

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE TECHNOLOGIES LLC,

Petitioner

v.

BELDEN INC.,

Patent Owner

Case IPR2023-01061

Patent No. 6,998,537

PETITIONER COMMSCOPE'S REPLY BRIEF

TABLE OF CONTENTS

I.	Claim Construction – “Twisted Pairs”	1
II.	The Challenged Claims Are Invalid	2
A.	GROUND 1: Beggs in view of Jachimowicz	2
1.	A POSITA Would Have Understood Beggs’ Tape Could Be Foamed Polymer, And Also Would Have Been Obvious	3
2.	Beggs and Jachimowicz Each Teach Substantially Flat Tape.....	5
3.	The Petition Provided At Least Five Motivations.....	8
B.	GROUND 2: Ground 1 Further View of Gingue (Claims 20 and 22)...	13
C.	GROUND 3: Yanagita in view of Jachimowicz	13
1.	Jachimowicz Discloses a Substantially Flat Foamed Polymer Tape	13
2.	Yanagita Teaches Twisted Pairs As Claimed	14
D.	GROUND 4: Yanagita and Jachimowicz, In Further View of Gingue, Render Claims 20 and 22 Obvious	17
E.	GROUND 5: GmbH-866 in View of Roberts, Gingue, and/or Jachimowicz.....	18
1.	The Combined Teachings of the References Render the Claims Obvious	18
2.	The Challenged Claims Are Also Obvious to Try	20
3.	GmbH-866 Teaches and Suggests Separating Twisted Pairs As Claimed	20
(a)	PO Previously Took the Position that GmbH-866 <i>Does</i> Disclose Twisted Pairs.....	21
(b)	PO’s Expert’s Conclusory Arguments About “Stranded” Are Conclusory and Ignore the Context.....	23
(c)	German-English Technical Dictionaries Confirm Stranded Means Twisted in GmbH-866	26

4. Claims 20 and 22 Are Obvious	27
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TABLE OF AUTHORITIES

Cases

<i>Therasense, Inc. v. Becton, Dickinson & Co.</i> , 374 F. App'x 35 (2010).....	4
<i>Therasense, Inc. v. Becton, Dickinson & Co.</i> , 649 F.3d 1276 (2013).....	4
<i>In re Anova Hearing Labs, Inc.</i> , 809 F. App'x 840 (Fed. Cir. 2020)	12
<i>KSR Int'l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007)	5, 8
<i>S.-Tek Sys. v. Engineered Corrosion Sols., LLC</i> , 748 F. App'x 1003 (Fed. Cir. 2018)	12
<i>Therasense, Inc. v. Becton, Dickinson & Co.</i> , 593 F.3d 1289 (Fed. Cir. 2010).....	4
<i>Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.</i> , 200 F.3d 795, 803 (Fed. Cir. 1999).....	1

EXHIBIT LIST

Exhibit No.	Exhibit Description
1001	U.S. Patent No. 6,570,095 (the “ 095 patent ”)
1002	Excerpt of Prosecution History of U.S. Patent No. 6,570,095: Nov. 8, 2002 Notice of Allowance
1003	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,474 of U.S. Patent No. 6,570,095: Sept. 20, 2011 Action Closing Prosecution
1004	U.S. Patent No. 6,998,537 (the “ 537 patent ”)
1005	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: Nov. 2, 2004 Notice of Allowance
1006	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,476 of U.S. Patent No. 6,998,537: Sept. 20, 2011 Action Closing Prosecution
1007	Declaration of Kenneth Cornelison
1008	<i>Curriculum Vitae</i> of Kenneth Cornelison
1009	U.S. Patent No. 3,622,683 (“ Roberts ”)
1010	English language translation of German Patent No. 297,19,866 U1 (“ GmbH-866 ”), and attached Declaration of translator Anthea Heyes
1011	German Patent No. 297,19,866 U1 (untranslated original)
1012	English language translation of Japanese Patent Publication S43015470 (“ Yanagida ”), and attached Declaration of translator Anthea Heyes
1013	U.S. Patent No. 5,670,748 (“ Gingue ”)
1014	U.S. Patent No. 3,894,172 (“ Jachimowicz ”)
1015	U.S. Patent No. 4,755,629 (“ Beggs ”)
1016	<i>Electronic Wire & Cable - A User's Guide: Performance and Selection</i> , Section 5: Multiconductor Cables, AT&T (1987)
1017	Whitham D. Reeve, <i>Subscriber Loop Signaling and Transmission Handbook – Digital</i> , IEEE Telecommunications Handbook Series (1995)
1018	Whitham D. Reeve, <i>Subscriber Loop Signaling and Transmission Handbook – Analog</i> , IEEE Telecommunications Handbook Series (1992)
1019	U.S. Patent No. 5,380,591

1020	U.S. Patent No. 1,727,972
1021	U.S. Patent No. 1,956,730
1022	U.S. Patent No. 3,803,340 (Jachimowicz-340)
1023	Canadian Patent Application No. 2,058,046
1024	U.S. Patent No. 4,262,164
1025	U.S. Patent Pub. No. 2006/0169478
1026	U.S. Patent No. 4,253,890
1027	U.S. Patent No. 5,283,390
1028	U.S. Patent No. 5,969,295
1029	G.F. Moore, <i>Electric Cable Handbook</i> , BICC Cables (3d. ed. 1997)
1030	<i>The New IEEE Standard Dictionary of Electrical and Electronics Terms</i> (5th ed. 1993)
1031	Neil Sclater and John Markus, <i>Electronics Dictionary</i> , McGraw-Hill (6th ed. 1997)
1032	S. Yonechi et al., <i>Application of Spacer Forming Technique to Communication Cables</i> , International Wire & Cable Symposium Proceedings (1980)
1033	U.S. Patent No. 7,179,999 (the “999 patent”)
1034	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,475 of U.S. Patent No. 7,179,999: Oct. 14, 2011 Action Closing Prosecution
1035	Alcatel Cable Systems Product Catalog
1036	U.S. Patent No. 5,789,711
1037	Excerpt of Prosecution History of U.S. Patent No. 6,570,095: Oct. 22, 2001 Non-Final Office Action
1038	Excerpt of Prosecution History of U.S. Patent No. 6,570,095: April 3, 2002 Final Office Action
1039	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: March 3, 2004 Non-Final Office Action
1040	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: Terminal Disclaimer
1041	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: May 18, 2004 Amendments
1042	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: June 17, 2004 Final Office Action

1043	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: September 20, 2004 Request for Continued Examination
1044	Excerpt of Prosecution History of U.S. Patent No. 6,998,537: Sept. 9, 2005 Amendment
1045	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,474 of U.S. Patent No. 6,570,095: Feb. 24, 2012 Decision Granting Petition to Terminate <i>Inter Partes</i> Reexamination Proceeding
1046	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,476 of U.S. Patent No. 6,998,537: Feb. 24, 2012 Decision Granting Petition to Terminate <i>Inter Partes</i> Reexamination Proceedings
1047	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,475 of U.S. Patent No. 7,179,999: Feb. 24, 2012 Decision Granting Petition to Terminate <i>Inter Partes</i> Reexamination Proceedings
1048	U.S. Patent No. 5,814,768
1049	U.S. Patent No. 6,037,546
1050	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,474 of U.S. Patent No. 6,570,095: Jan. 11, 2010 Third Party Requester's Comments to Patent Owner's Response
1051	Excerpt of <i>Inter Partes</i> Reexamination No. 95/000,476 of U.S. Patent No. 6,998,537: Jan. 22, 2010 Third Party Requester's Comments to Patent Owner's Response
1052	<i>Belden Techs. et al. v. Superior Essex Comm'cns LP et al.</i> , No. 08-63-SLR, Dkt. 215 (D. Del. Aug. 8, 2010) – Claim Construction Order
1053	<i>Belden Inc. v. CommScope, Inc. et al.</i> , No. 22-783-RGA, Dkt. 292 (D. Del. May 26, 2023) – Scheduling Order
1054	Declaration of Sylvia D. Hall-Ellis, PhD
1055	English Translation of Japanese Patent Publication No. S43-15470 used in prior reexamination of US 6,998,537
1056	Japanese Patent Publication No. S43-15470 (untranslated original)
1057	English language translation of German Patent No. 297,19,866 U1 used in prior reexamination of US 6,998,537
1058	Excerpts from the reexamination of the '537 patent
1059	Excerpts from the reexamination of the '095 patent
1060	Declaration of Peter M. Kohlhepp in Support of Petitioner's Unopposed Motion for <i>Pro Hac Vice</i> Admission

1061	<i>Belden v. Superior Essex</i> , Belden’s Summary Judgement Motion, Docket No. 139
1062	<i>Belden v. Superior Essex</i> , Excerpts from Jury Trial Transcript, Day 6, 9/14/2010
1063	<i>Belden v. Superior Essex</i> , Excerpts from Jury Trial Transcript, Day 7, 9/15/2010
1064	<i>Belden v. Superior Essex</i> , Summary Judgement Order, Docket No. 216
1065	<i>Belden v. Superior Essex</i> , Petitioner’s Requests for Production
1066	<i>Belden v. Superior Essex</i> , Excerpts from Jury Trial Transcript, Day 6, 9/14/2010
1067	Excerpts, German Technical Dictionary (Routledge), Volume One
1068	Excerpts, German-English Technical and Engineering Dictionary (DeVries and Herrmann), Second Ed.
1069	Exhibit 1069 from the deposition of Charles Eldering
1070	Transcript from the June 21, 2024 Deposition of Charles Eldering, Ph.D. in IPR2023-01061
1071	Transcript from the May 21, 2024 Deposition of Charles Eldering, Ph.D. in IPR2023-01056
1072	ANSI/ICEA Standard S-84-608-1994
1073	REA Specification for Filled Telephone Cables with Expanded Insulation, Federal Register Vol. 58, No. 96. 5/20/1993
1074	International Standard ISO/IEC 11801 (first edition corrected and reprinted 1995-07-15) (excerpt)
1075	Excerpt from the File History of US Patent No. 6,570,095
1076	<i>Belden v. Superior Essex</i> , Docket No. 226, Joint Statement of Facts
1077	<i>Belden v. Superior Essex</i> , Belden’s Supplemental Response to Interrogatories 6, 7, & 23
1079	TIA/EIA Standard 568-A (1995) – Commercial Building Telecommunications Cabling Standard
1080	Reply Declaration of Kenneth Cornelison Regarding IPR2023-01061
2001	Declaration of Dr. Charles A. Eldering in Support of Patent Owner Preliminary Response

2002	Definition of “twisted pair” from Webster’s New World Telecom Dictionary, 2008
2003	U.S. Patent No. 10,170,220
2004	Deposition Transcript of Kenneth Cornelison, March 6, 2024
2005	U.S. Patent No. 4,800,236
2006	U.S. Patent No. 4,340,771
2007	Supplemental Declaration of Dr. Charles A. Eldering in Support of Patent Owner Response

The Petition identified three alternative bases of invalidity. Patent Owner (“PO”) does not credibly distinguish any. For example, the Beggs reference (Grounds 1, 2) expressly teaches separating twisted pairs with a foamed polymer separator, that the separator may be S-shaped, and that the S-shaped separator may be a substantially flat dielectric “tape.” A separator made of foamed polymer tape is plainly not a patentable invention.

I. Claim Construction – “Twisted Pairs”

The Board preliminarily construed “twisted pair” as “a pair of insulated conductors that are twisted together.” Paper 10, 12. PO proposes a similar definition and adds “around one another to form a balanced transmission line.” Paper 20, 15. PO’s addition is unnecessary because it does not go to a controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (Board need only construe claim terms to the extent necessary to resolve the controversy). The dispute is whether the conductors are “twisted together.” *E.g.*, Paper 20, 13-15, 39, 47, 48, 54, 60, 61 (PO repeatedly emphasizing “twisted together”); Ex-1080, ¶¶9-11. And PO does not try to distinguish any prior art based on whether a pair of conductors—once twisted around one another—“form a balanced transmission line.” This makes sense because that was understood to be a benefit of twisted pairs. Ex-1016, 7 (pairs are twisted “to decrease unbalanced mutual capacitance”); Ex-1017, 18 (“twist also helps keep the conductors of the

pair balanced”).

II. The Challenged Claims Are Invalid

A. GROUND 1: Beggs in view of Jachimowicz

This is a straightforward obviousness case. Beggs teaches using a foamed polymer separator to separate twisted pairs and that the separator can be a tape; Jachimowicz shows that two-material foamed polymer tapes were known and used in communications cabling. In view of these teachings, using a two-material foamed polymer tape to separate twisted pairs is plainly obvious.¹

¹ PO’s proffered expert—a professional patent consultant for the last 25 years (Ex-1070, 195:3-16)—appears to have minimal industry experience with twisted pair data cables, and certainly not the 3-4 years’ experience of a POSITA. *Compare* Ex-2001, ¶26 (PO’s expert arguing POSITA does not need “direct industrial experience” with twisted pair cables) *with* Ex-1007, ¶12. He admitted he has never designed a twisted pair cable and none of his patents are specifically directed to the design of cable. Ex-1071, 16:13-17:4, 17:14-18:4. In contrast, CommScope’s expert has 40 years of direct industry experience (much of that in designing, manufacturing, and testing of twisted pair cables) and is an inventor in the same field. Ex-1007, ¶5; Ex-1008, 1-4; Ex-2003; Ex-1080, ¶ 66.

1. A POSITA Would Have Understood Beggs' Tape Could Be Foamed Polymer, And Also Would Have Been Obvious

PO uses over five pages to argue that Beggs “does not teach” that the S-shaped separator “tape” can be foamed polymer. Paper 20, 17-22. PO is incorrect, but regardless PO does not dispute the Petition’s alternative argument and supporting evidence that this *also would have been obvious*. Petition, 27; Ex-1007, ¶92. For this reason alone, CommScope has more than sufficiently shown that using a foamed polymer tape to separate twisted pairs is not a patentable invention.

PO is also wrong about what Beggs discloses to a POSITA—a POSITA would have immediately understood that Beggs’ “tape” separator could be a foamed polymer. PO contends that the tape must be “flexible and stretchable enough” to be wrapped about the conductor pairs, but PO fails to provide any evidence that a foamed polymer tape would not be. And a POSITA would understand such tape to be easily capable of wrapping conductor pairs. Ex-1080, ¶13. PO also argues that preforms (55) and (58) have “different functions” from the tape embodiment. Paper 20, 21. This is wrong and irrelevant. It is wrong because the preforms and the tape both function to enclose each twisted pair in a buffer. *E.g.*, Ex-1015, 6:9-11 (“[S-shaped preform 58]) provides an individual buffer for each conductor pair”), 6:55-56 (“[tape] cause[s] each pair to be enclosed substantially in...the buffer”). It is irrelevant because the fact that twisted pairs are

“inserted” into the preform and “wrapped” by the tape is unrelated to a POSITA’s understanding that the tape could be foamed polymer. Ex-1080, ¶14.

PO’s contention that claim 19 of Beggs is directed to *only* the foamed polymer preform embodiments of the separator and “not” the tape embodiment does not hold up. *See* Paper 20, 20-22. Claim 19 depends through claim 3 to claim 1, which recites a “buffer system.” Ex-1015. Beggs identifies S-shaped tape as an example of such a buffer. Ex-1015, 6:52-56. Claim 19 simply states that such buffer systems (which Beggs says include a tape) can be comprised of foamed polymer. Ex-1080, ¶15. PO cites claim 18, which recites that the buffer is a tape. That does not help PO. Each of claims 18 and 19 depends separately from claim 1 (through claim 3). Claim 18 says that the buffer system of claim 1 can be a tape; Claim 19 says the buffer system of claim 1 can comprise foamed polymer. This does not mean that the tape cannot also be a foamed polymer. Ex-1080, ¶16.

PO also appears to argue that there is something legally improper about citing claim 19 of Beggs. Paper 20, 20. Again, PO is wrong. “The claims of a prior art patent are part of its disclosure.” *Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1289, 1295 (Fed. Cir. 2010), vacated on other grounds, 374 F. App’x 35 (2010), reinstated in part, 649 F.3d 1276, 1296 (2013) (en banc). Further, the Petition does not rely on comparing the “scope” of a prior art claim to the scope of the challenged claim. Rather, the Petition and CommScope’s expert merely pointed

to claim 19 as additional evidence of how POSITA would understand Beggs' overall teaching.

PO's reading of Beggs' disclosure is not only unsupported; it is also artificially narrow. Beggs teaches various embodiments of "buffering" between twisted pairs (Ex-1015, 5:64-6:11), that such buffers may be made of foamed polymer (*id.*, 6:1-3 and claim 19), and that the S-shaped buffer could be "a tape" (*id.*, 6:52-56). To a POSITA, the common-sense understanding of this teaching is that the buffer system can be comprised of foamed polymer, whether the buffer is preform (55), preform (58), or tape. Ex-1007, ¶91; Ex-1080, ¶17.

2. Beggs and Jachimowicz Each Teach Substantially Flat Tape

PO also argues that Jachimowicz's "jacket" is not "substantially flat." Paper 20, 22-28. This argument misses the mark.

First, it is undisputed that Beggs, the lead reference, *already discloses* a "substantially flat" separator tape, that the separator can be foamed polymer, and that the separator separates twisted pairs. Petition, 24-25; Ex-1007, ¶88; Ex-1080, ¶20. PO's attempt to confine the obviousness analysis to only Jachimowicz's teaching regarding tape improperly ignores the arguments and evidence advanced by CommScope regarding Beggs. *E.g., KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007) (mandating an "expansive and flexible approach" to obviousness).

Second, regarding Jachimowicz, PO's repeated citation to the extruded "jacket" embodiment is a red herring. The Petition points to Jachimowicz's *alternative* teaching of a two-material foamed polymer "tape." *E.g.*, Petition, 27-29; *see also* Ex-1014, 2:46-59, Figs. 1, 2; Ex-1007, ¶¶93, ¶81; Ex-1080, ¶19.

Third, the purported "admission" by CommScope's expert that Beggs' preform (55) is not "substantially flat" (Paper 20, 26) is irrelevant. Ex-1080, ¶20. CommScope's expert pointed to a *different* embodiment in Beggs: the S-shaped buffer shown at Figure 7, where the buffer is a "tape" that is undisputedly substantially flat. Petition, 25-26; Ex-1007, ¶88; Ex-1080, ¶21.

Fourth, Jachimowicz itself also discloses a "substantially flat" foamed polymer tape. Ex-1080, ¶¶22-28. For one, PO's "undulating surface" argument again relies on the wrong embodiment (i.e., the extruded jacket in Figure 1 rather than the foamed "tape" alternative). Ex-1014, 2:46-50; Ex-1080, ¶¶23-24. For another, CommScope's expert's purported "admission" that he did not know whether "all tapes" are substantially flat misses the point. He explained that a POSITA would understand the "tape" of *Jachimowicz* is substantially flat, and that he was familiar foamed tapes like that. Ex-2004, 103:1-104:16 (referencing Ex-1007, ¶93); *see also* Ex-1007, ¶¶81, 93, 105-106; Ex-1080, ¶25. PO's expert by contrast, relies entirely on misreading Figure 1 as showing the "tape" embodiment

and was not familiar with foamed tapes used in communication cabling. *See* Ex-1070, 213:2-214:1.

PO's "undulating surface" argument also relies on an implied but incorrect claim construction. Such a tape would still be "substantially flat." Ex-1080, ¶26. The claim recites "*substantially* flat," not "flat" or "completely flat." The specification confirms that a "flat" tape need not be completely free of surface texture—"pair separator 14" is shown as a ridged tape and described as a "flat configurable tape." Ex-1004, Fig. 4, 5:48-49. A POSITA would have understood even a tape such as what PO's drawing depicts (Paper 20, 25) is "substantially" flat. Ex-1080, ¶26.

PO's argument that CommScope's expert had an "erroneous understanding" of the function of Jachimowicz's tape (Paper 20, 26-27) is also incorrect. Ex-1080, ¶27. CommScope's expert correctly noted that Jachimowicz describes the pairs as "held together in the bundle" by the foamed polymer tape. Ex-1014, 2:46-54; *see also id.* claim 7; Ex-1080, ¶27. Moreover, PO's expert incorrectly attributes the "locking" function to a purported ridged structure on the surface of the foam in Jachimowicz. Jachimowicz does not teach this and that is not what a POSITA would have understood. Ex-1080, ¶27-28.

3. The Petition Provided At Least Five Motivations

CommScope provided more than sufficient motivations to support the obviousness ground.

PO argues that Jachimowicz teaches a “jacket” to “lock” the twisted pairs together, not separate them. Paper 20, 22-23, 28. But Beggs *already* discloses a substantially flat tape expressly for the purpose of separating twisted pairs. Petition, 25-26. And PO does not even contend that Jachimowicz somehow teaches away from using a foamed polymer tape in the manner taught by Beggs. Moreover, it is common sense that foamed polymer tape could be used in the manner taught by Beggs, and there is no evidence it could not. Ex-1080, ¶29; *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007) (“[c]ommon sense teaches...that familiar items may have obvious uses [even] beyond their primary purposes”).

PO also argues that the foamed polymer in Jachimowicz “needs to be of sufficiently rigid composition” to “lock” the twisted pairs together, and that the “rigidity” would not be suitable for the S-shaped separator disclosed by Beggs. Paper 20, 23, 28-29. The evidence does not support this. CommScope’s expert explained that Jachimowicz “indicates...that the tape is ‘appl[ied]’ to hold pairs together in a bundle...indicating that the tape was substantially flat [and] could be configured (e.g. wrapped or folded) around pairs.” Ex-1007, ¶81; Ex-1080, ¶30. Neither PO nor its expert provide any explanation for why that is wrong. Ex-1080,

¶¶30-31. Indeed, the term “tape” itself indicates a more than sufficient degree of flexibility. Ex-1080, ¶¶30, 29. PO’s expert cites testimony from CommScope’s expert that a Mylar-backed foamed polymer tape would “provide enhanced tensile strength properties” that would “decrease the tendency for the foamed tape to stretch or break.” Ex-2001, ¶119; Ex-2007, ¶168. But this says nothing about adding *rigidity*. Ex-1080, ¶31. To the contrary, a POSITA would have known that Mylar-backed foamed polymer tape was more than sufficiently flexible (for example, it came on rolls). *Id.*²

PO’s arguments for why the five motivations provided in the Petition “all fail” are also entirely unpersuasive. Ex-1080, ¶¶33-41.

As to the first, CommScope did not “misconstrue” what Beggs teaches. *See* Paper 20, 29. CommScope accurately noted that Beggs teaches a buffer separating twisted pairs that can be a foamed polymer and that can be a dielectric tape. Ex-1080, ¶34. That alone would have motivated a POSITA—applying ordinary common sense—to use a tape made of foamed polymer. *See* Petition, 29; Ex-1007, ¶92; Ex-1080, ¶34.

² PO also argues that Beggs “already has a jacket” (Paper 20, 29), but that is immaterial to the petitioned ground. Ex-1080, ¶32.

As to the second—the known benefit of improved mechanical properties provided by a plastic film backing—PO merely repeats its assertion that Jachimowicz teaches a “jacket” to “lock” pairs together while a separator would need “flexibility.” Paper 20, 30. As explained above, the evidence shows that a POSITA would expect tape like the Mylar-backed foamed polymer tape of Jachimowicz to be more than sufficiently flexible. *E.g.*, Ex-1080, ¶35. PO also contends that an “undulating and uneven surface” of the tape would not be suitable for separating pairs—again, not so. As explained above, a POSITA would not understand the Jachimowicz tape to have an “undulating” surface. And even if it did, a POSITA would still expect such a tape with “undulations” to easily maintain a distance between the pairs to reduce crosstalk. Ex-1080, ¶36.

As to the third through fifth motivations, PO merely argues that Beggs “already” discloses using a foamed polymer separator. Paper 20, 30-32. This only *reinforces* the obviousness of what was claimed. PO does not dispute that Beggs teaches it is beneficial to use a foamed polymer separator between twisted pairs and that the separator can be a substantially flat “tape.” Ex-1080, ¶37. So even if Beggs were found to not expressly teach that the “tape” could be foamed polymer, the Petition shows that would be at most a very minor, obvious modification with known benefits. Petition, 29-32; Ex-1007, ¶¶96-104, ¶107; Ex-1080, ¶37. PO also contends that a POSITA would be motivated to “retain the Beggs preform

(58)...rather than switch to any kind of tape.” Paper 20, 31-32. But Beggs teaches that another option for the separator is a “tape.” Ex-1015, 6:52-56; Ex-1007, ¶¶86-107; Ex-1080, ¶38. Beggs itself teaches “switch[ing]” to a tape. *Id.*

PO also contends that CommScope’s expert failed to provide any “quantitative analysis” of the advantages of using foamed tape, “including reduced flammability.” Paper 20, 32. But a POSITA would not have needed any “quantitative” analysis to understand the predictable advantages. Ex-1080, ¶39. For example, CommScope’s expert explained the unremarkable (and undisputed) concept that “foam tends to have more air in it and be less dense. Therefore, it would result in less flammable material in the cable in general.” Ex-2004, 202:9-15; *see also id.* 203:6-18 (same); Ex-1080, ¶39. PO contends CommScope’s expert “admitted” that the specific materials used are a consideration in determining flammability. However, CommScope’s expert explained that Gingue teaches “foaming ‘decreases the amount of flammable material employed *for a given volume of material.*’” Ex-1007, ¶104, ¶46 (quoting Ex-1013, 3:20-26); Ex-1080, ¶40. PO’s expert did not dispute this. Different materials commonly used in communications cabling may be more or less flammable, but the undisputed evidence shows that foaming a given material would have been expected to beneficially reduce overall flammability. Ex-1080, ¶40.

PO also contends that CommScope's expert "admitted" that a non-foamed tape can be thicker than a foamed tape. Paper 20, 32. This is false—he actually testified that for tapes used in the *cabling* art, foamed tapes are typically thicker: "typically, in my experience, for these types of cables forming separators in this case, **the foamed tape would be typically thicker than a non-foamed tape.**" Ex-2004, 104:6-16; *see also id.* 103:12-13 (same); Ex-1080, ¶41. Again, PO's expert did not dispute this.

The cases PO cites are inapposite. In *In re Anova Hearing Labs, Inc.*, 809 F. App'x 840, 843 (Fed. Cir. 2020), the Board failed to explain why a POSITA would have been motivated to make a five-reference combination. In *S.-Tek Sys. v. Engineered Corrosion Sols., LLC*, 748 F. App'x 1003, 1006-07 (Fed. Cir. 2018), the lead reference already had a drum drain and the petitioner had procedurally waived the argument that the alternative drain would *replace* the existing drum drain. Here, Beggs itself already teaches using a tape to replace preform (58) as a twisted pair separator (and that the separator can be foamed polymer). The additional cases PO cites (*e.g., Virtek, In re Rouffet, Metalcraft*) each merely say that identifying the elements of a claim in the prior art is not enough, and that there must be a reason to combine them. Here there is ample evidence of reasons to combine teachings—PO's expert identified at least five. CommScope does not use the challenged claim

as a “roadmap.” Rather, *Beggs is the roadmap*, teaching both a foamed polymer “buffer” between twisted pairs and that the buffer can be an S-shaped “tape.”

B. GROUND 2: Ground 1 Further View of Gingue (Claims 20 and 22)

PO contends that claims 20 and 22 each require a substantially flat foamed polymer “tape” and that Beggs and Jachimowicz fail to disclose such a tape that can be used as a twisted pair separator. Paper 20, 34-35. As explained in the Petition and above, this is obvious in view of the teachings of Beggs and Jachimowicz. §II.A.2, *supra*.

PO also makes a one-sentence argument that because Gingue teaches foamed polymer for use as “insulation,” it cannot render claims 20 and 22 obvious. Paper 20, 35 (citing Ex-2007, ¶¶173-176). The cited paragraphs from PO’s expert are entirely conclusory. Ex-1080, ¶44. There is no dispute that Gingue discloses the claimed properties of foamed polymer, and PO does not refute the Petition’s evidence that it would have been obvious to provide those properties in a foamed polymer tape as claimed.

C. GROUND 3: Yanagita in view of Jachimowicz

1. Jachimowicz Discloses a Substantially Flat Foamed Polymer Tape

PO contends that because Jachimowicz “fails to disclose a substantially flat, foamed polymer tape,” Ground 3 fails. Paper 20, 35-36. As explained above,

Jachimowicz does disclose a substantially flat foamed polymer tape. §II.A.2, *supra*.

PO's only other argument is that CommScope's expert "admitted" Mylar and foamed polymers are flammable. Paper 20, 36. But PO cites no evidence that this would impact the obviousness of the combination. Ex-1080, ¶46. And it would not—it is undisputed that Mylar and foamed polymers were commonly used in communications cabling and had known benefits. *E.g.*, Ex-1013, 3:20-26, 4:32-37; Ex-1014, 2:50-54; Ex-1080, ¶46. Further, CommScope's expert provided two reasons a POSITA would make the combination—to predictably improve the electrical performance of the cable and to beneficially lower crosstalk. Ex-1007, ¶¶139-140. CommScope's expert also showed that Gingue expressly teaches foamed polymers could be and often were provided with a "flame retardant" additive. Ex-1007, ¶46 (citing Ex-1013, 4:37-48); Ex-1080, ¶46. PO and its expert *did not dispute* any of this evidence.

2. Yanagita Teaches Twisted Pairs As Claimed

PO also now argues that Yanagita does not disclose twisted pairs. Paper 20, 36-49. But PO *agreed* in prior proceedings that Yanagita does disclose twisted pairs. Ex-1077, 48, 45, 115 (PO's interrogatory response to invalidity contentions regarding '537 patent, affirmatively stating "JP 15470 discloses an alternately

stranded cable comprising stranded pairs” and not disputing disclosure of twisted pairs). Moreover, the arguments PO now makes are unsupported.

PO first argues, wrongly, that Yanagita’s discussion of “pairs”/“stranded pairs” just refers to the prior art. Paper 20, 43-46. A POSITA would instead understand Yanagita to be describing the cables the inventive twisted plastic core can be applied to. Ex-1080, ¶47. Indeed, the stranded pairs discussion appears immediately under “Detailed Explanation of the Invention,” where it describes the types of “alternatingly stranded cable” that the inventive twisted plastic core is used with. Ex-1012, 1; *see also* Ex-1055, 1.³

PO then argues that Yanagita discloses *only* straight wires, and the discussion of the option wherein “insulated wires are twisted together” just refers to straight wires being laid along the twisted core. Paper 20, 46-48. This is also wrong. Yanagita discloses that *each* element 1 that is laid along the twisted core can be *either* a single “insulated wire”/“insulated element wire” *or* “wherein insulated strands are twisted together”/“stranded groupings of such” (i.e. twisted

³ PO “objects” to Ex-1055, but (i) the foreign language patent is the reference, not any particular translation of it (*see* Paper 27, 3), (ii) PO used Ex-1055 previously without objection, and (iii) Ex-1055 is not inconsistent with Ex-1012.

pairs or quads). Ex-1012, 1; Ex-1055, 1; Ex-1080, ¶¶48-50. This is evident to a POSITA from Ex-1012, and also corroborated by Ex-1055:

Ex-1012, 1	Ex-1055, 1
“1 is an insulated wire or that wherein insulated wires are twisted together, laid divided onto both sides of a core material 2” “<u>alternatingly twisted cable</u> wherein a large number of insulated wire strands, or that wherein the insulated wire strands are twisted together, are laid, <u>while twisting along the surfaces, ...</u>”	“reference numeral 1 constitutes an insulated element wire or stranded groupings of such; <u>these are divided and longitudinally run along both surfaces of core material 2</u>” “<u>alternatedly stranded cable...</u>; onto both surfaces of the core material, a plurality of either insulated element wire or else stranded groupings of such are vertically <u>run along the surfaces while being twisted</u>”

See also Ex-1012 and Ex-1055, claims 1, 2 (same).

If the bolded text merely referred to the twisting due to straight wires being laid along the twisted core (as PO contends), it would be redundant of the other

(underlined) twisting already described. Ex-1080, ¶¶48, 50.⁴ That interpretation also completely ignores the fact that Yanagita clearly describes multiple options for the composition of each element “1”: element 1 can be *either* a single “insulated wire” *or* “insulated wires [that] are twisted together.” Ex-1080, ¶¶49-51. During deposition, PO’s expert argued that the “or” clauses (bolded in the table above) were just redundant. Ex-1070, 205:1-22. This is not credible. “Or” means “or,” and Yanagita is including twisted pairs in its description of options for the wire units “1” in the cable. Ex-1080, ¶51.

Moreover, most communication cables at the time used twisted pairs or quads. Ex-1007, ¶¶31-33 (citing additional evidence); Ex-1080, ¶53. It is implausible to read Yanagita as limiting its invention to *only* cables with straight wires, particularly when it expressly refers to “pairs”/“stranded pairs.” Ex-1080, ¶53.

D. GROUND 4: Yanagita and Jachimowicz, In Further View of Gingue, Render Claims 20 and 22 Obvious

PO again contends that Jachimowicz fails to disclose a substantially flat tape that can be used as a twisted pair separator. Paper 20, 49-50. But as explained in the Petition and above, Jachimowicz does. §II.A.2, *supra*.

⁴ CommScope’s expert did not “admit” that Yanagita was unclear with respect to disclosing twisted pairs, as PO contends. Ex-1080, ¶52.

PO also repeats its one-sentence argument that because Gingue teaches foamed polymer for use as “insulation,” it cannot render claims 20 and 22 obvious. Paper 20, 49-50 (citing Ex-2007, ¶¶173-174, 186). Again, the cited paragraphs from PO’s expert are entirely conclusory. Ex-1080, ¶55; *see also* §II.B, *supra*. Neither PO’s expert nor PO disputes that Gingue discloses the claimed *properties* of foamed polymer, and PO does not provide any evidence to refute the Petition’s evidence that a POSITA would be motivated to provide those same properties in a foamed polymer tape used as claimed.

E. GROUND 5: GmbH-866 in View of Roberts, Gingue, and/or Jachimowicz

As explained in the Petition, the claims challenged here (claims 19-22) stood as rejected a prior reexamination, in view of GmbH-866, Roberts, and Gingue, when that reexamination was terminated by settlement. Ground 5 of the Petition is merely that same ground (with the additional teaching of Jachimowicz), and PO has not identified any reason that the Board should now reach a different result.

1. The Combined Teachings of the References Render the Claims Obvious

PO again argues that Jachimowicz does not disclose a substantially flat foamed polymer tape (Paper 20, 50-51), but as explained above it does. §II.A.2, *supra*. Moreover GmbH-866 itself already taught “substantially flat” shieldings to separate twisted pairs. Petition, 60; Ex-1007, ¶178.

PO also argues that “neither the Petition nor CommScope’s expert provide any [] analysis” regarding whether replacing the metallic shieldings in GmbH-866 with a foamed polymer tape separator would impact crosstalk. Paper 20, 51. That is incorrect. The Petition and CommScope’s expert provided extensive evidence, explaining that:

While the modification (replacing metalized partial shieldings 11, 12 with foamed polymer tape) may result in some loss of crosstalk protection, the GmbH-866 cable still would have been expected to perform as intended.

Petition, 55-57 (citing and discussing Ex-1007, ¶¶168-172; Ex-1015, 3:48-51, 7:52-62, 9:32-36, 9:41-44; Ex-1048, Figs. 1-2, 5-6; Ex-1036, 4:5-16; Ex-1023, 3:12-14, 3:17-31; Ex-1049, Figs. 1-3, 3:52-56, 2:31-34); Ex-1080, ¶57. Neither PO nor its expert responded to any of this evidence, leaving it completely unrebutted.

PO contends that CommScope’s expert was “unable to answer” specifically “whether replacing a metallic shield with a dielectric separator in a cable would have an impact on crosstalk.” Paper 20, 51. This is misleading. Ex-1080, ¶58. The questions asked did not concern the effect of a dielectric between *twisted pairs*; rather, they concerned whether placing a dielectric “between two *conductors*” would reduce crosstalk. Ex-2004, 58:1-64:12. This line of questioning is not the relevant issue. Ex-1080, ¶59.

PO's expert also argues that a POSITA would not have been motivated without "quantitative analysis of the impacts" on crosstalk. Ex-2007, ¶188. That is not correct. The extensive evidence cited by the Petition that a POSITA would still have been motivated to make the modification, even if it resulted in some loss of crosstalk protection, was more than sufficient and *entirely un rebutted*. See Petition, 56-57 (citing evidence); Ex-1080, ¶57.

2. The Challenged Claims Are Also Obvious to Try

PO entirely ignores CommScope's alternative argument and supporting evidence that replacing the metallic separators of GmbH-866 with separators of only dielectric materials would have been obvious to try. Petition, 52-53 (citing evidence). The un rebutted obvious to try evidence—particularly where the claims stood as rejected as obvious to try in view of GmbH-866, Roberts and Gingue in the prior reexamination—only reinforces the obviousness of the claims.

3. GmbH-866 Teaches and Suggests Separating Twisted Pairs As Claimed

During the prior reexamination, the Examiner found (and PO did not dispute) that GmbH-866 taught twisted pairs as claimed. Ex-1058, 4-5, 31, 49, 55-56, 69-70, 106-111. That conclusion was correct, and PO has not identified any reason to change it.

PO now argues that GmbH-866 does not disclose twisted pairs as claimed (Paper 20, 52-62) but its new arguments are not supported. PO itself previously

admitted that GmbH-866 discloses twisted pairs as claimed; its expert ignores the context and sentence structure of GmbH-866; and German-English dictionaries confirm that the translator correctly and consistently used “stranded” in the twisted sense.

(a) PO Previously Took the Position that GmbH-866 Does Disclose Twisted Pairs

In a prior district court lawsuit, PO filed a pretrial “Joint Statement of Admitted Facts” stipulating that GmbH-866 disclosed twisted pairs as claimed:

Case 1:08-cv-00063-SLR Document 226 Filed 09/02/10 Page 6 of 30

16. It is not contested that German Patent DE 297 19 866 (the ‘866 Patent) discloses the following limitations of Claim 27 of the ‘095 Patent:

- a. “a data communications cable”
- b. “a first twisted pair of insulated conductors”
- c. “a second twisted pair of insulated conductors”
- d. “a configurable dielectric pair separator that separates the first and second twisted pairs of insulated conductors”
- e. “the configurable dielectric pair separator being substantially flat”
- f. “a jacket enclosing the first and second twisted pairs of insulated conductors and the dielectric pair separator”
- g. “wherein the configurable dielectric pair separator is arranged within the jacket to form at least two grooves”

Ex-1076, p.6 ¶16; *id.* p.7 ¶18 (claim 31).⁵ PO also restated this in discovery responses, dispositive motion practice, and during trial. *E.g.* Ex-1077, 30-32; Ex-1061, 9; Ex-1063, 1360:19-20. PO also took this position during a prior *inter partes* reexamination. Ex-1058, 69; Ex-1059, 21, 33.

PO's argument now that GmbH-866 does not disclose twisted pairs is not credible. PO's Response did not address these prior inconsistent positions. Further, the Board could find that PO's previous stipulation judicially estops PO from now taking the opposite position.

In briefing opposing CommScope's Motion to Compel, PO argued that CommScope filed a new translation of GmbH-866 in this matter. This fails. First, the foreign language GmbH-866 is the reference asserted, not any particular translation of it. *See* Paper 27, 3. And PO used the prior translation (Ex-1057) without objection. Second, the two differences in translations PO identified are immaterial. *See* Paper 23, 3-4. As to "isolated" versus "insulated": a POSITA would have immediately understood "isolated" referred to conductors that are insulated (and thus electrically isolated) from each other. Ex-1080, ¶68; *see also*

⁵ During trial, PO also entered a formal "stipulation" into evidence ("JTX-397") but PO contends it is "unable to locate" that exhibit. Paper 23, 2 n.1; *see also* Ex-1063, 1308:1-15, 1331:18-1332:11; Ex-1066, 1268:24-1269:2, 1142:1-12.

Ex-1067, 4; Ex-1068, 4. As to “pairs” versus “pair”: this is a red herring, as there are at least four other places using nearly the same phrase where *both* translations use “pairs.” *Compare* Ex-1010, 3, 5, 8 *with* Ex-1057, 4, 7, 10.

**(b) PO’s Expert’s Arguments About “Stranded” Are
Conclusory and Ignore the Context**

PO cannot (and does not) dispute that GmbH-866 uses “stranded” to mean twisted in almost every instance. *E.g.*, Ex-1010, 3 (“*stranding* of the pairs 1”), 4 (“two pairs of *stranded* conductors”), 8 claim 11 (“conductor pairs (1) are *stranded*”); Ex-1080, ¶¶59-74. PO’s expert argues that in one particular sentence, though, (where it refers to “pairs” of “stranded copper conductors or wires”), GmbH-866 suddenly uses “stranded” to mean something different. This is not credible. A POSITA would understand that GmbH-866 uses “stranded” consistently in the twisted sense. Ex-1080, ¶¶63, 70-73.

PO’s expert also provides contradictory arguments relating to the sentence describing “pairs” of “stranded...conductors or wires”:

four pairs 1, each consisting of two **isolated, stranded**
copper *conductors 2 or wires*...

Ex-1010, 3. On the one hand PO’s expert argued that “stranded” modifies *only* “conductors” and not “wires.” Ex-2001, ¶80. On the other hand, he appears to argue that “isolated” modifies *both* “conductors” and “wires.” Ex-2001, ¶83

(arguing “isolated” “teaches away” from the pair being “intertwined”).⁶ These arguments are inconsistent and not credible. Normal sentence structure indicates “stranded,” “isolated,” and “copper” all modify each of “conductors or wires.” Ex-1080, ¶¶65. Moreover, this is additional evidence that “stranded” means twisted, just as it does everywhere else in GmbH-866. If “stranded” in these two sentences instead meant multi-filament wire, then referring to stranded “conductors or wires” would have been nonsensically redundant. Ex-1080, ¶¶64-65.

PO contends that GmbH-866 “teaches away” from twisted pairs because it describes the pairs as consisting of “two isolated conductors in each case.” Paper 20, 57-58. This also does not make any sense. Plainly, “isolated” conductors refers to conductors in a pair being insulated and thus electrically isolated from each other, not that they are physically separated or individualized. Ex-1080, ¶68; *see also* Ex-1067, 4; Ex-1068, 4. All figures show insulated conductors 2 of each pair 1 touching or nearly touching (consistent with twisted pairs). Ex-1010, Figs. 1-5; Ex-1080, ¶68.

PO also cites GmbH-866’s description of the “effective diameter” of the copper conductor or wires and argues that a twisted pair is “not typically referred

⁶ At deposition, PO’s expert repeatedly refused to clarify his understanding of what “isolated” modified. Ex-1070, 172:16-188:9.

to as having a diameter.” Paper 20, 59. This argument is a confusing non-sequitur. GmbH-866 simply identifies the effective diameter of the “copper conductors or wires” that comprise the twisted pair.

PO also confusingly argues that GmbH-866 does not specifically teach that the “insulation (3)” is also stranded (twisted). Paper 20, 58-59. This is nonsensical. A POSITA would not expect a separate reference to twisting the insulation, because the insulation is *part of* (adhered to) the conductor. Ex-1010, 3 (“The copper conductors or wires preferably *have* an insulation 3”); Ex-1080, ¶69.

PO also seeks to leverage CommScope’s expert’s acknowledgement that “stranded” in certain contexts can mean multifilament wire. *See* Paper 20, 55. However, CommScope’s expert explained that “you have to understand the context,” and *in the context of GmbH-866* (the relevant context for this proceeding) “stranded” conductors or wires clearly means *twisted*. Ex-2004, 214:5-16; Ex-1080, ¶¶62-67. He also explained that he had never seen a four-pair data cable of the type disclosed by GmbH-866 that did not use twisted pairs. Ex-2004, 215:15-216:7; Ex-1080, ¶66. PO’s expert *did not dispute this*. It would be implausible to a POSITA to read GmbH-866 as excluding cables with twisted pairs. Ex-1080, ¶66; *see also* Ex-1074, 15, 25, 27, 43 (ISO/IEC11801 standard); Ex-1079, 14-15, 30, 34, 54-55, 78-79, 83 (TIA/EIA-586-A standard); Ex-1080, ¶66.

**(c) German-English Technical Dictionaries Confirm
Stranded Means Twisted in GmbH-866**

The table below shows how Ex-1010 translated the phrases describing twisted pairs:

“vier Paaren aus zwei verseilten isolierten Kupferleitern oder -litzen” “four pairs of two stranded isolated copper conductors or wires”
“vier Paare 1 aus jeweils zwei isolierten, verseilten Kupferleitern 2 oder -litzen auf” “four pairs 1, each consisting of two isolated, stranded copper conductors 2 or wires”
“kann auch lediglich <i>zwei Paare</i> verseilter Leiter aufweisen” “can also comprise just <i>two pairs</i> of stranded conductors”

Compare Ex-1011, 2, 4, 5 *with* Ex-1010, 2, 3, 4. German-English technical dictionaries confirm what Ex-1010 says—that the translator was correctly using “stranded” (“verseilten”) consistently in the twisted sense, and that “stranded” in the multi-filament sense is a different word (“litzen”):

“verseilten”	Ex-1068, 10, e.g.: • <i>Verseilen</i>: to twist, strand, cable • <i>Verseilt</i>: stranded (cable) • <i>Verseilter Draht</i>: twisted wire Ex-1067, 9, e.g.: • <i>Verseilen</i>: <Fertig> cabling • <i>Verseilmachine</i>: <Fertig> cabling machine
“leitern” or “litzen”	• <i>Leiter</i>: <Telekom> Conductor (Ex-1067, 9)

	• <i>Leiter</i>: conductor, (Ex-1068, 7) • <i>Litzendraht</i>: <Elektriz, Elektrotech> braided wire, stranded conductor (Ex-1067, 8) • <i>Litzendraht</i>: flexible, stranded wire; <i>Litzenseil</i>: rope made of strands (Ex-1068, 9)
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While the conductive portion of each member of the pair can be either solid copper (“leitern”) or multi-filament wire (“litzen”), in either case the two insulated wires are twisted (“verseilten”) together.

4. Claims 20 and 22 Are Obvious

PO again contends that Jachimowicz fails to disclose a substantially flat foamed polymer tape that can be used as a separator and that Gingue merely teaches using foamed polymer as “insulation.” Paper 20, 62-63. But as explained above Jachimowicz does teach a substantially flat tape that can be used as a separator (§II.A.2, *supra*), and also GmbH-866 already teaches substantially flat shieldings. The evidence shows it would have been both obvious and obvious to try to replace those with foamed polymer tape. And there is no dispute Gingue discloses the claimed properties of foamed polymer or that a POSITA would be motivated to provide those properties in a foamed tape. §II.B, *supra*.

Respectfully submitted,

Dated: July 9, 2024

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Reply Brief totals 5,590 words per Microsoft Word's word count tool, which complies with the requirement of 5,600 words allowed under 37 C.F.R. § 42.24(c)(1).

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CERTIFICATION OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e) and the agreement of the parties, the undersigned certifies that on July 9, 2024, a true and correct copy of the foregoing Reply Brief was served via electronic mail upon the following:

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