
6 had read this sentence earlier. It's the last
7 sentence in paragraph 31 on marked page 16 of
8 Exhibit 1007, where you state, "Twisted pairs were
9 (and are) commonly referred to as simply 'pairs' in
10 the industry"; correct?

11 A. That is correct.

12 Q. But is it your opinion that any time
13 the word "pairs" is referred to in the context of
14 data communications cables, unless it's specified
15 otherwise, it's referring to twisted pairs and not
16 untwisted pairs; correct?

17 A. Well, the sentence is, "Twisted pairs
18 were (and are) commonly referred to simply as
19 'pairs' in the industry."

20 So a pair in data communication cable
21 would typically refer to twisted pair.

22 Q. And if something refers to a pair in

1 the data communications cable context, without
2 specifying whether it's twisted or untwisted, is it
3 your opinion that the intent is to mean twisted?

4 A. The answer to that question is no.
5 And the reason is I mentioned earlier an example of
6 such a product called twinax and other type of
7 constructions where there are two wires that could
8 be called a pair that are -- by definition of a
9 cable construction design are not twisted.

10 So in the case of some cables which
11 are intentionally not twisted and are data
12 communications cables, then the correlation would
13 not -- there can be a pair that's indeed not twisted
14 by the example I gave earlier.

15 However, when we're talking about a
16 cable design to be a twisted pair cable, data
17 communication, say groups of twisted pairs together,
18 as in many of the references -- or all of the
19 references actually that we mentioned, that would be
20 expected -- a pair would be expected to be a twisted
21 pair.

22 Q. So we spoke about your work at Belden

1 earlier. Do you know if design specifications at
2 Belden in the 1999 time frame identified whether a
3 particular conductor pair in a cable was twisted or
4 untwisted?

5 A. Are you talking about a document such
6 as a manufacturing specification or a product
7 specification?

8 Q. Sure.

9 A. Yeah, my recollection is that such
10 documents describe the construction of a product
11 would have information such as the lay length of a
12 pair to be included in a cable.

13 Q. So such documents would specify
14 whether it was a twisted or untwisted conductor;
15 correct?

16 A. Reading the description of the
17 document, yes, it would either lay out a lay length
18 or say -- or say not twisted together. By some
19 means it would depict whether or not the pair, in
20 the term you're using or maybe the example I
21 mentioned about the coax cable, whether that would
22 be twisted or not.

1 Q. If we go to marked page 37 in
2 Exhibit 1007, and look at paragraph 70.

3 And here you state that
4 configurable -- or configurable separator means a
5 separator that can be formed or arranged when the
6 cable is being formed; correct?

7 A. That is correct. That's what I say.

8 Q. What do you mean by "arranged"?

9 A. So to answer your question, I'm trying
10 to recollect if some of that same terminology was
11 used in either the '537 or the '095 patent and
12 whether I picked up on that.

13 In patent '537, Column 3, line 26, the
14 '537 patent describes with this arrangement. And so
15 I do recollect that the '537 does use the term "as
16 such an arrangement."

17 So then paragraph 70 actually
18 describes "meaning of a 'configurable' separator, as
19 would be understood by one of ordinary skill in the
20 art in view of the '537 Patent's claims,
21 specification, and prosecution history, is a
22 separator that can be formed or arranged when the

1 cable is being formed."

2 So I did use the term "arranged," and
3 it's consistent as well with Column 3, line 26,
4 since I was trying to paraphrase the view of the
5 '537 patent.

6 Q. Under the definition you have in
7 paragraph 70, can you give me an example of a
8 separator that is not configurable?

9 MR. KOHLHEPP: Object to form, also
10 scope.

11 THE WITNESS: The question about can I
12 think of a separator that would not be
13 configurable, the question to me is
14 indistinct and vague. I don't understand any
15 limits, if there are any, on what
16 configurable might be or not what
17 configurable might be, so ...

18 BY MR. HOEHNER:

19 Q. Well, I can help you there. It's the
20 definition you provided in paragraph 70. That's
21 exactly what I'm using the term "configurable" to
22 mean.

1 My question again is: Can you think
2 of any separator that would not be configurable,
3 under your own definition?

4 A. Well, "configurable" is defined not by
5 me, but by '537.

6 Q. Well, it actually isn't. There is a
7 phrase in your report that says "is a separator that
8 can be formed or arranged when the cable is being
9 formed." Those are your words. Those words don't
10 show up in the '537.

11 My question is: Under that definition
12 in your report, can you give me an example of a
13 separator that is not configurable?

14 A. At this time, I cannot think of a
15 configure -- a [inaudible] that would not be
16 configurable, simply because I can't think of one at
17 the moment.

18 Q. Let me turn to marked page 34 in
19 Exhibit 1007, and look at paragraph 65. Here you
20 construed "substantially flat" as "a separator that
21 is initially a substantially flat member prior to
22 being formed into the cable"; correct?

1 A. That is correct.

2 MR. HOEHNER: And can we also bring up
3 Exhibit 1015, which is U.S. Patent
4 No. 4,755,629.

5 (Exhibit 1015, Previously Marked.)

6 BY MR. HOEHNER:

7 Q. And, Mr. Cornelison, that's also in
8 your marked IPR exhibit stack, if you want to find
9 it.

10 Can we turn to marked page 5, which
11 shows Figure 6.

12 A. I see that.

13 Q. Do you see preform 55 in Figure 6?

14 A. I do. And --

15 Q. Let me know when you're ready.

16 A. Well, did you -- so this is -- you say
17 1005; is that correct? Or did I mishear you?

18 Q. Exhibit 1015.

19 A. Thank you.

20 Okay. I'm with you now. I have the
21 document in front of me, and I'm seeing the screen
22 in front of me, as well.

1 Q. Okay. So when you look at preform 55,
2 is preform 55 substantially flat, as you have
3 construed that term?

4 A. That would not be substantially flat,
5 as I construed the term.

6 Q. And if we look in Exhibit 1015 on
7 marked page 9, Column 6, starting at line 3, do you
8 see it says, "Further, the preform 55 is provided
9 with a longitudinally extending slit 56 in each
10 outer wall thereof. In this way, the preform 55 may
11 be provided in a supply roll to a manufacturing line
12 and a pair of the insulated conductors 42-42,
13 twisted or untwisted, is caused to be inserted into
14 each tubular portion 56 as the tubular portion is
15 opened along its slit 57."

16 Do you see that?

17 A. Yes, I do see that.

18 Q. So this teaches that preform 55 can be
19 supplied on a roll to a manufacturing line; correct?

20 A. Yes, it does.

21 Q. Is preform 55 substantially flat when
22 supplied to the manufacturing line, under your

1 definition of "substantially flat"?

2 A. Yeah, my view it would not be supplied
3 substantially flat.

4 Well, I'm going to restate my answer
5 there.

6 Figure 55 preform certainly has a
7 shape to it. Pulling the '537 declaration, I do
8 describe Beggs in that declaration, and I talk about
9 on lines -- on paragraph 77 in that declaration, I
10 talk about Beggs teaches a buffer system between the
11 twisted pairs and that the buffer can -- the buffer
12 can be a preform that has a tubular shape -- dual
13 tubular shape or S shape, Figure 7, and the S-shaped
14 buffer may be replaced with a tape, which is made of
15 dielectric material.

16 So Figure 6 in Beggs does talk about
17 an extruded shape, but Beggs goes on to say that --
18 what I do say in -- in Beggs 6, 48 to 56, is that
19 although Beggs is talking about extruded shape,
20 S shape, I describe myself in the declaration, but
21 Beggs also does say in Column 6, line 48, may --
22 each of the tubular members may comprise material in

1 strip form which is wrapped helically or
2 longitudinally, for example, about its associated
3 pair of insulated conductors.

4 So Beggs does open up that, in strip
5 form, wrapped as opposed to being an S-shape.

6 Q. While we're on marked page 53 in
7 Exhibit 1007, paragraph 102, you state, "A POSITA
8 also would have expected the use of a foamed polymer
9 tape to maintain the distance between those twisted
10 pairs similar to what Beggs teaches for a foamed
11 polymer [sic]. This is due to the increased
12 thickness of the foamed tape compared to the S-shape
13 non-foamed tape"; right?

14 You see that?

15 A. I see the screen in Exhibit 10 --
16 1007.

17 Q. I haven't asked a question. So I'm
18 not sure what you're answering about.

19 A. I'm about to make a comment, not
20 answer a question, that Exhibit 1007 includes a
21 declaration about patent '537 and '095. So when you
22 say refer to Exhibit 1007, I cannot tell whether

1 you're talking about the '095 or the '537 section of
2 the document.

3 So in this case, my question back to
4 you is just a matter of where are we? Are we in the
5 '095 or the '537 section?

6 Q. We remain in the '537 section, which I
7 stated earlier. I'm fairly certain I said I will
8 notify you when we switch to the '095, but we've
9 been in the 1061 declaration this entire time.

10 A. Okay.

11 Q. And it's also been shown on the
12 screen.

13 So my question is: In your opinion,
14 are all tapes substantially flat, as you've
15 construed that term in these IPR proceedings?

16 A. Rereading and reminding myself about
17 the 102 paragraph that you referred to, and so I
18 believe the question was about whether the tape was
19 substantially flat; is that correct?

20 Q. Correct. Is it your opinion that all
21 tapes are substantially flat?

22 A. I do not know about all tapes. What I

1 do know, though, is that I do provide an example of
2 what would be considered an element that would be
3 used in figure -- in paragraph 102 as I describe a
4 foamed polymer tape. And that is in paragraph 93 of
5 my declaration where I actually show a profile of a
6 tape that might be used. So I have the description,
7 overall drawing of the kind of tape I'm thinking
8 about. I do not know about all tapes.

9 Q. So in paragraph 102, how do you know
10 that the foamed tape is thicker than the non-foamed
11 tape?

12 A. In my experience, foamed tapes are
13 consistently thicker than non-foamed tapes. I'm
14 comparing the thickness of a foamed tape to a
15 S-shaped non-foamed tape. So a non-foamed tape
16 would be in -- someone in the art would be, for
17 instance, a polyester, known as Mylar, or a material
18 like that.

19 And in foamed tapes, then the
20 thickness is much -- is greater because the
21 characteristics and mechanical construction of the
22 foam itself would be thicker than a non-foamed tape.

1 So it would be difficult for someone
2 in the art to understand that a foamed tape is
3 generally thicker than non-foamed tape based on the
4 type of thicknesses known in the industry for
5 non-foamed tapes, such as polyester.

6 Q. Is it possible to have a non-foamed
7 tape that is at least as thick as or thicker than a
8 foamed tape?

9 A. There is a -- opening the concept of
10 tape to beyond that typically used in cables of this
11 type and expanding the range of possible tapes, one
12 might consider or find a tape that's not foamed to
13 be thicker than a foamed tape. But, typically, in
14 my experience, for these types of cables forming
15 separators in this case, the foamed tape would be
16 typically thicker than a non-foamed tape.

17 MR. HOEHNER: Can we bring up Exhibit
18 EX1014, which is U.S. Patent No. 389-4172.

19 (Exhibit 1014, Previously Marked.)

20 BY MR. HOEHNER:

21 Q. Mr. Cornelison, you should find a copy
22 of that in your marked IPR exhibits stack, if you'd

1 like.

2 A. Yeah, it is there. I found it. I
3 have it in front of me.

4 Q. And if we could turn to marked page 3,
5 Column 2, starting around line 35 down to line 54.
6 And I'll ask a question, whether you want to review
7 this after I ask the question or beforehand.

8 My question is: This reference,
9 Exhibit EX1014, relates to conductor pairs that have
10 different lay lengths that are held together with a
11 film-backed foamed thermoplastic tape; correct?

12 A. Okay. I was trying to find, as you
13 were talking, the specific words that you were
14 just --

15 Q. I was paraphrasing what were in
16 Column 2, lines 35 to 54.

17 A. Okay.

18 Q. I was paraphrasing what Exhibit 1014
19 is teaching.

20 A. Okay. I am with you now. Thank you.

21 Q. Okay. So would you agree that
22 Exhibit 1014, which we'll refer to Jachimowicz,

1 relates to conductor pairs having different lay
2 lengths that in one embodiment are -- they're held
3 together in a unit with a film-backed foamed
4 thermoplastic tape?

5 A. Well, in Column 2, line about 50, 51
6 to roughly -- he does state that the pairs can be
7 held together, together in the bundle in other ways,
8 if desired, as by applying it -- applying a tape
9 made of a foamed thermoplastic material -- foamed
10 thermoplastic supported by a film such as Mylar or
11 polypropylene, or other material.

12 So that is what he describes. And I
13 hear you talking about a film-backed tape or
14 something, which I take it is your interpretation of
15 what he's saying.

16 Q. The purpose of the tape in Jachimowicz
17 is to lock the conductor pairs together in order to
18 prevent lay distortion when the bundle is handled in
19 manufacturing or installation; correct?

20 A. I do not believe that is correct.

21 Q. Why isn't that correct?

22 A. In Column 2, again, line 46, 47, he

1 says, "To lock the pairs 10, 11, 14 and 18 together
2 and prevent lay distortions when the bundle is
3 handled in manufacturing processes or installation,
4 a thin jacket [sic]" -- presuming he means jacket in
5 a typo -- "a thin jacket of foamed polyethylene is
6 extruded over the bundle."

7 So to perform the function of lock,
8 he's describing the extruded thin jacket of foamed
9 polyethylene.

10 Q. Do you see the next sentence that
11 says, "The pairs can be held together in the bundle
12 in other ways, if desired, as by applying a tape
13 made of foamed thermoplastic supported film -- a
14 foamed thermoplastic supported by a film as Mylar or
15 polypropylene, or other material"?

16 A. I do see that line, yes.

17 Q. You don't think that sentence is
18 referring to the sentence before it as another way
19 to lock the pairs?

20 A. I do not.

21 Q. Why not?

22 A. Because he distinctly uses different

1 terminology in the beginning of the paragraph when
2 describing the extruded layer polyethylene, and he
3 changes terms in line 51, where he only says "can be
4 held together."

5 Q. And so in your opinion, what's the
6 difference between the sentence preceding line 51
7 and the start of the paragraph in line 46?

8 A. Okay. The difference is to lock the
9 pairs means to deliberately limit the movement of
10 the pairs within the core, such as handling
11 manufacturing processes or installation, a thin
12 jacket of foamed polyethylene, et cetera.

13 So he's talking about locking the
14 pairs to withstand -- handle the manufacturing
15 processes or installation, such that he's describing
16 a function of that extruded layer.

17 Pairs can be held together -- he goes
18 on in line 50 or 51, pairs can be held together in
19 the bundle in other ways, if desired, but he uses
20 the term "held together," which is more -- to
21 someone in the art -- skilled in the art, that would
22 tend to be representative and typical when an

1 overlap tape is applied as what Jachimowicz does
2 describe in his text and his drawings.

3 So I do see the two materials, whether
4 it be the extruded polyethylene or the film-backed
5 polypropylene such -- or backed with Mylar or
6 polypropylene perform some similar functions, but
7 not the same functions.

8 Q. Would the pairs that are held together
9 with the Mylar solution be able to move in relation
10 to one another?

11 MR. KOHLHEPP: Objection to form,
12 foundation.

13 THE WITNESS: It is my experience that
14 when cables are subjected to things like
15 installation stresses -- installation handle
16 with manufacturing processes or at
17 installation, in those situations there is
18 mechanical stress on the cable and it does
19 depend upon the core construction a bit, but
20 it is and, in fact, I have observed where the
21 twisted pairs assemblies can slightly move
22 around within the core in reaction to the

1 stresses placed upon that cable core or the
2 completed cable either through manufacturing
3 processes or installation.

4 So I do indeed have a -- see a
5 distinction, what he's trying to describe
6 about the functions and the degree of -- just
7 the functions about the extruded layer versus
8 the tape layer.

9 I do not understand in a
10 conventional -- well, I do not understand in
11 the term of being held together by applying a
12 tape as -- in my experience, as locking --
13 lock pairs together and prevent lay
14 distortion.

15 BY MR. HOEHNER:

16 Q. So, in your opinion, when the Mylar
17 tape is used, the conductor pairs are able to move
18 in relation to one another?

19 MR. KOHLHEPP: Object to form.

20 THE WITNESS: I apologize. The first
21 few words of your question went by, and I did
22 not capture that. So if you could repeat it,

1 please, I would appreciate it.

2 BY MR. HOEHNER:

3 Q. Sure.

4 In your opinion, the Mylar tape
5 solution presented here in the language that we've
6 been reviewing in Jachimowicz refers to the
7 conductor pairs being held together versus locked.
8 And, in your opinion, the fact that Jachimowicz says
9 the pairs can be held together using the Mylar tape
10 solution allows those pairs to move in relation to
11 one another as opposed to the lock solution?

12 MR. KOHLHEPP: Object to form, scope.

13 THE WITNESS: In my experience, the --
14 applying a tape could allow conductors, pairs
15 within the cable to move about when subjected
16 to installation, which may or may not happen
17 depending upon the installation and the
18 manufacturing processes.

19 However, he does indicate by his text
20 locking the pairs, which to me does indeed
21 disclose that he's trying to perform a more
22 solid mechanical capture in the cable than

1 with the tape that he describes a bit later.

2 BY MR. HOEHNER:

3 Q. The selection of the lay lengths of
4 the twisted pairs is an important factor in the
5 Jachimowicz solution; isn't it?

6 MR. KOHLHEPP: Object to form, scope.

7 THE WITNESS: I have attempted to call
8 this patent the Jachimowicz. We have
9 different pronunciations, but it's the same
10 document. And I did want to take a bit of
11 time to refresh my memory about what this
12 patent contains in this stack and the claims.

13 I believe responsive but perhaps not,
14 but I will say this, that Jachimowicz does
15 indeed disclose that the lays are different
16 among the different pairs of the cable.

17 BY MR. HOEHNER:

18 Q. And why is that important in the
19 Jachimowicz solution?

20 A. It was common in making twisted pair
21 cables to have different lay lengths among the
22 different pairs. So Jachimowicz is describing such

1 a thing known in the art to have different pair
2 lengths among different pairs. And that's really
3 the extent I see. What Jachimowicz was talking
4 about is that they indeed do have different pair
5 lengths.

6 Q. What is the purpose of having
7 different pair -- conductor pair lay lengths?

8 A. Well, I do know having different pair
9 lengths is a means to have increased electrical
10 isolation between twisted pairs.

11 Q. And how -- strike that.

12 Are the lay lengths chosen in relation
13 to the particular arrangement of conductors within
14 the cable to minimize the electromagnetic
15 interference between the pairs?

16 A. Well, in Column 1, line 30, he
17 describes that to minimize crosstalk, it is
18 necessary to avoid proximity of pairs of the same,
19 or nearly the same, twist (lays).

20 He goes on to describe various
21 limitations about what lays to choose and various
22 limitations in the cable design, et cetera.

1 So it's consistent with my answer that
2 having twist lays that are not the same in a cable
3 minimizes crosstalk.

4 Q. And so once the lays are determined
5 and the cable is designed, is it important to
6 maintain those conductive pairs in the same relative
7 proximity to one another during manufacture and
8 installation?

9 MR. KOHLHEPP: Object to form.

10 THE WITNESS: Well, I see that
11 Jachimowicz discloses such limitations and
12 lay lengths such as -- and he goes on in
13 Column 1, line 37, I believe, "In large
14 cables, having 50 pairs, there is a need to
15 employ at least 22 pair lays to avoid
16 proximity of pairs of the same twist length."

17 He goes on in line 54 to talk about,
18 "The cable of this invention consists of a
19 multitude of identical small cables twisted
20 together to form one cable core," as shown in
21 Figure 4, as I understand, and Figure 3.

22 So your question was about separating

1 pairs or groups or bundles, and Jachimowicz
2 does describe bundles of pairs.

3

4 BY MR. HOEHNER:

5 Q. Right. And the lay length in those
6 bundles of pairs are specifically chosen; correct?

7 A. They are chosen, yes. And they are
8 chosen within the limits of the design, and he does
9 describe in a claim about the differences -- the
10 difference between one and the other, but...

11 Q. And once those lay lengths are chosen,
12 the goal was to prevent changes to those lay lengths
13 and distortion amongst those lay lengths because
14 those lay lengths were specifically chosen; correct?

15 A. So I was considering the art I'm
16 reading and my recollection of your question that
17 you asked and interested in answering the question.
18 If you could repeat that one, I believe it dealt
19 with lay lengths and distortion and that kind of
20 thing.

21 Q. In Jachimowicz, we just discussed that
22 selecting the lay lengths within a particular bundle

1 of conductor pairs is important. Is it equally as
2 important to maintain those lay lengths during
3 manufacture and installation?

4 A. Yes, it is important to maintain that
5 during installation and manufacture. There's
6 specifically chosen lay lengths, and it is desirable
7 to maintain those lay lengths.

8 Q. If we turn to marked page 50 in EX1007
9 in the '537 IPR, you referred to the depiction on
10 the top of the page earlier in your testimony. You
11 drew the depiction of the film-backed polymer shown
12 here on marked page 50; correct?

13 A. Yes, I do.

14 Q. So this depiction is not taken from
15 any of the references you cited, you created this
16 yourself; correct?

17 A. That is correct, to represent a
18 typical tape that I understand in the industry.

19 Q. And so your depiction here is based on
20 your personal opinion of what the particular tape
21 would look like as opposed to anything in either
22 Jachimowicz -- in Jachimowicz; is that right?

1 MR. KOHLHEPP: Object to form.

2 THE WITNESS: He describes the tape
3 that we talked about in -- my figure would --
4 it describes a tape, I understand, as typical
5 and known and conventional by someone skilled
6 in the art. And I included the diagram such
7 as I did, because Jachimowicz does not
8 describe any other particular characteristics
9 of the tape that he applied over the core to
10 bind the -- to bind the core.

11 And I know in the art that it's very
12 typical to provide the function of binding --
13 or not binding, but holding it together to be
14 an often used -- typically used a tape with a
15 similar profile as what I show in that page.

16 BY MR. HOEHNER:

17 Q. Jachimowicz doesn't teach separating
18 conductor pairs from each other using a dielectric
19 separator; does it?

20 A. No, Jachimowicz does not disclose
21 separating pairs within a group from each other by
22 using the extruded foam he describes for the foamed

1 tape overall.

2 Q. The jacket or tape material 20
3 separates the bundled pairs from the shield in
4 Jachimowicz; correct?

5 A. That is correct.

6 MR. HOEHNER: We've been going another
7 hour. It's 12:40 -- about 12:40, your time.
8 Why don't we break for lunch, if that's all
9 right with you guys.

10 THE WITNESS: Okay with me.

11 THE VIDEOGRAPHER: All right. The
12 time is 12:36 p.m. Off the record.

13 (Luncheon recess from the record.)

14

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A F T E R N O O N S E S S I O N

5

THE VIDEOGRAPHER: The time is

6

1:09 p.m. Back on the record.

7

MR. HOEHNER: Can we bring up EX1012,

8

which is the English language translation of

9

Japanese patent application publication

10

S43-15470.

11

(Exhibit 1012, Previously Marked.)

12

KENNETH CORNELISON,

13

having been previously sworn, resumed the

14

stand and testified further as follows:

15

EXAMINATION (Cont'd.)

16

BY MR. HOEHNER:

17

Q. And, Mr. Cornelison, you should have a

18

copy of that in your marked IPR exhibit stack, as

19

well, if you'd like.

20

A. I have it.

21

Q. Exhibit 1012 is an English language

22

translation of a Japanese language patent

1 application publication; correct?

2 A. Yes, that is correct.

3 Q. Are you able to read Japanese?

4 A. I am not.

5 Q. Are you the individual who arranged to
6 have the original Japanese language patent
7 application publication translated, as it's shown in
8 Exhibit 1012?

9 A. I am not.

10 Q. Do you know who did?

11 A. I believe it was one of the counsel
12 members here at Caspar.

13 Q. If you turn to marked page 3 of
14 Exhibit 1012, there's a translator certification;
15 correct?

16 A. Yes, that is correct.

17 Q. Is it your opinion that the
18 translation in Exhibit 1012 is perfectly clear and
19 understandable?

20 MR. KOHLHEPP: Object to form.

21 THE WITNESS: My pause is because
22 you're saying "perfectly." It is a

1 translation, and so I accept that it is a
2 translation to the extent of the
3 understanding and ability of the translator.

4 BY MR. HOEHNER:

5 Q. But in terms of the translation
6 itself, the English language in Exhibit 1012, is
7 everything in there clear and understandable to you?

8 A. It is clear and understandable.

9 Q. Is there anything in Exhibit 1012 that
10 isn't perfectly clear, in your opinion?

11 A. There are terms used, particularly
12 "stranding" and "twisting," that are, I would say in
13 my view, difficult to translate consistently across
14 languages with different meanings and different
15 contexts. There may be other examples in here,
16 which I don't recollect right now, but I read this
17 as Dr. Warren Smith best reflects -- that he says
18 best reflects the intention and meaning of the
19 original text.

20 I do not know if Dr. Warren Smith is
21 someone skilled in the art of wire cable. He may
22 be. I don't know. But there are terms here used in

1 the cable industry that would need close attention
2 as you read the English translation.

3 Q. Looking at Exhibit 1012, do you see
4 that the inventor is identified as Yanagita,
5 Y-A-N-A-G-I-T-A, with a T?

6 A. Yes, I do.

7 Q. Do you recall that throughout your
8 declaration in these IPRs, you refer to Exhibit 1012
9 as Yanagida with a D; is that right?

10 A. Yes, I do.

11 Q. Why is that?

12 A. I see that as an error, a typo error.

13 MR. HOEHNER: Can we bring up marked
14 Exhibit 1055, which is also located in your
15 stack of marked IPR exhibits.

16 (Exhibit 1055, Previously Marked.)

17 BY MR. HOEHNER:

18 Q. It may be hard to find. I believe
19 it's only a single page near the bottom of the
20 stack.

21 A. Okay. Yes, I see this document.

22 Q. Do you recognize Exhibit 1055?

1 A. I do. I have seen it before.

2 Q. In your declarations in these IPRs,
3 you refer to Exhibit 1055; correct?

4 A. Yes, I do refer to 1055.

5 Q. Exhibit 1055 is a different
6 translation of Yanagita; is that correct?

7 A. Yes, I believe that is the case, a
8 different translation.

9 Q. How did Exhibit 1055 influence your
10 analysis of Yanagita in your declarations?

11 A. Well, he influenced me or the effect
12 of my declarations here, because I would agree what
13 he has in this exhibit here, 155 -- 1055.

14 Q. Are you aware of any differences
15 between the translation in Exhibit 1012 and
16 Exhibit 1055?

17 A. Upon looking at the two documents, I
18 have 1012 and 1055, Yanagita comes up in Ground 3 on
19 page 64 of my declaration. And I did refer to
20 Yanagita 1012, also 1055, where I was forming an
21 opinion about what that patent and that art was
22 talking about describing.

1 And so there may -- I think there may
2 be or are word-by-word differences, but I don't know
3 where they are. And I believe there would be
4 word-by-word differences. But still I used the 1012
5 and the 1055, as shown on page 64, to form my
6 opinions and conclusions in my declaration.

7 Q. Do you know if any of the differences
8 between the translations in Exhibit 1012 and
9 Exhibit 1055 are substantive?

10 A. To my recollection at the moment, I do
11 not believe it's substantive. It has been a while
12 since I looked through these in great detail, but to
13 my recollection, no, there is no substantive
14 differences between the two.

15 Q. How did you know which translation was
16 the most accurate?

17 MR. KOHLHEPP: Object to form.

18 THE WITNESS: I did not view the
19 translations as being more or less accurate,
20 so I don't -- I don't see that concept here
21 in my review of 1012 and 1055. But I did
22 review both of them to understand the art and

1 the concepts being taught in the patent.

2 BY MR. HOEHNER:

3 Q. So is it your opinion today that there
4 are no substantive differences between the
5 translations in Exhibit 1012 and 1055?

6 A. That's not what I said. And so --

7 Q. You're not aware of any substantive
8 differences between Exhibit 1012 and 1055; is that
9 correct?

10 A. When I answered your question, I said
11 I don't believe there are substantive differences.
12 However, it's been a while since I've looked at
13 these two documents to read them in detail. I don't
14 think there are, but it has to be taken in the
15 context and the situation. I've not had a chance to
16 look through these in detail that recently.

17 Q. But when you drafted your report, were
18 you aware of any substantive differences between
19 Exhibits 1012 and 1055?

20 A. No, I was not aware of substantive
21 differences at that time.

22 Q. If we can look at page 1 of

1 Exhibit 1012 in paragraph 1 under the "Detailed
2 Explanation of the Invention."

3 You see it states, Yanagita --

4 A. So where are we, sir?

5 Q. We're on marked page 1, upper
6 left-hand corner of the document under "Detailed
7 Explanation of the Invention."

8 A. Yes.

9 Q. Do you see that it reads, "relates to
10 an improvement of an alternately twisted cable,
11 and, in particular, relates to an alternately
12 twisted cable that prevents twisting of a wire core
13 from becoming undone."

14 You see that?

15 A. Yes.

16 Q. Is that a good summary of the
17 invention disclosed here in Yanagita?

18 MR. KOHLHEPP: Object to form.

19 THE WITNESS: I've been reviewing the
20 two documents here in front of me trying to
21 prepare for your questions so I can get a
22 better feel for the documents I've not

1 reviewed in a little bit here.

2 So if you could repeat your question,
3 I'll try to answer.

4 BY MR. HOEHNER:

5 Q. Is the statement in Yanagita we just
6 reviewed, which states, "The present invention
7 relates to an improvement of an alternately
8 twisted cable, and, in particular, relates to an
9 alternately twisted cable that prevents twisting
10 of a wire core from becoming undone," an accurate
11 description of the invention in Yanagita?

12 A. Okay. It is an accurate overview of
13 the art that Yanagita teaches.

14 Q. Yanagita doesn't disclose solutions
15 for reducing crosstalk in a data communications
16 cable; does it?

17 MR. KOHLHEPP: Object to form.

18 THE WITNESS: I do not see within
19 Yanagita either version here of the
20 translation, where he does talk about
21 crosstalk.

22 BY MR. HOEHNER:

1 Q. Okay. When I'm referring to
2 Exhibit 1012, I'm referring exclusively to
3 Exhibit 1012 --

4 A. Okay.

5 Q. -- to make things a little simpler
6 here. Because Exhibit 1012 is the asserted
7 reference.

8 If you look on marked page 1 of
9 Exhibit 1012, about seven lines up from the bottom
10 of Column 1, do you see where it describes the core
11 material 2 as hard plastic?

12 A. Yes, I see that.

13 Q. Are hard plastics dielectric
14 materials?

15 A. In the context of Yanagita, I would
16 say that the hard plastic that he describes would be
17 a dielectric material.

18 Q. Are all hard plastics dielectric
19 materials?

20 A. That is a very broad question. I
21 don't know of all hard plastics, to answer your
22 question.

1 Q. In Yanagita, having the core
2 material 2 made of hard plastic makes sense because
3 the whole purpose of the solution proposed in
4 Yanagita is to maintain the spiral twisting shape of
5 the cable; correct?

6 A. Yes, that is correct.

7 Q. As shown in the cross-section shown in
8 Figures 1 and 2 on marked page 2 of Exhibit 1012,
9 the core material in Yanagita marked element 2
10 touches and extends from one side of the pressing
11 yarn, which is element 3, across the middle of the
12 cable and touches the opposite side of the pressing
13 yarn; correct?

14 A. That is correct.

15 Q. Is plastic flammable?

16 A. Some plastics are flammable, and some
17 are deemed to be relative inflammable. It's -- in
18 answer to your question, I don't know of all
19 plastics.

20 Q. Is Mylar flammable?

21 A. To some extent.

22 Q. Is foam polyethylene flammable?

1 A. To some extent.

2 Q. In your declaration in Exhibit 1001
3 [sic] in the 1061 IPR, on marked page 68, if you
4 look at paragraph 137, which extends on to marked
5 page 69, you state, the addition -- sorry, you
6 propose adding a plastic-backed foam polymer tape to
7 Yanagita's core; correct?

8 A. Yes, I do.

9 Q. Would doing so increase the amount of
10 plastic in the resulting cable?

11 A. So in paragraph 137, it would add the
12 amount -- adding the tape would add the amount of
13 plastic-back foamed polymer tape.

14 Q. And continue on to marked page 70 in
15 Exhibit 1007, in paragraph 139, you state, "the
16 addition of foamed polymer tape would have been
17 expected to improve electrical performance by
18 reducing the capacitance between the twisted pair
19 (or group of twisted pairs) on one side of
20 Yanagida's core material 2 and a twisted (or group
21 of twisted pairs) on the other side, which would
22 reduce current leakage between the pairs and the

1 resulting transmission loss within the cable."

2 Do you see that?

3 A. Okay. As you were saying the words, I
4 was trying to find exactly the words. So as you
5 were reading, I didn't see that. I was looking at
6 my paper, not the screen. So I'll look here at the
7 screen for additional clues where you're speaking
8 from.

9 Well, I see the first sentence in
10 paragraph 139 to which you refer.

11 Q. Is your opinion stated in that first
12 sentence in paragraph 139 something that's taught in
13 Yanagita?

14 A. No, it is not taught in Yanagita.

15 Q. So what is your opinion based on?

16 A. It is -- so Yanagita does not
17 disclose -- I was going to talk with -- I was
18 refreshing my memory, because this section is about
19 the combination of Yanagita and Jachimowicz. So it
20 refreshed my memory of the section that we were in,
21 in the descriptions of things we were doing.

22 If I'm correct, we're in Ground 3,

1 Yanagita and Jachimowicz in this section. So given
2 my refreshing, we're in Ground 3, talking about a
3 combination of Yanagita and Jachimowicz.

4 One of the questions I believe,
5 although I don't recollect correctly, was that
6 Yanagita does not teach a dielectric foamed tape,
7 literally as shown, say, in paragraph 143 of my
8 declaration.

9 Q. Okay. We were talking about
10 paragraph 139.

11 A. Yes, 139.

12 Q. Right. And that first sentence.

13 And my question was: On what do you
14 base the opinion you expressed in your first
15 sentence of paragraph 139 on marked page 70 of
16 Exhibit 1007?

17 A. Sure. Jachimowicz teaches an example
18 of data cable communications back to 128 --
19 paragraph 128, marked page 65.

20 So on page -- in paragraph 138, I talk
21 about the electrical performance was improved --
22 electrical performance would be an advantage to

1 someone skilled in the art; and, therefore, the --
2 and the foamed tape was known to reduce capacitance
3 and increase spacing between conductors.

4 So the addition of a foamed polymer
5 tape, combining Jachimowicz and Yanagita, would be
6 something that would be considered by someone
7 skilled in the art to use the alternating twist
8 separator that Yanagita teaches, as well as add
9 components that would help improve conductor
10 isolation and lower dielectric constant adjacent to
11 the conductive pairs, such as shown in Jachimowicz.

12 Q. So your opinion in the first sentence
13 of paragraph 139 is based on your personal belief as
14 opposed to anything taught by Yanagita or
15 Jachimowicz; correct?

16 MR. KOHLHEPP: Object to form.

17 THE WITNESS: I'm looking in
18 particular for Jachimowicz, so I can refresh
19 my memory of what Jachimowicz discloses.

20 THE REPORTER: Mr. Cornelison, try to
21 keep your voice up, please.

22 THE WITNESS: I'm looking to try to

1 find a Jachimowicz reference and I have a
2 bunch of paper on my desk now and I'm trying
3 to find that paper copy so I can review that
4 exhibit in terms of the questions being
5 asked.

6 BY MR. HOEHNER:

7 Q. Can you explain to me what you're
8 reviewing, Mr. Cornelison?

9 A. I'm looking at Jachimowicz to
10 describe -- to review his description of his claims
11 and performance and just about done with that, as
12 well.

13 So it is known in the art, not just my
14 personal opinion, that foaming is a way to reduce
15 the dielectric constant and intend to improve the
16 ability of the cable to transmit and have
17 advantages. I believe I -- well --

18 Q. Sorry, you trailed off. Are you done
19 answering?

20 A. So on page 20, I do talk about the
21 separating twisted pairs. Using a foamed polymer,
22 specifically, was also known by 1999. And so foam

1 was an understood way to separate twisted pairs in a
2 way that reduces the dielectric constant and
3 improves the transmission loss.

4 So Jachimowicz does describe a foam
5 layer in the core, and Yanagita does describe the
6 twisting around a hard plastic, as it were,
7 separator to keep the twisted pairs in place. And
8 by adding a foam to the construction would be a
9 reasonable motivation by someone skilled in the art
10 to take Yanagita, make a communication cable, and
11 improve the electrical properties by adding a foam
12 with lower dielectric constant, which would result
13 in less capacitance, et cetera -- not et cetera,
14 less capacitance and otherwise favorable changes to
15 the transmission line.

16 Q. So in paragraph 139, you refer to
17 capacitance. Can you explain to me exactly what
18 forms the capacitor you're referring to?

19 A. Well, I say, "The addition of foamed
20 polymer tape would have been expected to improve
21 electrical performance by reducing the capacitance
22 between a twisted pair (or group of twisted

1 pairs)" --

2 THE REPORTER: Please slow down.

3 THE WITNESS: My apologies. Thank you
4 for reminding me.

5 "First, the addition of a foamed
6 polymer tape would have been expected to
7 improve electrical performance by reducing
8 the capacitance between a twisted pair (or
9 group of twisted pairs) on one side of
10 Yanagita's core 2 and a twisted (or group of
11 pairs) on the other side, which would reduce
12 current leakage between the pairs and the
13 resulting transmission loss within the
14 cable," reading from paragraph 139.

15 So by combining the foam -- the foamed
16 polymer tape and -- such as in Jachimowicz
17 and Yanagita's instruction would be
18 alternating pillar, then it would be
19 anticipated and likely a success to improve
20 the electrical performance of the pairs by
21 combining those two elements.

22 BY MR. HOEHNER:

1 Q. Is there any capacitance between the
2 various conductor pairs that you allege within the
3 two conductor groups on either side of the Yanagita?

4 A. So in Yanagita, if I understand your
5 question correctly, as a dielectric -- the separator
6 is dielectric, which we've talked about is
7 nonconductive, but there still would be electrical
8 coupling across this -- that separator is described
9 in Yanagita.

10 And a foamed polymer tape added, as
11 shown, would decrease the capacitance between the
12 two groups and increase and improve the transmission
13 properties.

14 Q. What if instead of a hard plastic you
15 placed a metal film between the conductor groups in
16 Yanagita, would that reduce capacitance between the
17 two conductor groups?

18 MR. KOHLHEPP: Objection, form, scope.

19 THE WITNESS: Well, right now we're
20 talking about paragraph 139, Yanagita and
21 Jachimowicz combining the art. And so my
22 text in here is talking about when the

1 separator is described in -- or the shape or
2 whatever in Yanagita, when that is
3 dielectric, then the foam would improve
4 the -- would reduce capacitance between the
5 two groups.

6 BY MR. HOEHNER:

7 Q. My question is: If instead of that
8 foam, you placed a metallic film between the two
9 conductor groups in Yanagita, would that work to
10 eliminate capacitance between the two conductor
11 groups?

12 MR. KOHLHEPP: Same objection, form.

13 THE WITNESS: If the -- if the tape
14 were of metal and -- conductive metal and
15 extended in the same extent as shown in
16 Yanagita, then the effective capacitance
17 between the two groups -- between the two
18 groups would not be as significant because of
19 the current -- the presence of the metallic
20 shield or metallic separator, whatever.

21 However, if Yanagita's core is
22 separated or the divider was indeed metallic

1 and conductive, then it would reduce the
2 capacitance between twisted pairs and offer
3 transmission advantages by reducing
4 capacitance between conductors within that
5 group.

6 But, again, that's not the scope of
7 Yanagita or this claim we're making or this
8 combination we're talking about. But if it
9 were metallic, there would still remain
10 transmission line advantages by having a
11 foamed polymer tape there.

12 BY MR. HOEHNER:

13 Q. So in your proposed combination, the
14 only capacitance issues at play are between the
15 conductors collectively on one side of Yanagita's
16 core and the conductors on the other side of
17 Yanagita's core; is that correct?

18 A. Not exclusively, no. Because there's
19 also capacitance between conductors on a side. I do
20 talk about in paragraph 139 coupling between the --
21 I do say, "reducing the capacitance between a
22 twisted pair (or group of twisted pairs) on one side

1 of Yanagita's core 2 and a twisted (or group of
2 twisted pairs) on the other side, and would reduce
3 current -- leakage current [sic]."

4 As demonstrated by Yanagita, there is
5 an advantage transmission-wise to have the pairs
6 separated by -- from, say, a metal layer by a foam
7 low dielectric -- low dielectric material, such as
8 in Yanagita.

9 It would also improve the transmission
10 properties, particularly in the pairs that were
11 adjacent to the conducting layer -- conducting
12 barrier.

13 Q. So in your proposed combination of
14 Yanagita and Jachimowicz, conductors within -- just
15 the conductors within one side of the cable in
16 Yanagita experience capacitance issues with the
17 other conductors on the same side; is that correct?

18 A. That is correct. And the foamed tape
19 would be a way to lower the dielectric constant,
20 which then in turn would lower the capacitance of
21 particular conductors that would be adjacent to the
22 divider in Yanagita.

1 Q. Would the foamed tape do anything with
2 regard to the capacitance between conductors that
3 are on the same side of Yanagita?

4 A. Yes, it would.

5 Q. And how would that work?

6 A. It would work because for the
7 conductors near that divider, the effective
8 dielectric constant would be lower if there was a
9 foamed tape. And so even the conductors
10 particularly adjacent to the divider would not be
11 exposed -- would be exposed to a lower dielectric
12 constant, therefore, lower capacitance than if there
13 were no foamed tape there.

14 Q. And that's irregardless of what's on
15 the other side of that dielectric tape; correct?

16 A. I would not agree with "irregardless."
17 I'm just trying to explain that a foamed tape
18 adjacent to the divider, as described in Yanagita,
19 if it were dielectric, would have an additional
20 effect of decreasing capacitance between two groups.

21 And with a low dielectric foamed tape
22 applied along with the divider in Yanagita, it would

1 also lower some capacitance between pairs due to the
2 lower effective dielectric constant, particularly
3 those pairs near the divider.

4 Q. And those pairs that you're referring
5 to are pairs on one side of the divider. So within
6 one side of the divider, the pairs in and amongst
7 that group of pairs would experience lower
8 capacitance because of the divider?

9 A. Yes, because the divider -- because
10 the divider combined with the lower dielectric
11 constant foam-type material would lower the
12 capacitance, therefore, lower the coupling from
13 pair -- pair to pair on one side of the divider.

14 Q. When you add physical space between
15 two conductors, does that lower the capacitance
16 between them?

17 A. If the other construction of the
18 conductors is the same and we're just taking the
19 separation of the conductors to a wider separation,
20 then that would decrease the capacitance between the
21 two conductors.

22 Q. And when designing a cable, is there a

1 tradeoff between various factors, such as
2 capacitance, crosstalk, the diameter of the cable,
3 et cetera?

4 MR. KOHLHEPP: I'm going to object to
5 form.

6 THE WITNESS: The location, the
7 spacing, the materials, arrangement of
8 conductors within a transmission line cable,
9 dielectric constant, et cetera, those factors
10 all combine together to result in a
11 particular capacitance between two conductors
12 within that cable construction. So the
13 capacitance between two conductors and
14 twisted pair would depend upon several
15 factors within the cable construction itself.

16 BY MR. HOEHNER:

17 Q. And as a cable designer, you need to
18 consider all those different factors when designing
19 a particular cable; correct?

20 A. Yeah, they would be --

21 MR. KOHLHEPP: Object to form.

22 BY MR. HOEHNER:

1 Q. I'm sorry, I didn't hear the answer.
2 Your counsel spoke over you.

3 A. Someone -- to me, someone skilled in
4 the art would understand some of the effects of
5 various construction types or materials, et cetera,
6 and would take those into consideration when putting
7 together a cable design.

8 Q. And as a designer of a data
9 communications cable, does the overall cost of the
10 cable come into play in terms of a particular design
11 and whether it's viable or not?

12 A. Well, the cost issue is something I've
13 not explored in my declaration or made any comments
14 about advantages for -- I'll put it this way -- at
15 least in -- except in general, if someone wants an
16 economical solution, I did not -- I don't believe I
17 designed any details there, but of all the factors,
18 there would be economics involved, but I don't think
19 I touched all that much on economics in my
20 declaration.

21 But a lot of what I talk about is the
22 actual technical changes or capacitance changes, the

1 effects on the transmission line. But certainly in
2 considering changes, economics and product cost
3 could be a motivation for combining or looking at
4 various arts to fought -- to find an improved
5 solution.

6 Q. Going back to Yanagita, how does the
7 plastic core of Yanagita obtain its shape?

8 We can pull up Exhibit 1012 and marked
9 page 2.

10 A. Let's do that, pull up 1012.

11 So as I see about the third line from
12 the bottom on the first column on page 1 of it, and
13 that starts the description of the twisting of the
14 hard plastic separator.

15 Q. Okay. And so how does it obtain the
16 shape shown in Figure 2?

17 A. Yes, in that column, they start the
18 conversation about how to do that with heating,
19 temperature, guide holes, revolving plates,
20 et cetera. And I can go in more detail or read the
21 text, but that is how they describe forming the --
22 the divider in Figure 2.

1 Q. To what temperature is the core
2 material 2 heated?

3 A. I do not see -- in the document they
4 describe the temperatures at which they maintain
5 temperature is in the bottom of column -- the first
6 column on that page, maintaining a given
7 temperatures.

8 Q. So you don't know what temperature the
9 plastic core material 2 is heated to to obtain that
10 shape; correct?

11 A. That is correct, they do not
12 articulate a temperature.

13 Q. Under your theory of what Yanagita
14 discloses, each of the conductor bundles on either
15 side of the core material 2 is comprised of twisted
16 pairs; is that right?

17 A. About six or eight lines down from the
18 "Detailed Explanation of the Invention," there's a
19 sentence that begins, "There is a trend to often
20 using, as communication cables, so-called
21 'alternatingly stranded [sic] cables,' wherein a --
22 that a -- wherein a large number of strands of

1 insulator wires or pairs thereof or quad strands, or
2 units thereof, are twisted together..."

3 So when I see that wording and the way
4 he phrases that, I see him explaining that on either
5 side of the divider, it could be quads, twisted
6 pairs, or even insulated wires.

7 Q. So under your interpretation of
8 Yanagita, each side of the divider in Yanagita has
9 twisted pairs, and those twisted pairs are grouped
10 together into the bundle shown in Figure 2 on either
11 side of the core material; is that correct?

12 A. Yes, that is correct.

13 Q. So the twisted pairs of either side of
14 the core material 2, within that bundle -- the
15 twisted pairs within that bundle are generating
16 crosstalk with the other conductive pairs in that
17 particular bundle; correct?

18 A. Yes, that is correct. They are
19 depict- -- there's a bundle of twisted pairs in
20 Figure 2.

21 Q. Right. And the twisted pairs that you
22 allege are within the group shown in Figure 2 and

1 disclosed in Yanagita are generating crosstalk with
2 the other pairs within that same group; correct?

3 A. That is correct.

4 Q. And the group on one side of the core
5 material 2 is generating crosstalk with the group on
6 the other side of the separator; is that correct?

7 A. If I understood your question, you're
8 talking about the group on one side generating
9 crosstalk to the group on the other side?

10 Q. Yes.

11 A. Yes, there would be some cross- --
12 there would be crosstalk between the two groups.

13 MR. HOEHNER: Can we bring up
14 Exhibit 1010, which is a certified
15 translation of German Patent 297,19,866.

16 (Exhibit 1010, Previously Marked.)

17 BY MR. HOEHNER:

18 Q. Mr. Cornelison, there should be a copy
19 of that in your marked exhibit stacks, as well.

20 And I'm going to refer to Exhibit 1010
21 as GmbH266 for short, if that's okay.

22 A. I also have this in paper form in

1 front of me.

2 Q. Okay. If you could turn to marked
3 page 2, and look at the last line on that page,
4 which runs over on to marked page 3. But it begins,
5 "The arrangement of the shielding according to the
6 invention furthermore makes it possible for the
7 application or introduction of the shielding into
8 the cable to take place by means of the stranding
9 and/or longitudinally extending deformation of the
10 conductor pairs."

11 Do you see that?

12 A. Yes, I do see that.

13 Q. What is the stranding referred to in
14 that sentence that we just read?

15 A. In this line, what I read is that he's
16 introducing the twisted pairs and the tapes that he
17 describes in Figures 1, 2, and 3 and et cetera,
18 combine those into a stranded -- into a cabled --
19 into a form of a cable and, therefore, at the same
20 time inserting the twisted pairs as well as the
21 shielding elements he shows into the cable core he
22 shows as the various Figures 1 through 4.

1 Q. What is the purpose of that stranding?

2 A. The line that follows, of course, I
3 see for the yellow highlighted says, "allows for
4 cost-effective production in a continuous production
5 process."

6 And certainly is one -- one aspect of
7 the arrangement that he talks about, but I also know
8 is that it's known to have the elements of the cable
9 stranded or formed into a spiral to provide
10 stability and location control for the -- for the
11 components.

12 Q. So the stranding referred to here is
13 not referring to twisting the individual wires of a
14 given conductive pair; does it?

15 A. No, I do not see that it includes
16 that.

17 Q. And if we continue down on marked
18 page 3, the last paragraph, about midway through, do
19 you see it reads, "The stranding of the pairs 1 can
20 consist in what is known as a helix stranding or in
21 an SZ stranding (alternating, right-left stranding).
22 In the case of an SZ stranding of the pairs,

1 preferably, the spacing of the reversal points of
2 the stranding direction can be dimensioned such that
3 the transfer frequency corresponding to the spacing
4 of the reversal points is above the defined upper
5 frequency limit."

6 Do you see that?

7 A. Yes, I do.

8 Q. What is the stranding referred to in
9 that paragraph referring to?

10 A. Well, I see in that paragraph, the --
11 there's a data transfer table shown in Figure 1. It
12 comprises four pairs 1, each consisting of two
13 isolated, which I term "insulated," stranded copper
14 conductors 2 or wires.

15 So he's stranding two copper
16 conductors in that sentence. So when I read this --
17 this document here, I see that that -- that section
18 of the paragraph is where he's talking about forming
19 the twisted pairs. And he goes on to talk about the
20 conductors can have a coating on, for instance, and
21 talks about the diameter.

22 And so then the twisted pairs that he

1 already mentions, the stranding of the pairs
2 together -- again, twisted pairs are already
3 described in this paragraph, now he's stranding the
4 pairs together, and then goes on to talk about that
5 stranding of pairs together can consist of what is
6 known as helix stranding or an SZ stranding
7 (alternating, left-right stranding).

8 So he is, again, talking about the
9 assembling of the core of the -- what would be
10 called the cable core, which consists of the twisted
11 pairs described above, and then on to result with
12 the configurations that he describes is possible in
13 Figures 1 through 5.

14 Q. What is helix stranding?

15 A. In terms of this paragraph in this
16 document, I see the stranding of the pairs I consist
17 of what is known as helix, which I interpret to mean
18 the direction of twist is consistently in one
19 direction. And he contrasts that to SZ stranding,
20 which he described as alternating right-left
21 stranding.

22 Q. Would you ever strand two individual

1 conductors into an SZ pattern?

2 A. In context with a data communication
3 cable, of the type talked about in this document and
4 the types of cable that we're talking about in my
5 declaration, in that context, I would not anticipate
6 SZ stranded conductors, i.e., the two wires in a
7 twisted pair.

8 Q. If we can continue on to marked
9 page 5, the last paragraph.

10 And rather than read this lengthy
11 paragraph into the record, I'll just let you read it
12 to yourself, and then let me know when you're done.

13 A. This paragraph starts, "The production
14 of data transfer cable," is what I'm looking at?

15 Q. Yep.

16 A. Okay.

17 (Document review.)

18 THE WITNESS: Okay. I've looked at
19 that paragraph.

20 BY MR. HOEHNER:

21 Q. What is the stranding referred to --
22 in that paragraph referring to?

1 A. So when I look at this paragraph and
2 see the diagram, as well, what I see going on here
3 is that the partial shieldings are applied together
4 with the stranding or the conductive pairs 1,
5 meaning he has twisted pairs and tapes that he
6 describes in figures coming together.

7 And he does say conductor pairs there
8 and/or longitudinally extending deformation of the
9 conductor pairs, which I read as forming the
10 conductor pairs into the stranded assembly.

11 And in particular, in the case of
12 stranding the conductor pairs in the SZ stranding
13 method, laying tools provided for the partial
14 shieldings 11 and 12 can assist the change in the
15 stranding direction produced in each case.

16 So when I read the words in sequence
17 and view the words in my language I understand as
18 part of the cabling art and the figures that he
19 shows and I see the cable having pairs, the pairs
20 and the tapes being pulled together, applied
21 together, as he says in that paragraph, and then
22 differentiates the process a bit -- differentiates

1 the process a bit such that laying tools can assist
2 the change of the stranding direction.

3 Q. So this is not referring to twisting
4 individual components of a given conductor pair; is
5 it?

6 A. I take it from looking at the diagrams
7 and the language, that he's talking about assembling
8 twisted pairs along with tapes together to form the
9 cable structure he shows in his figures.

10 Q. Right. But it's not referring to
11 twisting individual components of a twisted pair
12 together; correct?

13 A. If you mean forming a twisted pair
14 from two --

15 Q. Yes.

16 A. -- conductors, for example?

17 Q. Right.

18 A. No. I see that this section is
19 talking about assembling the cable core, and I read
20 the -- earlier in the document, as I was describing,
21 the other sections where he talks about twisting the
22 wires together to form a pair.

1 Q. If we can continue through
2 Exhibit 1010 on to marked page 8, and look at
3 Claim 11.

4 It reads, Data transfer cable
5 according to one or more of claims 1 to 10
6 characterized in that the conductor pairs (1) are
7 stranded in a helical or SZ-like manner.

8 What is the stranding referred to in
9 Claim 11 referring to?

10 A. In Claims 1 through 10, he is
11 describing the construction of the core, the
12 configuration of the tapes that he includes, such as
13 in the drawings. So he's not talking about, in 1
14 through 10, the actual assembly of the core
15 together.

16 So Claim 11 is where he brings up that
17 the SZ-like manner. And so, therefore, I read this
18 to, again, read upon the core's options, for
19 instance, he talks about from Claim 1 through 10,
20 can be stranded together in an alternating fashion,
21 helical or SZ-like manner, which, again, refers to
22 the cable core and not the wires within a twisted

1 pair.

2 Q. If we go back up to marked page 2, and
3 look at the first paragraph there.

4 It says, "The present invention
5 relates to a data transfer cable consisting of at
6 least n-pairs, n being an even-numbered multiple of
7 1, of two isolated conductors in each case, a
8 shielding of the conductor pairs that consists of
9 electrically conducted material, and an outer cable
10 sheath."

11 So do you interpret from this that --
12 or do you interpret generally that GmbH-866 relates
13 to a data transfer cable in which conductor pairs
14 are shielded by an electrically conductive material?

15 A. Yes, he does -- he does state in that
16 paragraph that the conductor pairs -- the conductor
17 pairs that consists of a -- a shielding of the
18 conductor pairs that consists of an electrically
19 conductive material.

20 Q. Right. So each of the embodiments
21 disclosed in GmbH-866, which is Exhibit 1010,
22 teaches the use of some type of metallic shield to

1 separate conductor pairs; correct?

2 A. Yeah, the -- I believe -- I believe
3 that to be true, that they were conductive
4 shieldings. And Figure 4 -- sorry, the top of
5 page 5, marked 5, it says they preferably consist of
6 metal foils, in particular, aluminum foils or
7 aluminum foils laminated with plastics materials.

8 So in that paragraph, he does describe
9 the preferred type of material.

10 Q. You mentioned a plastic laminated --
11 let's see. It says, aluminum foil laminated with
12 plastic material.

13 So if I took a cross-section of that
14 particular shield, it would show a plastic layer, an
15 aluminum layer, and then another plastic layer; is
16 that correct?

17 A. In this paragraph at the top of
18 page 5, he discloses aluminum foils -- or aluminum
19 foils laminated with plastic materials. I looked
20 through the declaration at a paragraph I did to
21 describe in brief summary this particular patent and
22 what it was disclosing.

1 I see in the top of page 5 that they
2 disclose shieldings that would be aluminum foils or
3 foils laminated with plastic material. They also
4 offer up thicknesses, particularly -- in particular
5 for the tape.

6 But he does not describe any details
7 about the lamination, nor does he -- let me put it
8 this way. He doesn't describe any details about the
9 lamination, but it does have aluminum foil laminated
10 with plastic material, is what he discloses.

11 Q. Right. So if the aluminum is
12 laminated with the plastic, can I cross-section that
13 material, would it show a plastic layer, an aluminum
14 layer, and then a metal -- sorry, and then another
15 plastic layer?

16 A. Given the paragraph we're looking at,
17 it might, but simply because he doesn't go in any
18 detail about the type of, any particular type or
19 construction of the foil itself.

20 Q. Would it be possible to have a
21 four-layer shield that consists of a plastic layer,
22 metal layer, another plastic layer, and then another

1 metal layer?

2 A. The four-layer tape would be possible.
3 A ten-layer tape might be possible. I don't think
4 that's practical to consider. All I'm trying to
5 read here is what he tells us about the tapes.

6 Q. And you're saying it doesn't provide
7 any detail as to what the construction or the tape
8 is in this particular reference; correct?

9 MR. KOHLHEPP: Object to form.

10 THE WITNESS: It does say it includes
11 aluminum foil laminated with plastics
12 material, is as much detail as he provides
13 for us.

14 BY MR. HOEHNER:

15 Q. In the field of electrical conductors,
16 are you familiar with the term "solid wire"
17 conductor?

18 A. Yes, I am.

19 Q. What is a solid wire conductor?

20 A. So it's where the -- in a data
21 communication cable, the type we are talking about
22 right now and in general in this declaration, it

1 would be a thin rod of copper, for instance, that
2 would be continuous from one end to the other,
3 electrically continuous, and would be physically a
4 single rod type of material. And that would be
5 called a solid conductor.

6 Q. In relation to electrical conductors,
7 are you familiar with the term "stranded wire"?

8 A. Yes, I am.

9 Q. In --

10 A. I am familiar with stranded wire.

11 Q. What is stranded wire?

12 A. It is a wire that is first formed of
13 much smaller elements or rods or copper and then
14 assembled together to form a larger composite
15 conductor.

16 Q. So would you say that's multiple
17 individual strands of smaller gauge wire that are
18 twisted together to create a larger gauge wire?

19 A. Yes, that would be a conventional type
20 of construction in data cable of the type we're
21 talking in the declaration, as well as other art
22 we're talking about.

1 Q. And in a stranded wire, would each of
2 the individual strands be referred to as a -- each
3 of the components smaller gauge wires within the
4 larger gauge wire, would they each be referred to as
5 a strand of wire?

6 A. Each individual filament could be
7 called a strand. That would be a strand of -- a
8 strand within a conductor, which is in turn an
9 assembly of the strands.

10 Q. And have you used stranded conductors
11 in your career?

12 A. I have used conductors that consist of
13 small filaments of conductive material assembled
14 together in an overall larger conductor, which in
15 turn is insulated by dielectric material to form a
16 component, which then is applied into a -- say a
17 twisted pair and made into a data cable.

18 Q. And the component you -- I should say
19 the stranded conductor you just described that's
20 comprised of smaller gauge wire that's assembled
21 into a larger gauge wire, have you used those in
22 relation to data communications cables?

1 A. Yes, I have used those in relation to
2 data cables.

3 Q. Are there any applications in which
4 you'd use a stranded conductor over a solid wire?

5 MR. KOHLHEPP: Object to form.

6 THE WITNESS: I do know, from my own
7 personal experience, that in data cable on
8 occasion, conductors -- insulated conductors
9 can consist of filaments within the assembly
10 coated by a -- surrounded by and insulated by
11 a dielectric material.

12 I am not prepared to talk about
13 applications or where they might be used. I
14 know they exist out there. The one thing I
15 do know and can say about a stranded
16 conductor that's typical but not necessary it
17 would be true is that it tends to be more
18 flexible and easier to bend when it consists
19 of filaments rather than a solid conductor.

20 So I can say that in those cases where
21 flexibility perhaps is desired, that might be
22 a place where you might find it in an

1 application. But I think that for the point
2 of the declaration and what I'm trying to
3 say, getting into applications is something I
4 really don't understand that well to list a
5 lot of -- or any applications, except they
6 would have a commonality typically that a
7 more flexible conductor would be an advantage
8 in that situation, whatever the application
9 would be.

10 BY MR. HOEHNER:

11 Q. Are you aware of any industry
12 standards that require the use of either a solid
13 wire or stranded conductor in particular
14 applications?

15 A. I don't remember offhand that would
16 require solid or stranded at this point.

17 MR. HOEHNER: We've been going for a
18 while. How about we take a short break.

19 THE VIDEOGRAPHER: All right. The
20 time is 2:47 p.m. Off the record.

21 (Recess from the record.)

22 THE VIDEOGRAPHER: The time is

1 3:33 p.m. We are back on the record.

2 MR. HOEHNER: Can we bring up
3 Exhibit EX1009, which is U.S. Patent
4 No. 3,622,683.

5 (Exhibit 1009, Previously Marked.)

6 BY MR. HOEHNER:

7 Q. And, Mr. Cornelison, you can find a
8 copy of it in your marked exhibit stack, if you'd
9 like.

10 A. And I have that document, as well, in
11 front of me.

12 Q. And can we turn to marked page 14,
13 which has Exhibit 22.

14 Can you walk me through what Figure 22
15 in Roberts is depicting? And I'll note that
16 Column 11, lines 16 to 42, on marked page 22 of
17 Roberts, contains a description of what Figure 22
18 is, for your reference.

19 A. I see the figure in front of me,
20 Figure 22 of Roberts. And, also, in Exhibit 1007,
21 indeed I do have a brief overview of Roberts, as
22 well, in my declaration. So I have turned to that

1 section, as well.

2 Q. So looking at Figure 22, each of the
3 elements marked 25, which are identified as spools,
4 are individually turning counterclockwise; correct?

5 A. I believe that to be the case, meaning
6 that 25 has the twisted pair coming off the spool
7 toward the bottom and -- if you want to call it
8 bottom in this figure, the way it's depicted, and so
9 do the other spools. So I would say agree that this
10 likely shows all the spools turning
11 counterclockwise.

12 Q. In the description that I noted on
13 Column 11, lines 16 to 42, elements 14 and 16 are
14 identified as insulated electrical conductors;
15 right?

16 A. Where are you, again, in Roberts?

17 Q. This is Column 11, on marked page 22,
18 lines 16 to 42.

19 A. Yes, I see that.

20 Q. So as Roberts describes it, the
21 elements coming off of spools 25 are only identified
22 as insulated electrical conductors; right?

1 A. No, they're not only described -- it's
2 not the only description for those conductors within
3 the document. There are other places where he talks
4 about the elements 14 and 16.

5 Q. You used the word "twisted pairs."
6 It's your understanding that Roberts discloses
7 twisted pairs?

8 A. Yes, I do understand that Roberts
9 discloses twisted pairs.

10 Q. Where does Roberts use the word
11 "twisted pairs"?

12 A. In the abstract.

13 Q. I'm sorry, your answer is the
14 abstract?

15 A. He mentions it in the abstract.

16 Q. Where does the word "twisted pairs"
17 appear in the abstract?

18 A. He mentions that the -- plurality of
19 insulated conductors (pairs). He also says, of an
20 otherwise conventional telephone cable design. And
21 then he goes on to say it's divided into at least
22 two portions by a plastic-coated metal foil strip or

1 tape.

2 Then he goes on to say, Measurements
3 between pairs, divided by this plastic-coated metal
4 foil, of unwanted energy transferred from one
5 conductor to the other by means of mutual inductive,
6 capacity, or conductive coupling (crosstalk), shows
7 greatly improved properties over undivided cable
8 pairs or divided cable pairs of prior art.

9 Now, the term "pairs" is clear to me
10 because of the description I just read in the
11 abstract. Yeah, so Roberts himself uses pairs to
12 describe two conductors as a pair. He also talks
13 about the cable being of conventional -- otherwise
14 conventional -- let's see, get the right words --
15 otherwise conventional telephone cable design are
16 divided into at least two portions by the
17 plastic-coated metal foil strip or tape.

18 So you have to also take his mention
19 of the word "pair" in the abstract, and I believe
20 it's elsewhere but certainly for right now just go
21 stay with that, and I'm looking at my abstract -- my
22 declaration, in particular paragraph 89 in the '095,

1 where I do an overview of Roberts, as well.

2 And in that section, particularly
3 paragraph 89, I mention some other exhibits that
4 also discuss some detailed constructions of
5 conventional telephone cables of that time frame
6 and -- where in Exhibit 1019, at 1:10 to 15, a
7 typical telephone cable is constructed of twisted
8 pairs of metal conductors.

9 So I mention also Exhibit 1016 and
10 1017, 1029 exhibit, where all of these exhibits of
11 the time of Roberts describe cables of this type as
12 twisted pairs. I don't see Roberts in this
13 particular art teaching anything that would be
14 considered unconventional, as far as the overall
15 construction, except for his added art, which is the
16 separator that divides the cable pairs into two
17 regions.

18 Q. The words "twisted pairs" never
19 appears in Roberts; correct?

20 Well, I'll withdraw the question. The
21 document speaks for itself. The words "twisted
22 pairs" don't appear in Roberts despite your

1 interpretation.

2 If we can go back to Figure 22.

3 MR. KOHLHEPP: Counsel, I would
4 appreciate if you would just keep it to
5 questions rather than testifying. Thank you.

6 BY MR. HOEHNER:

7 Q. Each of the elements 25, as we
8 discussed, are individually turning counterclockwise
9 such that their axes of rotation extends
10 perpendicular to the page; correct?

11 A. That is the way I view it, yes.

12 Q. And as they turn, spools 25 feed
13 electrical conductors 14 and 16, as well as shield
14 15 and tape 17, into the die plate 20 -- or die
15 plate 30; correct?

16 A. Die plate 30 -- die plate 30, yes.

17 Q. Collectively, the spools 25 and die
18 plate 30 are also rotating in the direction of the
19 large arrow shown in Figure 22?

20 A. At the number 34, I presume?

21 Q. Correct. And the large arrow to the
22 left of -- well, it's the bottom of Figure 22.

1 A. Yes.

2 Q. So is that your understanding, that
3 collectively the entire unit of all of the spools
4 25, along with die plate 30 and 30A, are also
5 rotating in the direction of the large arrow at the
6 bottom of Figure 22?

7 A. Agreed.

8 Q. If we could look at marked page 22,
9 and we can probably leave -- let's leave that up on
10 the screen so we can refer to it. And you have your
11 copy with you.

12 In Column 11, lines 26 to 31, do you
13 see where it reads, "All the spools (25) have a
14 further rotation as shown by the large arrow just to
15 the left of the spools. This axis of rotation is
16 one that runs parallel to element (4) and element
17 (17) and it is this rotation that provides the
18 twisting of the insulated electrical conductors in
19 the finished product (4)."

20 Do you see that?

21 A. Column 11, again?

22 Q. Yeah. Column 11, line 26.

1 A. Okay.

2 Q. To 31.

3 A. I see that both -- yes, I'm there.

4 Q. Okay. So do you agree that what this
5 means is spools 25 collectively, as well as die
6 plates 30 and 30A, are rotating around an axis that
7 runs through the center of die plates 30 and 30A in
8 this rotation, twists the conductors 14 and 16, as
9 well as shield 15 and plastic tape 17, into the
10 finished cable product?

11 Is that your understanding?

12 A. It's my understanding. However, it's
13 also my understanding that upon spools 25 exists
14 twisted pairs of conductors that are indeed those
15 conductors within the twisted pair are strand by the
16 motion, as shown in the large arrow and the rotation
17 of die plate 30.

18 Q. The rotation described -- I just
19 described to you has nothing to do with twisting the
20 conductors of twisted pair; does it?

21 A. The motion described in this, if we
22 look at it again here, but I'm talking about -- he's

1 talking about Figure 22?

2 Q. Correct.

3 (Document review.)

4 THE WITNESS: So he's -- he's talking
5 about assembling the twisted pairs coming
6 from spool 25 into a cable assembly that
7 would -- a grouping of twisted pair cable --
8 twisted pair conductors.

9 BY MR. HOEHNER:

10 Q. If you look at Column 11, line 16 to
11 42, does anything in that description indicate that
12 the motion described is twisting conductors into
13 twisted pairs?

14 A. I do not see where this particular
15 section is talking about twisting conductors into
16 twisted pairs. Because in Figure 22, he is talking
17 about forming an assembly of twisted pairs, and he's
18 describing Figure 22.

19 Q. In Column 11, around line 17, it says,
20 "Figure 22 illustrates diagrammatically a method and
21 apparatus (34) the production of a portion of the
22 cable in the instance invention as illustrated in

1 part by element (4) in Figure 4"; correct?

2 A. Yes, that is correct.

3 Q. So if we could turn to Figure 4 on
4 marked page 4.

5 A. Okay. I'm there.

6 Q. Conductors 14 and 16 are depicted in
7 Figure 4 as individual straight conductors; aren't
8 they?

9 A. That is their depiction --

10 MR. KOHLHEPP: Object to form.

11 BY MR. HOEHNER:

12 Q. And Figure 4 shows some degree of
13 spacing between the various individual conductors in
14 Figure 4; correct?

15 A. I see in Figure 4 an assembly of
16 twisted pairs, and I see that because I know what a
17 conventional cable is of the day. I understand
18 through several arts, as well as my own personal
19 experience, of equipment such as described in
20 Figure 22 and cables of the type that Roberts is
21 talking about, where it's common, understood, and
22 part of a cable type that Roberts discloses, which

1 is a conventional telephony cable of the day with
2 that type, but they would be twisted pair cables.

3 Q. Are you aware of any telephone cables
4 that do not utilize twisted pairs?

5 A. I do not know of any telephone cable
6 of the type described in Roberts and similar cables
7 that would not be made of twisted pairs.

8 Q. I'm not referring to Roberts'
9 description. I'm asking you, do you know of any
10 telephone cables that contain untwisted pairs?

11 A. I know of one that would be -- that
12 possibly would be called a telephone cable. It
13 would be the -- an example of that would be a coil
14 cord that goes from your handset to the base unit in
15 a house telephone, where the properties of that
16 cable in particular are intended to be the spiral
17 flexibility, it works with baseband frequencies, not
18 carrier frequencies, baseband meaning up to maybe 3
19 kilohertz instead of hundreds of kilohertz.

20 And so it would be possibly called a
21 telephone cable. Often did not have stranded
22 conductors, did not have crosstalk requirements,

1 like in conventional telephone cable and other
2 requirements, such as telephone cables.

3 So I can think of an example that
4 would not have twisted conductors. But, again, it
5 would not be a conventional telephone cable such as
6 described in Roberts and of -- and in wide
7 production of the day in different embodiments.

8 Q. Was it your opinion that the depiction
9 of the conductors in Figure 4 is incorrect in terms
10 of -- or misleading in terms of the description in
11 Roberts?

12 A. No, I would not agree that they are
13 misleading. And the reason -- for instance, in my
14 declaration -- I believe it's in here -- declaration
15 at page -- page 55 as marked and paragraph 117.

16 It shows an actual dimensional
17 telephone as described in -- of the type described
18 by Roberts. It's an actual photograph, not a
19 drawing. And it includes twisted pair conductors as
20 defined by the actual description of the product.

21 This reference I'm -- this references
22 an Alcatel catalog that circa 19 -- certainly prior

1 to 1999. And I include this because in a
2 conventional telephone cable, telephone cables, when
3 you take a section like shown in the actual
4 photograph, the conductors do not appear in many
5 ways to be twisted. They appear to be longitudinal.

6 So I take my -- first, my knowledge,
7 as someone skilled in the art, that the picture in
8 paragraph 117, page 55, is an accurate description
9 of a telephone cable of the day.

10 And, therefore, I do not see the
11 picture -- the drawing, Figure 4, to be misleading,
12 but actually a reasonable representation of a cable
13 of that type when looking at a short section of
14 pairs exposed from a sheath or the -- exposed from
15 the sheath or length of cable.

16 Q. There's spacing between the conductors
17 shown in Figure 4; correct?

18 A. I know -- I can see how it's drawn,
19 but I don't see that as being a -- something that
20 would differentiate Figure 4 from cables of the
21 type -- conventional type Roberts describes and
22 cable that Roberts described and mentioned in other

1 arts that I mentioned in my declaration. I have
2 several references to external documents that
3 describe telephone cable of the type of Roberts.

4 They consistently show a construction
5 such I show in paragraph 117. And they consistently
6 say they're constructed as twisted pairs.

7 Q. If we flip to page 6, it shows a
8 cross-section of a Roberts embodiment. Likewise,
9 the conductors there have spacing in between them;
10 don't they?

11 A. The figure has conductors shown with
12 spacing, which I take as a representation of how the
13 cable would look in a cross-section and not a
14 lateral depiction of conductor spacing or how many
15 conductors would be under the tape, et cetera.

16 Again, knowing conventional telephone
17 cable, the arts, references, and photographs and
18 diagrams that are available in that time frame and
19 the fact that Roberts says this is a modification of
20 a conventional telephone cable, I do read Roberts
21 talking about twisted pairs. He's trying to
22 describe in Figure 9, for instance, where the

1 twisted pairs are, not so much as a 3D accurate
2 drawing.

3 He is depicting pairs -- some pairs
4 inside, pairs 14 -- which are pairs 14, and some
5 pairs outside that shield layer, and the outside --
6 the pairs outside that shield layer would be 16.

7 Q. Is the way -- in your opinion, are
8 twisted pairs depicted in Figure 9 on page 6 a
9 typical way to represent twisted pairs, in your
10 opinion?

11 A. I would say yes, that it is -- it has
12 been done in descriptions before to describe the
13 twisted pairs in a telephone cable known to be made
14 of twisted pairs as somewhat longitudinal wire
15 depicted in the drawings.

16 Q. To clarify the record, you pointed to
17 Exhibit 1007 earlier. I believe you were referring
18 to the 1062 Exhibit 1007 on marked page 55; correct?

19 A. That is correct.

20 Q. Looking at that picture, are all of
21 the conductors shown in the picture in paragraph 117
22 that you depict, are those conductors pressed

1 tightly together?

2 A. In the photograph, yes, they are
3 pressed tightly together.

4 Q. Turning to Figure 23 of Roberts in
5 Exhibit 1009, at marked page 15, we see a similar
6 arrangement to that in Figure 22; correct?

7 A. Yes, that is correct.

8 Q. So here die plates 30 and 30A are
9 rotating the same manner as those in Figure 22;
10 correct?

11 A. That is correct.

12 Q. And like in Figure 22, conductors 14
13 and 16 are being added to the cable between die
14 plates 30 and 30A; correct?

15 A. I'm sorry, would you just repeat that
16 question, please?

17 Q. Sure.

18 Conductors 14 and 16 here in Figure 23
19 are being added to the cable between die plates 30
20 and 30A?

21 A. Conductors 14 and 16 are being added
22 through plate number 30, of which conductors 14 and

1 16, are indeed twisted pairs of conductors.

2 Q. I'm not asking whether they're twisted
3 pairs. I'm saying are they being added to the cable
4 in between die plates 30 and 30A?

5 A. So if twisted pairs enter plate -- to
6 try to be as accurate as I can, given the drawing
7 that I have, twisted pairs enter die plate 30,
8 traverse down to die plate 30A, where the groups of
9 twisted conductors, twisted pairs are formed into
10 groups at 30A, and they are then combined with
11 element 15, which is a central shield that separates
12 the two groups.

13 And that is depicting the assembly of
14 a cable of the invention of Roberts, which is an
15 otherwise conventional cable with the addition of
16 element 15, as described in this drawing.

17 Q. So element 15 separates conductor
18 groups 14 and 16 to -- on the top of Figure 23 shown
19 here.

20 A. Right. The group of twisted pairs 14
21 and 16, yes.

22 Q. Is any of what is occurring in

1 relation to Figure 23 creating twisted pairs?

2 A. I do not see Figure 23 creating a
3 twisted pair. I see it creating the assembly in
4 the -- assembly that Roberts refers to as -- I think
5 it's Figure 17.

6 Q. Correct.

7 A. Figure 17.

8 Q. Why don't we turn to Figure 17.

9 A. Okay.

10 Q. So Figure 17 is a depiction of the
11 cable that's created by the mechanism in Figure 23;
12 correct?

13 A. That is correct.

14 Q. And the description in Roberts about
15 Figure 23 has nothing to do with creating twisted
16 pairs; correct?

17 A. I -- Figure 23 in Roberts is an
18 illustrative process to combine twisted pairs 14 and
19 twisted pairs 16 into the assembly as shown in
20 Figure 17.

21 Q. So looking at Figure 17, is it your
22 understanding that each of the individual conductor

1 groups 14 and 16 transmit data -- well, strike that.

2 Is it your understanding that all of
3 the conductors located within conductor group 14
4 transmit information or data in the same direction?

5 A. Well, a conventional telephone cable,
6 of which this is a variation, consists of twisted
7 pairs. One pair is on one side of that divider, and
8 a pair is on the other side of the divider. And as
9 Roberts described, the invention allows the pairs,
10 which form a transmission line -- a transmission
11 line -- a pair forms a transmission line to transmit
12 in one direction, in one section of the cable and
13 transmit the other direction in the other portion of
14 the cable.

15 But the transmission medium is twisted
16 pair and the -- the transmission medium is twisted
17 pair. And there are twisted pairs on one side that
18 transmit one way, as I said, repeating, twisted
19 pairs on the other side that transmit the other
20 direction, and that makes up the invention of
21 Roberts.

22 Q. So in Roberts, all of the -- what you

1 allege are twisted pairs in one conductor group, say
2 element 14, are all transmitting in the same
3 direction; correct?

4 A. Yes, that is what I believe Roberts to
5 describe. And then he goes on to -- well, the
6 answer is yes, the pairs on one side transmit one
7 direction, the pairs on the other side transmit the
8 other direction.

9 Q. In your opinion, is that a
10 conventional telephone design, telephone cable
11 design?

12 A. The conductors, which are formed in
13 the twisted pairs, on either side of the divider
14 tape, that portion of the cable is what I would
15 consider conventional, meaning twisted pair
16 transmission or telephony, data telephony.

17 What Roberts is disclosing is a way to
18 divide the two sections into compartments, and he
19 goes on in one of the charts to improve crosstalk
20 between the two groups of twisted pairs.

21 Q. Are you familiar with the term
22 unbalanced and balanced transmission modes?

1 A. I am familiar with that, yes.

2 Q. And what is a balanced transmission
3 mode?

4 A. A very rough description of balanced
5 transmission mode is where two wires transmit at one
6 time an equal and opposite signal, and that creates
7 a traveling way of going down a transmission line,
8 such as the polarity of one wire is opposite the
9 polarity of the other wire.

10 Q. And what's an unbalanced transmission
11 mode?

12 A. It means that in general that there is
13 one wire transmitting electrical signal creating an
14 electrical field, and that would be an unbalanced
15 transmission mode.

16 Q. And the cable depicted in Roberts, is
17 that used for balanced or unbalanced transmission?

18 A. It is unbalanced, because it is
19 twisted pair. And we get into pairs and balance and
20 unbalance, which is really not -- the question at
21 hand to me is that what does Roberts disclose,
22 describe, and state.

1 If you could look at -- for me, my
2 Exhibit 1017, and page 17 of that document, it
3 depicts a drawing of a cable that says, "Loop
4 Transmission Media, Part I - Twisted Pair Metallic
5 Cables."

6 And if you see in that drawing, that
7 depiction, they include essentially circles to
8 describe a twisted pair. So here is an example --
9 you mentioned about -- something about is this
10 depicting, and what is it depicting, et cetera.

11 I bring this point up because it's an
12 example of an independent publication and
13 explanation via drawing that articulates
14 specifically in a title of a drawing twisted pair
15 metallic cables, which would be conventional at the
16 time of Roberts, and yet depicts cable pairs as
17 circles kind of drawn together and -- also, you
18 asked about do they seem to be packed together or
19 loose or have separation.

20 This particular drawing I'm looking
21 at, which is Chapter 7, Drawing A, doesn't even fill
22 in the whole inside, just to depict the style that

1 there are twisted pairs in there. So it's not
2 unusual of the day to depict twisted pair cables,
3 such as including conventional cables as -- on a
4 schematic or an overall drawing of the idea of
5 twisted pairs in a -- assembled together in a unit,
6 without depicting the detail of a twisted pair.

7 Knowing Roberts, knowing dimensional
8 cable, and knowing how other artists have depicted
9 twisted pairs in this somewhat similar time frame,
10 certainly before 1999, it is not surprising or
11 disturbing to me to show -- to see that Roberts is
12 depicting a -- an invention which consists of
13 separating pairs 14, separating 16, pairs 16 in
14 various ways, including those in Figure 17.

15 Q. So under your theory, the twisted
16 pairs in conductor group 14 are packed against one
17 another with no shielding or separator of any kind
18 between them; is that right?

19 A. We're talking about Figure 17?

20 Q. Yes.

21 A. Well, I look at Roberts, and I can
22 read it again to find some specific detail and find

1 the words for you, but I know from reading it before
2 that element 15 is a conductive material put on both
3 sides with a polymer, which would be essentially a
4 shield. And Roberts describes the performance of
5 that shield in one of his starts where he depicts
6 the difference during crosstalk with and without
7 shield 15.

8 And, secondly, element called the
9 metal shield, which is upper left as we're looking
10 at in the diagram of Figure 17, he calls it a
11 shield. And it's also a -- known to be of the day
12 metallic, sometimes called an armor because it's on
13 the outside, but it also performs a function of
14 shield.

15 So in Roberts, what I see then is an
16 element called metal shield surrounding the entire
17 construction. I see a shield 15, dividing the two
18 groups. I know that they're twisted pairs because
19 it's conventional construction and quite used in the
20 day and consistent with all the documents, as well
21 as within Roberts, who does use the word "pairs."

22 And so I do see that each segment

1 grouping in Roberts to be under a shield and
2 separated by a shield under the outer shield and
3 separated by the element 15.

4 Q. Okay. Now, let's try answering the
5 question I actually asked.

6 A. Okay.

7 Q. Let's start with shield 15.

8 Shield 15 extends entirely through the
9 interior section of the cable shown in Figure 17;
10 correct?

11 A. That is correct.

12 Q. It entirely separates conductor group
13 14 from conductor group 16; correct?

14 A. That is correct.

15 Q. And under your theory, groups of
16 twisted pairs are located within conductor group 14;
17 correct?

18 A. That is correct.

19 Q. And, similarly, under your theory,
20 groups of twisted pairs are grouped together in
21 conductor group 16; correct?

22 A. Correct.

1 Q. So under your theory, all of the
2 conductors within group 14 are all generating
3 crosstalk with each other; correct?

4 A. Within group 14, you say --

5 Q. Yes.

6 A. -- for instance?

7 Yeah, there is crosstalk between the
8 elements in 14, between the pairs in 14.

9 Q. Likewise, between all of the
10 conductors in group 16, there's crosstalk generated
11 between them, as well?

12 A. That is correct.

13 Q. Every embodiment in Roberts utilizes
14 some form of metallic shield between the conductor
15 groups 14 and 16; correct?

16 A. All the diagrams of Roberts do include
17 an element 15.

18 Q. Element 15 is a metallic shield;
19 correct?

20 A. Element 15 is a metallic shield that
21 shields the conductors. It also provides some
22 mechanical integrity and mechanical separation of

1 the two groups, as well.

2 Q. So every embodiment in Roberts
3 utilizes a metallic shield between conductor groups
4 14 and 16; correct?

5 A. 14 and 16 -- yes, that is correct. He
6 has -- I was looking to see. He has different
7 embodiments, in particular where it's four groups.
8 I was double-checking the -- your question included
9 the word "all." I wanted to make sure.

10 Q. So when Roberts refers to "pairs" in
11 the abstract, why is it illogical to consider his
12 mentioning of pairs as one conductor transmitting in
13 one direction in conductor group 14 and another
14 conductor transmitting in the opposite direction in
15 conductor group 16?

16 A. Well, that would be a use of the wires
17 as not pairs and would be inconsistent and actually
18 opposite the teaching of all telephone cable
19 construction descriptions of the time of Roberts.

20 Roberts is trying -- first of all,
21 Roberts is not trying to invent a new transmission
22 mode or transmission medium. He's trying to

1 separate two groups of conventional telephone
2 cable-type constructions for improved near-end
3 crosstalk.

4 So in a way -- I have no opinion about
5 trying to do one conductor on one side or unbalanced
6 transmission mode. That's not what Roberts is
7 talking about. He does mention pairs in his
8 document. So he is talking about twisted pairs.

9 And all the art at the time talks
10 about twisted pairs, balanced transmission line.
11 That would be unrealistic to expect Roberts is
12 trying to talk about a wire on one side and a wire
13 on the other, of the divider.

14 MR. HOEHNER: Can we pull up marked
15 Exhibit EX1007 from the '095 IPR, which is
16 IPR 2023-01062.

17 BY MR. HOEHNER:

18 Q. Do you recall earlier we discussed in
19 detail the manufacturing process disclosed in
20 Roberts in Figures 22 and 23?

21 A. Yes, I do.

22 Q. If we could turn to marked page 42 in

1 Exhibit 1007. Sorry, it's page 40 -- marked
2 page 43.

3 A. Okay.

4 Q. Here, in paragraph 90, you chose to
5 rely on a third-party reference that allegedly
6 discloses a generic cable manufacturing process
7 rather than use the manufacturing process for the
8 cable disclosed in Roberts.

9 Why did you use this particular
10 depiction?

11 MR. KOHLHEPP: Object to form.

12 THE WITNESS: I used this picture and
13 selected it because it has a couple of
14 elements I thought were interesting to
15 illustrate. One is it is a document of the
16 time talking about conventional twisted pair
17 cable as Roberts does.

18 The elements are -- I can tell as one
19 of skilled in the art, he's not trying to
20 depict a picture or a photograph of a machine
21 making cable. He's trying to illustrate the
22 steps through which a cable would go to be

1 manufactured.

2 So this was in -- call it simple terms
3 and straightforward, we have twisted pair
4 wire supply, as you can see in the diagram.

5 We go into subunits where, like the
6 lay plate 30 in Roberts, the twisted pairs go
7 through holes, which are in there turned
8 together, form subunits, as shown in the
9 third drawing schematic, and then taken to a
10 pick up where the assembled core would be
11 coiled upon a spool.

12 And so I picked this because it
13 depicts the various stages in a very simple
14 way of the manufacturing processes of twisted
15 pair cable.

16 BY MR. HOEHNER:

17 Q. If we continue on to marked page 56 in
18 Exhibit 1007 in the '095 declaration, paragraph 118,
19 you state, "Unless it was specified expressly that a
20 'pair' of copper conductors in a communications
21 cable was untwisted, as of late 1998/early 1999 a
22 POSITA would have understood that it was twisted";

1 is that right?

2 A. That is right. That's correct.

3 Q. So in forming your opinions in these
4 IPRs, unless a reference expressly stated that a
5 pair of conductors was untwisted, you assumed that
6 the conductor pair was a twisted pair; is that
7 right?

8 A. Well, I did not make assumptions based
9 on this sentence or just because it was typical or
10 was -- that the -- unless expressly -- excuse me.

11 The sentence beginning 118 is a true
12 statement. What I did for Roberts is look at the
13 style of cable, the art he's talking about, the
14 background, the relevant art at the time to
15 determine in that way whether or not Roberts
16 described twisted pairs.

17 So I didn't assume something simply
18 because -- I did not do assume it was untwisted just
19 because it didn't say untwisted. It said -- it
20 talked about pairs in Roberts, described the
21 stranding of the cable, and described pairs of
22 conductors, instructions consistent throughout the

1 telephone industry of that time, they were twisted
2 pairs. I relied on the art, of which I had Roberts
3 plus contemporary information about cable and cable
4 design.

5 Q. If we turn to marked page 107 in
6 Exhibit 1007 in the '095 declaration, you include
7 Ground 5 and state, in paragraph 233, "I explained
8 above, Roberts teaches the use of twisted pairs.
9 However, even if it did not teach that, it would
10 have been an obvious thing to do."

11 Why did you include Ground 5 in your
12 declaration?

13 A. I had the view of Roberts itself. I
14 had the view from art. I talked about documents,
15 descriptions, and cables of the day. This ground
16 was added to just assume in case someone thought
17 Roberts was talking about untwisted pairs, that they
18 would have been motivated by Roberts to make twisted
19 pairs out of it.

20 It is not an admission that I think
21 Roberts might have been twisted pair. I believe it
22 is by preponderance of evidence. But in case

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1 someone thought it was not twisted pairs, I wanted
2 to show grounds how it would have been motivated to
3 modify Roberts with a reasonable expectation of
4 success in view of one or more of GmbH-866,
5 Jachimowicz, and Gingue, and Claims 27 through 33.

6 (Reporter seeks clarification.)

7 THE WITNESS: I'll repeat a little
8 bit.

9 A POSITA would have been motivated to
10 modify Roberts with a reasonable expectation
11 of success in view of one or more of
12 GmbH-866, Jachimowicz, and Gingue.

13 BY MR. HOEHNER:

14 Q. You didn't include similar language
15 for any of the other references you relied on in
16 your declarations. So why did you believe it was
17 necessary to provide an alternative argument with
18 regard to Roberts?

19 MR. KOHLHEPP: Object to form.

20 THE WITNESS: So your previous
21 question was why I would include the
22 Ground 5?

1 BY MR. HOEHNER:

2 Q. Correct. Was there -- you didn't use
3 the same language with regard to any of the other
4 references. Why did you do that for Roberts? Was
5 there something ambiguous that caused you to include
6 this ground?

7 A. I believe I answered that specific
8 question already.

9 Q. Why don't you answer it again.

10 A. I rely on Eileen to read it back, if
11 you want to do that.

12 Q. No, I'm not sure it was the exact same
13 question.

14 A. Well, then we'll read back the
15 question and the answer to make sure they're the
16 same. I did answer the question about why --

17 Q. Your counsel can object to the
18 question as they want to, but I'm asking you a
19 question.

20 And I said, you didn't include that
21 language for any of the other references in either
22 of your declarations. And I'm just wondering why

1 you included that language with respect to Roberts,
2 in particular?

3 MR. KOHLHEPP: Object to form, also
4 asked and answered.

5 THE WITNESS: It is difficult to
6 answer a question like that using exactly the
7 same words. I don't have a photographic
8 memory. I do remember very recently in this
9 conversation answering the question about
10 why. There's an explanation of why.

11 So we could read back my answer. And
12 I believe if the answer was why then, it is
13 why now. But my understanding, Tom, that
14 they're both the same question of why did I
15 put this section in.

16 MR. KOHLHEPP: I believe -- I mean,
17 there's a fairly -- there's an answer at --
18 if we go back to line 182/4, you'll find
19 there is an answer to that. So I'm not sure
20 what your basis is for contending the witness
21 has not answered the question.

22 MR. HOEHNER: Okay. Why don't we take

1 a short break.

2 THE VIDEOGRAPHER: Okay. The time is
3 4:02 p.m. Off the record.

4 (Recess from the record.)

5 THE VIDEOGRAPHER: All right. The
6 time is 4:13 p.m. Back on the record.

7 BY MR. HOEHNER:

8 Q. If we could turn back to Exhibit 1007
9 from the '537 IPR, which is IPR 2023-01061, and if
10 we could turn to marked page 54.

11 A. Okay.

12 Q. It extends on to page 55. Let's see.
13 No, it starts on page -- it starts on marked
14 page 54, the last sentence. It's a snippet there.

15 It says, "The substitution of
16 Jachimowicz's plastic-backed foamed polymer tape for
17 a non-foamed tape would result in less flammable
18 material within the cable, thus improving the
19 overall flame resistance of the cable"; correct?

20 Do you see that?

21 A. I do see that.

22 Q. And how do you know that?

1 A. I go on to talk about the -- let's
2 see. Let me go and look at that a little bit here.

3 I do need to look -- to answer your
4 question, I do reference Gingue 3:20-26. I need to
5 look briefly at that reference.

6 So in 104, we're talking about, which
7 is on the screen here, the substitution of the
8 plastic-backed foamed, Beggs teaches -- I'm sorry,
9 Gingue teaches at 3:20 to 26 that the foam in this
10 is constructions -- a foam material is preferably
11 employed to achieve a favorable balance of
12 electrical properties of flame retardancy.

13 So as Gingue said that foam would
14 decrease the -- it would achieve a favorable balance
15 of electrical properties of flame retardancy, such I
16 used that reference to talk about a substitution of
17 Jachimowicz's plastic-back foamed polymer tape or
18 non-foamed tape would result in less flammable
19 material in the cable, as Gingue states in 3:20 to
20 26.

21 Q. How are you able to assess the amount
22 of material in a plastic-backed foamed polymer tape

1 versus a non-foamed tape?

2 A. That's generally the advantage of a --
3 by a foamed polymer tape or a non-foamed tape. So I
4 am comparing something that is foamed to something
5 that is non-foamed. And a non-foamed -- both are
6 tapes. The foamed would tend to have less material
7 in it than a solid -- than a non-foamed tape, I
8 should say.

9 Q. What quantitative comparison did you
10 do to come to that conclusion?

11 A. I did not do a quantitative analysis
12 with this. I was reflecting that foam tends to have
13 more air in it and be less dense. Therefore, it
14 would result in less flammable material in the cable
15 in general.

16 Q. But that would depend on the
17 particular foamed material versus the particular
18 non-foamed material to make that assessment;
19 wouldn't it?

20 A. That is true, but I was thinking about
21 a non-foamed material -- a tape of a material, one
22 being non-foamed and another being foamed.

1 Q. Can you have a foamed polymer that is
2 more flammable than a non-foamed polymer, depending
3 on what it's made of?

4 MR. KOHLHEPP: Object to form,
5 foundation.

6 THE WITNESS: Gingue is talking about
7 either foamed or non-foamed material and
8 consisting of polyolefins and polyurethanes,
9 et cetera. I'm sorry, that's not correct.
10 No.

11 And his teaching is by foaming,
12 there's less material there. And I use that
13 as an example that where foamed tape would
14 have less material than a non-foamed tape in
15 the same context that Gingue uses to say that
16 when he has a foamed material, there's -- it
17 would be less material in the cable as in
18 3:20 through 26.

19 BY MR. HOEHNER:

20 Q. But that depends on the composition of
21 the materials you're comparing; doesn't it?

22 A. As in Gingue, I was considering this

1 as Gingue did where we were talking essentially the
2 same type of material, one is foamed and one is not
3 foamed.

4 Q. But if you have different materials,
5 it's impossible to have a foamed polymer that's more
6 flammable than a different non-foamed polymer;
7 correct?

8 MR. KOHLHEPP: Object to form.

9 THE WITNESS: So different materials
10 have different flame retardancy, yes. But,
11 again, the -- but, again, I'm looking at
12 Gingue and what he teaches within similar
13 materials, where such that a plastic-backed
14 foam polymer tape would result in less
15 flammable material because there's less
16 material.

17 BY MR. HOEHNER:

18 Q. But to make a definitive assessment of
19 that, you'd need to know how much material is
20 actually in the materials you're comparing; don't
21 you?

22 MR. KOHLHEPP: Object to form.

1 THE WITNESS: 104 is in context of
2 Gingue, where I talk about, as Gingue does,
3 where decrease -- foaming decreases the
4 amount of flammable material employed for a
5 given volume of material.

6 I went on to say that plastic-backed
7 foamed polymer tape for non-foamed tape would
8 result in less flammable material and -- in
9 the same context of Gingue, which is talking
10 about the similar material -- about the same
11 material, one being foamed.

12 In the context of Gingue, I believe
13 this to be an accurate statement, meaning
14 that foam would have less material within the
15 cable.

16 You also brought up to compare apples
17 and oranges or one material or another
18 material, et cetera. That's also an
19 additional consideration, as far as
20 flammability. I do agree with that.

21 But in the context of Gingue, I'm
22 talking about -- as in Gingue, foaming or not

1 foaming of material and the amount of
2 material that would be in the cable would be
3 less if it's foamed.

4 BY MR. HOEHNER:

5 Q. During any of the breaks we took
6 today, did you discuss any of your testimony with
7 counsel for CommScope?

8 A. No, I did not.

9 MR. HOEHNER: No further questions at
10 this time.

11 MR. KOHLHEPP: Okay. We'll go on and
12 take another brief break, and then we
13 probably have more questions.

14 THE VIDEOGRAPHER: All right. The
15 time is 4:27 p.m. Off the record.

16 (Recess from the record.)

17 THE VIDEOGRAPHER: The time is
18 4:44 p.m. Back on the record.

19 EXAMINATION

20 BY MR. KOHLHEPP:

21 Q. Mr. Cornelison, I just have a few
22 additional questions for you.

1 First, do you recall there was a fair
2 amount of discussion of twisted pairs earlier in the
3 deposition? Do you recall that?

4 A. I do recall that.

5 Q. Okay. And then I believe you had
6 pointed as an example of twisted pairs to
7 Exhibit 1016.

8 Why don't we go ahead and open that
9 up.

10 A. I got it.

11 Q. And you had pointed to marked page 7
12 as an example of twisted pairs.

13 Do you recall that?

14 A. Yes, I do recall that.

15 Q. And then you had pointed to marked
16 page 8 as another example of a different
17 configuration of twisted pair.

18 Do you recall that?

19 A. Yes, I do recall that.

20 Q. Okay. So in a twisted pair, in your
21 experience and knowledge, does the insulation of one
22 conductor always have to be in contact with the

1 insulation of the other conductor, or can there be
2 some space between those two conductors at various
3 points in the twisted pair?

4 A. The intention and advantage of a
5 twisted pair is to have the conductors at a fixed
6 and determined position and particularly spacing,
7 actually.

8 So the examples on page 7 and page 8
9 illustrate the same intent, but because of
10 construction details in particular, a longer lay
11 length, as described on page 8, that tight
12 arrangement is not always achieved with the longer
13 lay lengths.

14 Longer lay lengths I talk about are
15 those typical, including telephone cable as of the
16 time frame of Roberts. So you would tend to see
17 portions where the conductors were not exactly in a
18 spiral or twisted consistently.

19 However, even in page 8, compared to
20 non-twisting the conductors provide substantially
21 improved spacing and determination of position that
22 would improve the electrical transmission better

1 than, say, if the pairs were just longitudinal or
2 not twisted together.

3 Q. Okay. So in a twisted pair,
4 particularly those with a longer lay length, you may
5 see some space between the insulation of the two
6 conductors at various points.

7 Is that an accurate statement?

8 MR. HOEHNER: Objection, leading.

9 THE WITNESS: I did explain to you a
10 little bit before how -- a few seconds ago in
11 a previous question, where page 8 does talk
12 about the pairs where they may not be in
13 contact with each other and how that is
14 better than not having any twisting of the
15 pairs at all.

16 And as shown in Figure 8, there can be
17 some spaces between conductors on occasion
18 with long lays. One example would be lays
19 often used in -- or actually typically
20 used -- not often, but typically used -- or
21 actually is often and is typical -- typically
22 used in telephone cables, such as Roberts.

1 BY MR. KOHLHEPP:

2 Q. Earlier you were also asked some
3 questions about the Yanagita reference, which is
4 Exhibit 1012.

5 So if you can open that up. Pull up
6 that, please.

7 A. I have 1012.

8 Q. Okay. Now, if you could also go to
9 your declaration in Yanagita, 1062 IPR,
10 Exhibit 1007, 1062. And if you could go to marked
11 page 116.

12 A. I have marked page 116 in front of me.

13 Q. Okay. So if you go to paragraph 257,
14 do you see that?

15 A. Yes, I do.

16 Q. And you offer an opinion there.

17 What is that opinion?

18 A. My opinion in 257 is that Yanagita
19 does disclose a first and second twisted pair of
20 insulated conductors. And I go into the paragraph
21 to quote Yanagita, such that element 1 can be where
22 insulated wires are twisted together, which is the

1 evidence that the wires are twisted together to form
2 a pair.

3 Q. Okay. So was Yanagita's disclosure
4 with respect to Exhibit -- I'm sorry, with respect
5 to twisted pairs in the Exhibit 1012 translation
6 clear to you?

7 A. It was clear to me. I found it in the
8 first column on page 1 as one example, where he
9 talks about alternately stranded cables. And he
10 goes and explains wherein a large number of strands
11 of insulated wires or pairs thereof or quad strands,
12 which tells me he's talking about a cable with an
13 alternately strand, can be used for single
14 conductors or pairs or quads.

15 Q. Okay. I think I may have misspoke. I
16 meant to ask about Yanagita's disclosure. So I'll
17 reask the question, because I see here that I
18 misspoke.

19 So was Yanagita's disclosure, with
20 respect to twisted pairs in the Exhibit 1012
21 translation, clear to you?

22 Am I misspeaking? I said Gingue

1 instead of Yanagita. I meant to say Yanagita.

2 A. Well, I did look at -- you referenced
3 me to the proper section. I'm looking at
4 paragraph -- 257 paragraph in my declaration.

5 Q. Correct.

6 A. Yes, which is talking about Yanagita.

7 Q. Correct.

8 A. And I quoted from Yanagita.

9 Q. Okay. Let's go to Exhibit 1010, which
10 is the German reference. And as you recall, there
11 was some earlier discussion about the term
12 "stranded."

13 Do you recall that?

14 A. Yes, I do recall that.

15 Q. And the German reference,
16 Exhibit 1010, uses the term "stranded" in the
17 translation; correct?

18 A. Yeah, he does. He uses stranded in
19 particular at the second paragraph under "Data
20 transfer cable" and other places, I believe. And
21 other -- excuse me.

22 Yes, he uses the "stranded" in the

1 second paragraph of 1010 and perhaps other places,
2 as well, that I do not remember offhand.

3 Q. And I believe earlier you agreed with
4 questions from counsel that "stranded" in some
5 context can mean a conductor that has many filaments
6 of copper; is that correct?

7 A. That is correct.

8 Q. And "stranded" can also mean in other
9 contexts twisted; is that correct?

10 MR. HOEHNER: Objection, leading.

11 THE WITNESS: I know stranding is a --
12 is a -- as a verb, or "stranded," to mean
13 stranded copper conductors where you have
14 fine filaments making up an overall larger
15 conductor.

16 I know in my work through the years
17 and in this field "stranded" also means
18 twisting things together, including a twist
19 tape to -- insulated conductors making a
20 twisted pair.

21 So I do find "stranding" and
22 "twisting" sometimes used in different ways,

1 and you have to understand the context to
2 understand the intended meaning of that word.

3

4 BY MR. KOHLHEPP:

5 Q. So in the context that German is using
6 the term "stranded," how is the German -- or what is
7 the German reference using the term "stranded" to
8 mean?

9 A. Given the context of the cable, the
10 cable design being a four-pair cable, talking about
11 frequency ranges of 1 megahertz to 600 megahertz for
12 this particular piece of art, and four pairs, so
13 he's -- it's clear to me he's talking about four
14 pairs of two stranded insulated copper conductors or
15 wires, which I view as two insulated copper wires
16 stranded or twisted together to form a pair.

17 Q. How long have you worked in the cable
18 industry?

19 A. Some 40-plus years, as in my
20 declaration, my CV.

21 Q. Are you -- in those years of
22 experience, did you come across cables of the type

1 discussed by the German reference?

2 A. I have often, particularly in the
3 context of the frequency range, performance
4 requirements, not all such cables had departure
5 shieldings as described in this part, but the
6 existence of four pairs for the application --

7 (Reporter seeks clarification.)

8 THE WITNESS: Okay. So, also, cables
9 that have the partial shielding, as shown in
10 the figures in this art, I have seen cables
11 very similar with the exception of the
12 particular shielding configurations as shown
13 in this patent.

14 BY MR. KOHLHEPP:

15 Q. Were four-pair data communications
16 cables common prior to 1999?

17 A. Yes, they were. For instance,
18 Category 5 and CAT3 -- Category 3 originated
19 sometime in the '90s or perhaps even a bit before,
20 but certainly by the '90s, there were category cable
21 four pairs.

22 Q. So in your 40-plus years of experience

1 in the cable industry, have you ever seen a
2 four-pair data communications cable of the type
3 shown by German that did not have twisted pairs?

4 A. The answer is no. All the cables I
5 have seen in that time frame and described as
6 meeting these frequency requirements were twisted
7 pairs.

8 Q. So earlier counsel for Belden was
9 asking you about the Roberts reference.

10 Do you recall that?

11 A. Yes, I do.

12 Q. And that's Exhibit 1009. Pull that
13 up, if you could.

14 A. I have 1009 in front of me.

15 Q. Okay. I'm going to direct you to
16 Figures 13 and 14.

17 My question is: Do those figures show
18 groups of twisted pairs that do not have a metallic
19 shield between them?

20 A. Actually, the diagram does show that
21 there are two groups that are not separated by a
22 metallic shield.

1 Q. Which two groups are you referring to?

2 A. In this case, it would be groups 16
3 that are -- essentially we would call them the top
4 of the picture and the bottom of the picture. I do
5 remember a question very similar asked before, and
6 perhaps I answered in the same way.

7 I thought -- my recollection, I looked
8 at all these diagrams and I said they all include
9 element 15. I may not have said that. We can go
10 back to the record.

11 But to your question, are there groups
12 in Figures 13 and 14 that are not separated by a
13 metal shield, the answer is yes, in this particular
14 case, Group 16 and Figure 13 and Figure 14 are not
15 separated by a metal shield.

16 Q. Okay.

17 MR. KOHLHEPP: No further questions
18 from me.

19 EXAMINATION (Cont'd)

20 BY MR. HOEHNER:

21 Q. Before counsel's redirect questions to
22 you, did you confer with counsel regarding your

1 testimony today?

2 A. I did not.

3 MR. HOEHNER: No further questions.

4 THE VIDEOGRAPHER: Okay. I'm going to
5 get us off the record.

6 This marks the end of today's
7 deposition. The time is 5:06 p.m.

8 (Off the record at 5:06 p.m. Central Time)

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1 STATE OF NEW YORK)

2 ss:

3 COUNTY OF WESTCHESTER)

4

5 I, EILEEN MULVENNA, CSR/RMR/CRR, a
6 Certified Court Reporter, Registered Merit Reporter,
7 Certified Realtime Reporter, and Notary Public in
8 and for the State of New York, do hereby certify:

9

10 That I reported the taking of the
11 deposition of the witness, KENNETH CORNELISON,
12 commencing on the 6th day of March, 2024, at the
13 hour of 9:00 a.m. (Central Time)).

14 That prior to being examined, the witness
15 was duly sworn by me to testify to the truth, the
16 whole truth, and nothing but the truth.

17 That I thereafter transcribed my said
18 shorthand notes into typewriting and that the
19 typewritten transcript of said deposition is a
20 complete, true and accurate transcription of my
21 said shorthand notes taken down at said time, and
22 that a request has been made to review the
transcript.

I further certify that I am not a relative
or employee of an attorney or counsel of any of the
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IN WITNESS WHEREOF, I have hereunto
set my signature this 10th day of March, 2024.

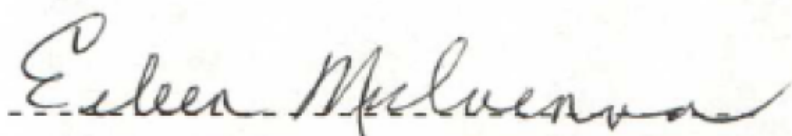
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EILEEN MULVENNA, CSR/RMR/CRR/RDR

Page 220

1 Kenneth Cornelison, c/o
Carlson, Caspers, Vandenburg & Lindquist P.A.
2 Capella Tower, Suite 4200, 225 South Sixth Street
Minneapolis, Minnesota 55402

3
Case: CommScope Technologies LLC v. Belden Inc.
4 Date of deposition: March 6, 2024
Deponent: Kenneth Cornelison

5
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15 not hesitate to call our office at (202)-232-0646.

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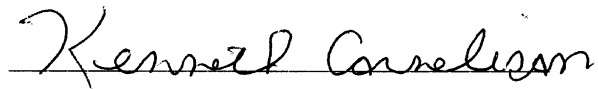
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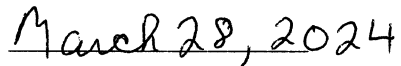
Witness Name: Kenneth Cornelison

Deposition Date: March 6, 2024

Page No.	Line No.	Change
161	13	Replace "elements or rods or copper" with "elements or rods of copper". [Reason for edit: typographical error]
185	18	Replace "unbalanced" with "balanced". [Reason for edit: misspoke; also to make consistent with other testimony]
218	18-19	Replace "a twist tape to -- insulated conductors" with "twisting two insulated conductors". [Reason for edit: typographical error]
215	4	Replace "departure" with "partial". [Reason for edit: typographical error]



Signature



Date

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3
4 SIGNATURE PAGE
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5 Witness Name: Kenneth Cornelison
Deposition Date: March 6, 2024

6
I do hereby acknowledge that I have read
7 and examined the foregoing pages
of the transcript of my deposition and that:

8
9 (Check appropriate box):
() The same is a true, correct and
10 complete transcription of the answers given by
me to the questions therein recorded.
11 () Except for the changes noted in the
attached Errata Sheet, the same is a true,
12 correct and complete transcription of the
13 answers given by me to the questions therein
14 recorded.

15
16 March 28, 2024
17 DATE

Kenneth Cornelison
WITNESS SIGNATURE

18

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