

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA,
WESTERN DIVISION

PANDUIT CORP.,)
)
 Plaintiff,)
)
 v.)
)
 CORNING INCORPORATED,) Case No. 5:18-CV-229-FL
)
 Defendant.) **JURY TRIAL DEMANDED**
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)
)
)

FIRST AMENDED COMPLAINT

Plaintiff Panduit Corp. (“Plaintiff” or “Panduit”), by its attorneys, demands a trial by jury on all issues so triable and for its complaint against Defendant Corning Incorporated (“Defendant” or “Corning”) alleges as follows:

THE PARTIES

1. Plaintiff Panduit is a corporation organized and existing under the laws of Delaware with its principal place of business at 18900 Panduit Drive, Tinley Park, Illinois, 60487. Panduit is the owner by assignment of United States Patent Nos. 8,351,027 and 8,488,115 identified in paragraphs 8-9 below.

2. On information and belief, Defendant is a New York corporation with a principal place of business at One Riverfront Plaza, Corning, NY 14831. As used herein, “Defendant” includes Corning Incorporated, as well as its subsidiary companies and others under Corning Incorporated’s direction and control or who are in a joint enterprise with Corning Incorporated.

JURISDICTION AND VENUE

3. This is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, including 35 U.S.C. § 271, which gives rise to the remedies specified under 35 U.S.C. §§ 281 and 283–285.

4. On information and belief, jurisdiction and venue for this action are proper in the Eastern District of North Carolina.

5. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Defendant because it has purposefully availed itself of the rights and benefits of the laws of this State and this Judicial District. On information and belief, and based on the representations of Defendant’s counsel in connection with a jointly-filed motion to transfer venue into this Judicial District pursuant to 28 U.S.C. § 1404(a), Defendant has a physical presence in this Judicial District. (*See* DE 19 at 1). This Court also has personal jurisdiction over Defendant because it has done and is doing substantial business in this Judicial District, both generally and, on information and belief, with respect to the allegations in this complaint.

7. Venue is proper in this Judicial District under 28 U.S.C. § 1400(b) at least because Defendant resides in this Judicial District and/or because Defendant has committed acts of infringement in this District and has a regular and established place of business in the Eastern District of North Carolina. Additionally, venue is proper in this Judicial District based on representations of Defendant’s counsel in connection with a jointly-filed motion to transfer venue into this Judicial District pursuant to 28 U.S.C. § 1404(a). (*See* DE 19 at 1).

BACKGROUND FACTS

Panduit's Patented Methods

8. On January 8, 2013, the United States Patent and Trademark Office issued United States Patent No. 8,351,027 (“the ’027 Patent”) entitled “Method and Metric For Selecting And Designing Multimode Fiber For Improved Performance.” A copy of the ’027 Patent is attached hereto as Ex. A. Panduit is the lawful owner of all right, title, and interest in the ’027 Patent and has exclusive right to sue for and recover all past, present, and future damages for infringement of the ’027 Patent.

9. On July 16, 2014, the United States Patent and Trademark Office issued United States Patent No. 8,488,115 (“the ’115 Patent”) entitled “Method And Metric For Selecting And Designing Multimode Fiber for Improved Performance.” A copy of the ’115 Patent is attached hereto as Ex. B. Panduit is the lawful owner of all right, title, and interest in the ’115 Patent and has exclusive right to sue for and recover all past, present, and future damages for infringement of the ’115 Patent.

10. A path of light traveling through an optical fiber is called a “mode.” Optical fiber can have a single transmission mode (called “single mode fiber”) or can have multiple modes (called “multimode fiber” or “MMF”). Both the ’027 and ’115 Patents relate to innovative methods using new and useful techniques for selecting multimode optical fiber based on measurement and comparison of certain characteristics that Panduit has discovered are indicative of superiorly-performing multimode fiber. More specifically, Panduit has found that multimode optical fibers exhibiting a negative “DMD Shift”—a new metric that Panduit discovered—are superior in terms of minimizing Bit Error Rate (“BER”), which is a measurement of errors, and

therefore maximizing multimode fiber bandwidth performance at greater distances. Ex. A, '027 Patent at 1:23-26, 2:52-59. As the patents explain:

A new metric “DMD Shift” is derived from a [Differential Mode Delay (DMD)] measurement. The DMD shift can be used as a scaling factor for industry-standard EMB and DMD metrics to yield a more accurate prediction of a multimode fiber's Bit Error Rate (BER) channel link performance. The metric can be related to the refractive index profile in MMF and can, therefore, be used to optimize the design of MMF to achieve improved performance.

Id. at 2:52-59.

11. The '027 Patent relates to an innovative method of selecting multimode optical fiber by measuring the peak delay for pulses traveling through different radii of multimode optical fibers, subtracting the measured peak delay at one radius from the peak delay at a second larger radius, and then selecting the optical fibers where this subtraction results in a negative number (i.e. negative p-shift or negative relative delays). Ex. A at 4:16-5:16, 6:18-23, cl. 1.

Claim 1 of the '027 Patent states as follows:

1. A method for selecting multimode optical fiber for use in a communications network comprising:
 - measuring the peak delay for pulses traveling through different radii of a number of multimode optical fibers;
 - subtracting the peak delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber; and
 - choosing for use in a communications network those optical fibers in which the result of subtracting the peak delay at the first radius from the peak delay at the second radius is a negative number.

12. The '115 Patent relates to an innovative method of selecting multimode optical fiber, by measuring the pulse delay for pulses traveling through different radii of multimode optical fibers, subtracting the measured pulse delay at one radius from the pulse delay at a second larger radius, and then selecting the optical fibers where this subtraction results in a negative number (i.e. negative p-shift or negative relative delays). Ex. B at 4:19-5:19, cl. 1.

Claim 1 of the '115 Patent states as follows:

1. A method for selecting multimode optical fiber for use in a communications network, said method comprising:

measuring a pulse delay for pulses traveling through different radii of a number of multimode optical fibers;

subtracting the pulse delay at a first radius of each multimode optical fiber from the pulse delay at a second, larger radius of each multimode fiber; and

choosing for use in the communications network those optical fibers in which the result of subtracting the pulse delay at the first radius from the pulse delay at the second radius is a negative number.

13. In multimode optical fibers, because the light travels at different modes, there is modal dispersion, which is expressed in terms of Differential Mode Delay (DMD). Ex. A at 1:30-36. This DMD is a measure of the difference in pulse delay (ps/m) between the fastest and slowest modes traveling through the fiber. *Id.* Additionally, the pulse of light will undergo wavelength dispersion as it travels through the fiber. This is called chromatic dispersion. *Id.* at 1:53-58. Because dispersion leads to transmission errors, reducing these dispersions will increase the fiber's performance. *Id.* at 1:58-60.

14. While BER is used to quantify the bit error rate, and, in general, is tested using a standalone instrument, test bench or a computer, the Effective Modal Bandwidth (EMB) is used to determine the performance of the fiber. *Id.* at 1:61-63, 2:3-11. The EMB is calculated using the DMD measurements. *Id.* at 2:3-6. These DMD measurements are typically done in the factory when the fiber is being created using specific testing equipment, which may include standalone instruments (such as a sampling oscilloscope), test benches and/or computers. In practice, the DMD is calculated by "measuring the difference in pulse delay using the leading edge of the fastest pulse and the trailing edge of the slowest pulse." *Id.* at 3:23-25.

15. As noted above, Panduit's DMD Shift is derived from these DMD measurements and can be used as a scaling factor for industry-standard EMB and DMD metrics. *Id.* at 2:52-56. Because DMD plots are complex, it is often hard to identify the DMD Shift. *Id.* at 4:16-17. The

'027 and '115 Patents address this problem, and are directed to the methods for calculating and using the different DMD Shift measurements to select high-performing multimode optical fiber. *Id.* at 3:1-8. The DMD Shift is determined using the difference in, for example, pulse delays between different waveforms and will either be positive, *i.e.*, shifted to the right, or negative, *i.e.*, shifted to the left. *Id.* at 4:16-22.

16. Panduit discovered that fibers having a positive DMD Shift exhibited a lower-than-expected BER performance, and in many cases such fibers failed to meet system performance levels, even though their EMB and DMD metrics indicate they should pass. *Id.* at 4:57-62. On the other hand, fibers having a negative DMD Shift exhibited lower BER's overall and, therefore, significantly outperformed the positive DMD shifted fibers. *Id.* at 5:21-24. Thus, using DMD Shift, the fibers can be sorted into two groups: higher-performing negative DMD shifted fibers and lower-performing positive DMD shifted fibers. *Id.* at 5:26-30. Therefore, employing Panduit's patented methods, makers, users, sellers and importers of multimode optical fibers (or of cables containing one or more multimode optical fibers) may select the best performing fiber(s) for a given application—particularly those that require higher bandwidth at greater cable lengths. *Id.* at 2:59-64 (“When implemented as a test algorithm in production, [DMD shift] can be used to select fiber, sort fiber, or verify fiber performance. MMF compliant with this new metric will result in higher BER system performance for a given cable length, or allows a greater cable length for a given BER system performance.”).

Overview of Optical Fiber Manufacturing and Performance Testing

17. Optical fiber is made by drawing glass into very thin strands. This is done by first creating a glass “preform,” or a long cylindrical rod of porous glass soot. *See* <https://www.youtube.com/watch?v=7tsF3mSpqX8>, “Corning’s Manufacturing Advantage

(updated 2013),” (herein, “Corning Video”) at 1:10-1:58 (last visited January 30, 2019). Next, the glass preform is dehydrated and sintered in a furnace to transform it into a solid transparent rod of glass called an “optical fiber blank.” *Id.* at 1:59-2:22. Then, the optical fiber blank is vertically hung in a draw furnace where it is drawn into a hair-thin optical fiber. *Id.* at 2:37-2:50. Here, the tip of the blank is heated to the melting point of the glass until a gob of hot glass descends and is stretched down to a thin strand of optical fiber. *Id.* at 2:50-3:00.

18. During the fiber draw process, fiber parameters are monitored using computer controls and layers of protective coating are applied. *Id.* at 3:00-3:30. At the bottom of the draw tower, the thin strand of fiber is wound onto a take-up spool or winding drum that holds 100 km or more of optical fiber—with a typical yield from a preform being on the order of 125-150 km. These large lengths of optical fiber are eventually sub-divided into spools of typically 17.6 km or less. *See, e.g.,* https://www.corning.com/media/worldwide/coc/documents/Fiber/PI1468_07-14_English.pdf at p.2 (“Fiber lengths available up to 17.6 km/spool.”) (last visited January 30, 2019), (herein, “Ex. C”). Therefore, a single preform will yield up to approximately 7 or 8 spools of 17.6 km length, depending on the number of intermediate defects that may have to be cut out during the manufacturing process.

19. After the draw process, the optical fiber is tested for strength, optical performance and geometric parameters. *See* Corning Video at 3:30-3:51 (“[T]hen optical and physical parameters are measured to verify performance against specifications.”); *see also* https://www.youtube.com/watch?v=liKOYbgIC_c, “OFS OPTICS: MANUFACTURING HIGH-PERFORMANCE OPTICAL FIBER,” (herein, “OFS Video”) at 5:57-6:11 (last visited January 30, 2019). A series of optical tests are performed on each reel of fiber using an optical test station. *Id.* at 6:40-6:48. The optical tests include tests for attenuation, or loss of optical

power over distance. *Id.* at 6:48-6:52. An optical time-domain reflectometer, or OTDR, is used to measure attenuation uniformity throughout the reel. *Id.* at 6:52-6:58. Multimode optical fiber is tested for bandwidth, which is the information-carrying capacity of the optical fiber. *Id.* at 6:58-7:05. Bandwidth is verified using DMD measurements, which is a scan across the core of the fiber in 1 micron increments to verify the ability of individual modes (at each of the 1 micron incremental radiuses) of the fiber to properly carry the optical signal. *Id.* at 7:18-7:39; *see also* Ex. A, '027 Patent at 1:33-36 (“Modal dispersion is expressed in terms of Differential Mode Delay (DMD), which is a measure of the difference in pulse delay (ps/m) between the fastest and slowest modes traversing the fiber.”). DMD is measured by inserting light at 1 micron increments at one end of a test piece of fiber and measuring the light output at the other end of the test piece of fiber using testing equipment, which may include standalone instruments (such as a sampling oscilloscope), test benches and/or computers. Measurement of DMD in multimode fiber is defined by, and performed in accordance with known industry practices, including those defined by Telecommunications Industry Association (“TIA”) standard TIA-455-220.

20. As described above in Paragraph 14, these industry-standard DMD measurements, as described in Paragraph 19, are used to calculate industry-standard EMB. The industry-standard EMB metric is commonly used to grade multimode optical fiber, such as in the TIA’s standards for classifying multimode fiber as OM3 or OM4. *See* Ex. A, '027 Patent at 4:33-34 (“We note the minimum EMB for a fiber to qualify as OM4 is 4700 MHz·km.”).

21. As the fiber is tested, the measurement data described in the preceding paragraphs is recorded into documentation associated with each spool of fiber, so that the spools may be selected based on the recorded data. OFS Video at 6:11-6:25; *see also* Corning Video at 3:50-

4:00 (explaining that Corning fiber reels are assigned a unique serial number so that testing data remains associated with each reel of optical fiber).

Overview of Optical Fiber Cabling

22. Multiple individual multimode optical fibers are often bundled together in cables. Cables are composed of fibers all having the same performance characteristics so that the entire bundled cable may be represented to meet a given performance standard. For example, as discussed above in Paragraph 20, individual multimode fibers are graded as, for example OM3 or OM4, according to performance criteria defined by the TIA. For a cable comprised of multiple individual multimode optical fibers to be sold as an “OM4” cable, each of the constituent multimode fibers must individually meet at least the minimum TIA performance criteria for OM4 fiber. To ensure this, makers of cables containing one or more optical fibers (referred to herein as “cablars”—though to be clear, a company that makes optical fibers may also serve as a cabler—and may make cables using either fibers that it makes, or fibers that it procures from others) will use the optical testing and measurement data that is associated with each spool of fiber (discussed above in Paragraph 21) to select individual multimode optical fibers for inclusion in cable.

23. A typical cabler’s process is shown in the video, “How It’s Made: Optical Fiber Communications Cable,” available at: <https://www.youtube.com/watch?v=fjRqGKU9cUU> <https://www.youtube.com/watch?v=fjRqGKU9cUU>, (herein, “Superior Essex Video”) (last visited January 30, 2019). In this video, a cabler (who in this example does not manufacture its own fiber) explains that the first step is inspection and testing of optical fiber it receives from various manufacturers. *Id.* at 0:33-0:49. This cabler explains that the optical fiber it receives from the various manufactures is already characterized based on fiber performance

characteristics—*i.e.*, the optical testing and measurement data that is associated with each spool of fiber discussed above in Paragraph 21—which allows every optical fiber in every optical fiber cable to be traced through each step of cable production. *Id.* at 1:00-1:18.

24. After inspection and testing of fibers, the next step for assembling cables is coloring the individual fiber with one of 12 industry-standard colors to properly identify the fibers within the cables in accordance with industry standards. *Id.* at 1:19-2:28. As shown, an entire individual spool of fiber is given one color. *See id.* Once colored, the various spools of fibers selected for inclusion in the cable (based the optical testing and measurement data that is associated with each spool of fiber, as discussed above in Paragraph 21), are all aggregated together based on their commonality in characteristics, as discussed above in Paragraph 22. *Id.* at 2:29-2:55. Indeed, the video shows an example of 12 different colored fibers, from 12 different spools, being aggregated into a single cable. *Id.* at 3:34-4:34.

Panduit's Signature Core® Cables Made According to Panduit's Patented Methods

25. Plaintiff Panduit offers cables comprised of multimode optical fibers that are selected according to the processes claimed in Panduit's '027 and '115 Patents, explained above in Paragraphs 11-12 and 16. More specifically, Panduit's Signature Core® cables are comprised of multimode optical fibers that are selected by measuring the peak/pulse delay for pulses traveling through different radii of multimode optical fibers, subtracting the measured peak/pulse delay at one radius from the peak/pulse delay at a second larger radius, and then selecting the optical fibers where this subtraction results in a negative number, as described above in Paragraphs 11-12. Because the fibers selected for Panduit's Signature Core® cables all exhibit a negative DMD Shift, they are higher-performing fibers in terms of higher bandwidth at greater cable lengths, as described above in Paragraph 16.

26. The selection of fibers for inclusion in Panduit's Signature Core[®] cables based on negative DMD Shift is done during the optical testing and measurement step of fiber manufacturing that is described above in Paragraph 19. In addition to the industry-standard measurement of DMD described in Paragraph 19, the testing equipment performing the testing of fibers for Panduit's Signature Core[®] cables (which may include standalone instruments (such as a sampling oscilloscope), test benches and/or computers) additionally applies the comparison of peak/pulse delays described above in Paragraph 25, where the measured peak/pulse delay at one radius is subtracted from the peak/pulse delay at a second larger radius, and optical fibers where this subtraction results in a negative number are selected for inclusion in Panduit's Signature Core[®] cables. This is described in the Panduit patents. *See* Ex. A, '027 Patent at 2:59-64 (“When implemented as a test algorithm in production, [DMD shift] can be used to select fiber, sort fiber, or verify fiber performance. MMF compliant with this new metric will result in higher BER system performance for a given cable length, or allows a greater cable length for a given BER system performance.”).

27. Panduit's Signature Core[®] cables are often referred to as “OM4+” cables, even though OM4+ is not a defined standard, whereas OM3 and OM4 are (as described above in Paragraph 20). In Panduit's case, OM4+ refers to cables containing multimode optical fiber that are all higher-performing negative DMD shifted fibers selected according to Panduit's patented methods, explained above in Paragraphs 16 and 25-26. Indeed, the minimum bandwidth of the fibers in Panduit's Signature Core[®] cables, which are selected according to the processes claimed in the '027 and '115 Patent, is 5,500 MHz·km—exceeding the minimum bandwidth for standard OM4 fiber, which is 4,700 MHz·km, as explained above in Paragraph 20. *See* <https://www.panduit.com/content/dam/panduit/en/landing-page-pdf2/signature-core/signature->

[core-cisco-fiber-optic-cabling-technical-reference.pdf](#) (last visited January 30, 2019), (attached hereto as Ex. D). Panduit's Signature Core[®] cables also maximize multimode fiber bandwidth performance at greater cable lengths. *See id.*; *see also* Ex. A, '027 Patent at 2:61-64 ("MMF compliant with this new [DMD shift] metric will result in higher BER system performance for a given cable length, or allows a greater cable length for a given BER system performance.").

DEFENDANT'S INFRINGING PROCESSES

28. Plaintiff incorporates by reference the allegations contained in Paragraphs 8-27, above.

29. On information and belief, Defendant makes, uses, sells, offers for sale or imports multimode optical fiber for use in communication networks, and cables containing one or more such multimode optical fibers, that are made according to processes that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent (herein, the "Accused Processes").

30. On information and belief, the Accused Processes follow the manufacturing and testing steps set forth above in Paragraphs 17-24, above, which are incorporated herein.

31. For example, on information and belief, Defendant measures the bandwidth performance of the multimode optical fiber, and cables containing one or more such optical fibers, according to industry-standard EMB and DMD metrics as described above in Paragraphs 19-20. *See* Corning Video at 3:30-3:51 ("[T]hen optical and physical parameters are measured to verify performance against specifications."); *see also* Ex. E at 2 (Corning[®] ClearCurve[®] Multimode Optical Fiber Product Information) (explaining that Defendant "ensure[s] EMB via calculated effective modal bandwidth (minEMBc) for all [] ClearCurve multimode optical fibers" and that minEMBc takes into consideration the DMD).

32. Accordingly, on information and belief, the Accused Processes include performing a series of optical tests on each reel of multimode optical fiber in the manner described above in Paragraph 19. *See* Corning Video at 3:30-3:51 (“[T]hen optical and physical parameters are measured to verify performance against specifications.”). On information and belief, and as described in Paragraph 19, the optical tests include measurement and verification of bandwidth using DMD measurements. On information and belief, and as described in Paragraph 19, such DMD measurements involve a scan across the core of the fiber in 1 micron increments to verify the ability of individual modes (at each of the 1 micron incremental radiuses) of the fiber to properly carry the optical signal. On information and belief, and as described in Paragraph 19, DMD is measured in the Accused Processes by inserting light at 1 micron increments at one end of a test piece of fiber and measuring the light output at the other end of the test piece of fiber using testing equipment, which may include standalone instruments (such as a sampling oscilloscope), test benches and/or computers, or another similar DMD-measurement process. On information and belief, and as described in Paragraph 19, DMD is measured in the Accused Processes in accordance with Telecommunications Industry Association standard TIA-455-220.

33. On information and belief, in addition to the industry-standard measurement of DMD described above in Paragraphs 19 and 30, the testing equipment performing the DMD measurements in the Accused Processes (which may include standalone instruments (such as a sampling oscilloscope), test benches and/or computers) additionally applies a comparison of peak and/or pulse delays described above in Paragraphs 11-12, 16 and 25. More specifically, on information and belief, the testing equipment performing the DMD measurements in the Accused Processes measures the peak delay for pulses traveling through different radii of

multimode optical fibers, subtracts the measured peak delay at one radius from the peak delay at a second larger radius, and provides an output indicating whether this subtraction results in a negative number. Alternatively or additionally, on information and belief, the testing equipment performing the DMD measurements in the Accused Processes measures the pulse delay for pulses traveling through different radii of multimode optical fibers, subtracts the measured pulse delay at one radius from the pulse delay at a second larger radius, and provides an output indicating whether this subtraction results in a negative number. On information and belief, multimode optical fiber for use in communication networks is selected according to the Accused Processes where the output of this comparison is a negative number, or negative DMD Shift, as described above in Paragraph 16. This is described in the Panduit patents. *See* Ex. A, '027 Patent at 2:59-64 (“When implemented as a test algorithm in production, [DMD shift] can be used to select fiber, sort fiber, or verify fiber performance. MMF compliant with this new metric will result in higher BER system performance for a given cable length, or allows a greater cable length for a given BER system performance.”).

34. On information and belief, and as described above in Paragraph 21, the Accused Processes include recording the aforementioned measurement data—including the output of the comparison of peak and/or pulse delays described above in Paragraph 33—into documentation that is associated with each spool of fiber (or cables containing such fibers) made according to the Accused Processes, so that the spools or cables may be selected based on the recorded data. *See* Corning Video at 3:50-4:00 (explaining that Corning fiber reels are assigned a unique serial number so that testing data remains associated with each reel of optical fiber).

35. The multimode optical fiber that is made or selected according to the Accused Processes (as described above in Paragraphs 8-34, and the Paragraphs cited therein) is herein referred to as “Accused Fibers.”

36. On information and belief, the reels of Accused Fibers may either be sold by Defendant as-is, or they may be further processed by Defendant to make them into cables containing one or more Accused Fibers. Such cables are herein referred to as “Accused Defendant Cables.” To the extent that the Accused Fibers are further processed into cables by third-parties, such cables are herein referred to as “Accused Third-Party Cables.”

37. As described above in Paragraph 22, fibers selected for inclusion in cables must have the same performance characteristics. Therefore, on information and belief, the Accused Fibers are similarly selected for inclusion in the Accused Defendant Cables and Accused Third-Party Cables based on their performance characteristics. On information and belief, the selection of Accused Fibers for inclusion in the Accused Defendant Cables and Accused Third-Party Cables is based on the output of the comparison of peak and/or pulse delays described above in Paragraph 33 (which, on information and belief, may be recorded into documentation, as described above in Paragraph 34). Therefore, on information and belief, the Accused Defendant Cables and Accused Third-Party Cables are made according to Accused Processes that infringe, either literally or under the doctrine of equivalents, one or more claims of the ’027 Patent and ’115 Patent.

DEFENDANT’S INFRINGING PRODUCTS

38. As noted above, and on information and belief, the Accused Fibers and Accused Defendant Cables are made by Defendant according to Accused Processes that infringe, either

literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent. Examples of Accused Fibers and Accused Defendant Cables are discussed below.

39. On information and belief, Defendant sells Accused Fibers and Accused Defendant Cables designated or identified as “OM4+” or “OM4 Plus.”

40. On information and belief, Defendant alternatively designates or identifies its “OM4+” or “OM4 Plus” fibers and cables as “OM4 Extended”; “OM4 Extended Distance” or “OM4 Extended 10G Distance.”

41. Searching Defendant’s Fiber Optic Cable catalog for “OM4+” yields at least 663 products which, on information and belief, are Accused Defendant Cables:

Home / Fiber Optic Cables

Fiber Optic Cables

Refine By Selected Optical Communications x Clear All 663 items found

Search within these results

Catalog

Optical Communications (663) x

Application

- General Building Applications (2)
- General Purpose Horizontal (2)
- Indoor Horizontal (2)
- Vertical Riser (2)

Cable Type

- Loose Tube (340)

Breakout Tight Buffer Indoor Cable (2.0mm)
7 PRODUCTS

FREEDM® LST™ Loose Tube, Gel-Free Cable, Riser
12 PRODUCTS

FREEDM® LST™ Loose Tube, Gel-Free, Interlocking Armored Cable, Riser
12 PRODUCTS

<https://ecatalog.corning.com/optical-communications/AU/en/Fiber-Optic-Cables/c/fiber-optic-cables?productsSearchState=&resourcesSearchState=&relatedContentSearchState=&initialResultType=products&searchText=&> (last visited January 30, 2019).

42. Searching Defendant’s Fiber Optic Cable catalog for “OM4 Extended” yields at least 289 products which, on information and belief, are Accused Defendant Cables:

Fiber Optic Cables

Refine By

Selected Optical Communications x Clear All

289 items found

Search within these results

om4 extended

Catalog

Optical Communications (289) x

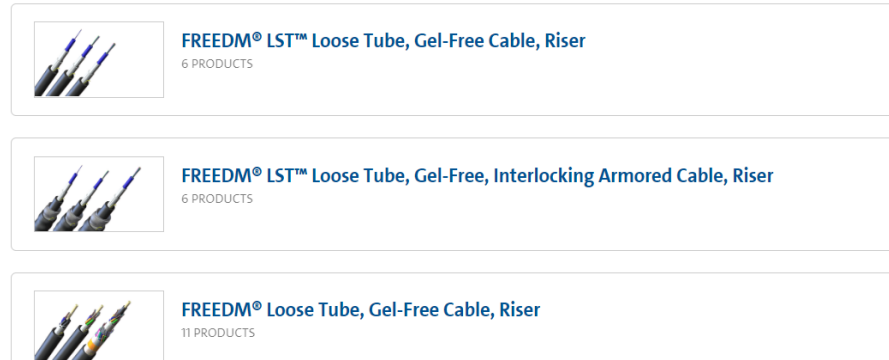
Cable Type

Loose Tube (148)

Ribbon (44)

Tight-Buffered (97)

Environment



FREEDM® LST™ Loose Tube, Gel-Free Cable, Riser
6 PRODUCTS

FREEDM® LST™ Loose Tube, Gel-Free, Interlocking Armored Cable, Riser
6 PRODUCTS

FREEDM® Loose Tube, Gel-Free Cable, Riser
11 PRODUCTS

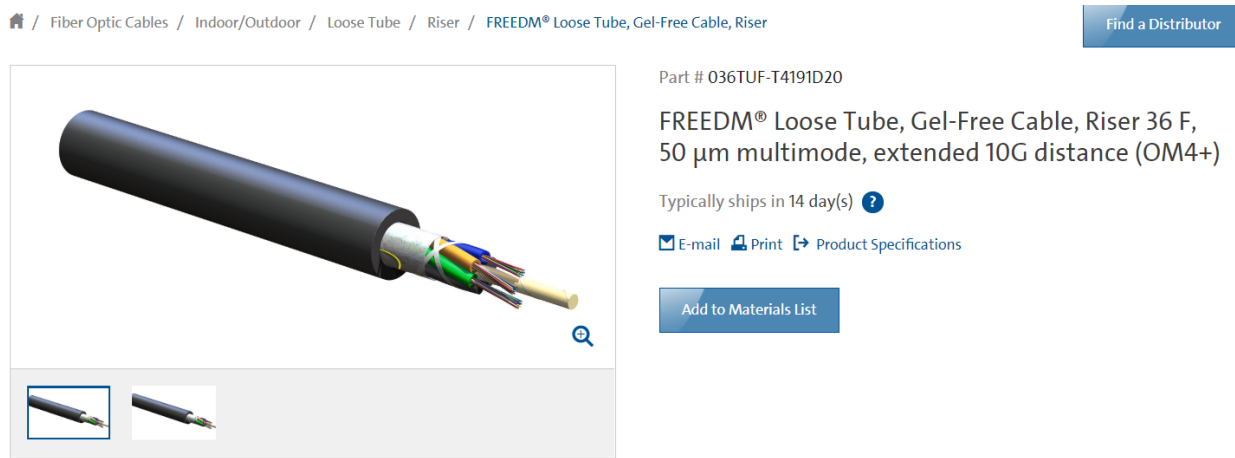
<https://ecatalog.corning.com/optical-communications/AU/en/Fiber-Optic-Cables/c/fiber-optic-cables?productsSearchState=&resourcesSearchState=&relatedContentSearchState=&initialResultType=products&searchText=> (last visited January 30, 2019).

43. As noted above in Paragraph 27, neither “OM4+” nor “OM4 Plus” are industry-defined standards. Panduit uses these designations refer to cables containing multimode optical fiber that are all higher-performing negative DMD shifted fibers selected according to Panduit’s patented methods.

44. Likewise, on information and belief, Defendant’s use of the designations “OM4+”; “OM4 Plus”; “OM4 Extended” or “OM4 Extended 10G Distance” on its multimode optical fibers and cables similarly refer to multimode optical fibers that are all higher-performing negative DMD shifted fibers selected according to Panduit’s patented methods, or cables containing the same, and are therefore Accused Fibers and Accused Defendant Cables, as set forth above.

45. As an example of such an Accused Defendant Cable, on information and belief, Defendant makes, uses, sells, offers to sell or imports a Corning OM4+ Cable called

“FREEDM® Loose Tube, Gel-Free Cable, Riser 36 F, 50 μm multimode, extended 10G distance (OM4+)”:



<https://ecatalog.corning.com/optical-communications/AU/en/Fiber-Optic-Cables/Indoor-Outdoor/Loose-Tube/Riser/FREEDM%C2%AE-Loose-Tube%2C-Gel-Free-Cable%2C-Riser/p/036TUF-T4191D20> (last visited January 30, 2019) (attached hereto as Ex. F).

46. On information and belief, when the specifications for the aforementioned “FREEDM® Loose Tube, Gel-Free Cable, Riser 36 F, 50 μm multimode, extended 10G distance (OM4+)” (available here: <https://ecatalog.corning.com/optical-communications/AU/en/Fiber-Optic-Cables/Indoor-Outdoor/Loose-Tube/Riser/FREEDM%C2%AE-Loose-Tube%2C-Gel-Free-Cable%2C-Riser/p/036TUF-T4191D20> (last visited January 30, 2019) (attached hereto as Ex. F)) are compared with the specifications for the OM4 version of the same cable, called “FREEDM® Loose Tube, Gel-Free Cable, Riser 36 F, 50 μm multimode (OM4)” (available here: <https://ecatalog.corning.com/optical-communications/AU/en/Fiber-Optic-Cables/Indoor-Outdoor/Loose-Tube/Riser/FREEDM%C2%AE-Loose-Tube%2C-Gel-Free-Cable%2C-Riser/p/036TUF-T4190D20> (last visited January 30, 2019) (attached hereto as Ex. G)), the OM4+ version has a longer, 600 meter, range for transmission of 10 Gigbit Ethernet (vs. 550

meters for the OM4 version) and a higher Minimum effective Modal Bandwidth (EMB) of 5,350 MHz·km (vs. 4,700 MHz·km for the OM4 version).

47. On information and belief, when comparing the specifications of the OM4+ and OM4 versions of various other configurations of Corning cables, they all exhibit the same performance differences: the OM4+ versions have a longer 10 Gigbit Ethernet range of 600 meters (vs. 550 meters for the OM4 versions) and a higher Minimum effective Modal Bandwidth (EMB) of 5,350 MHz·km (vs. 4,700 MHz·km for the OM4 versions).

48. As noted above in Paragraph 27, the minimum bandwidth of the fibers in Panduit's Signature Core[®] cables, which are selected according to the processes claimed in the '027 and '115 Patent, is 5,500 MHz·km—exceeding the minimum bandwidth for standard OM4 fiber, which is 4,700 MHz·km. As noted above in Paragraph 27, Panduit's Signature Core[®] cables maximize multimode fiber bandwidth performance at greater cable lengths.

49. On Panduit's current information and belief, selection of fibers according to the methods claimed and described in the '026 and '115 Patents is the only way to achieve the higher "OM4+" performance, found in Panduit's Signature Core[®] cables, as explained above in Paragraph 27, and as purportedly found in Defendant's Accused Fibers and Accused Defendant Cables, which are designated as "OM4+"; "OM4 Plus"; "OM4 Extended"; "OM4 Extended Distance" or "OM4 Extended 10G Distance," as described above in Paragraphs 46-47.

50. Therefore, on information and belief, Defendant's Accused Fibers and Accused Defendant Cables have been selected by Defendant according to Accused Processes in a manner that infringes, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent, as discussed in Paragraphs 29-37 above.

INFRINGING THIRD-PARTY PRODUCTS

51. As discussed above in Paragraph 36, and on information and belief, reels of Accused Fibers made by Defendant may be further processed into cables by third-parties (herein, “Third-Party Cablers”). As noted above, such cables are referred to herein as “Accused Third-Party Cables.” On information and belief, Third-Party Cablers make these Accused Third-Party Cables using Accused Fibers that, as described above in Paragraphs 8-37 (and the Paragraphs cited therein) were made or selected, either by Defendant or by the Third-Party Cablers, according to Accused Processes that infringe, either literally or under the doctrine of equivalents, one or more claims of the ’027 Patent and ’115 Patent.

52. Additionally, on information and belief, and as described above in Paragraphs 21 and 34, the Accused Processes include recording the aforementioned measurement data—including the output of the comparison of peak and/or pulse delays described above in Paragraph 33—into documentation that is associated with each spool of Accused Fibers so that the spools or cables may be selected based on the recorded data.

53. Moreover, on information and belief, and as described above in Paragraphs 22 and 37, fibers selected for inclusion in cables must have the same performance characteristics. Therefore, on information and belief, and as described above in Paragraph 37, the Accused Fibers are similarly selected for inclusion in the Accused Third-Party Cables—either by Defendant or by the Third-Party Cablers (to the extent the Third-Party Cabler performs this selection, the performance of such steps is attributable to Defendant because it directs and controls the performance of those functions and/or because Defendant is in a joint enterprise with such Third-Party Cablers)—based on the Accused Fibers’ performance characteristics. On information and belief, and as described above in Paragraph 37, such selection of Accused Fibers

for inclusion in the Accused Third-Party Cables—once again, either by Defendant or by the Third-Party Cablers who are directed, controlled and/or in a joint enterprise with Defendant—is based on the output of the comparison of peak and/or pulse delays described above in Paragraph 33 (which, on information and belief, is recorded into documentation by Defendant, as described above in Paragraphs 34 and 52). Therefore, on information and belief, and as described above in Paragraph 37, the Accused Third-Party Cables are made by the Third Party Cablers according to Accused Processes that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent.

54. On information and belief, Defendant had knowledge of the '027 Patent and '115 Patent, and had knowledge that the Accused Processes infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent since at least on or about a December 20, 2017 meeting between Plaintiff and Defendant wherein such was explained to Defendant.

55. On information and belief, with the knowledge described above in Paragraph 54, and with specific intent that the Third-Party Cablers would make Accused Third-Party Cables according to Accused Processes that infringe, Defendant made, used, sold or offered for sale Accused Fibers and/or the documentation described above in Paragraph 52, to the Third-Party Cablers. On information and belief, and as described above in Paragraph 53, the Accused Fibers and/or this documentation are for use in practicing the Accused Processes that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent. On information and belief, and as described above in Paragraph 53, this the Accused Fibers and/or documentation are a material part of practicing the Accused Processes. On information and belief, with the knowledge described above in Paragraph 54, Defendant knew

that the the Accused Fibers and/or documentation described above in Paragraph 52 were made or especially adapted for use in Accused Processes that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent. On information and belief, the the Accused Fibers and/or documentation described above in Paragraph 52 are not a staple article or commodity of commerce suitable for substantial non-infringing use.

TESTING CONFIRMS INFRINGEMENT

56. Confirming the foregoing, Panduit has obtained and tested specimens of Accused Defendant Cables and Accused Third-Party Cables, which on information and belief contain Accused Fiber. For each tested specimen, Panduit measured the peak delay for pulses traveling through different radii of each multimode optical fiber within the cable, subtracting the measured peak delay at one radius from the peak delay at a second larger radius. For each tested specimen, Panduit also measured the pulse delay for pulses traveling through different radii of each multimode optical fiber within the cable, subtracting the measured pulse delay at one radius from the pulse delay at a second larger radius. For each of 12 fibers in each of multiple tested specimens, this subtraction resulted in a negative number—*i.e.*, all 12 of the fibers in each of multiple tested specimens systematically exhibited a negative DMD Shift. More specifically, for each of 12 fibers in each of multiple tested specimens, measurement of relative peak and pulse delays indicates that for the low radial region 1-3 microns and high radial region 15-17 microns, such fiber systematically (*i.e.*, in all 12 fibers in a cable) has a negative DMD profile.

57. On Panduit's current information and belief, selection of fibers according to the methods claimed and described in the '026 and '115 Patents is the only way to achieve the systematic exhibition of a negative DMD Shift—particularly when focused on comparison of the low radial region 1-3 microns and high radial region 15-17 microns—in all 12 fibers in multiple

tested specimens of cable. On Panduit's current information and belief, achieving such a systematic exhibition without selection of fibers according to the methods claimed and described in the '026 and '115 Patents is a statistical near-impossibility, and manufacturing realities confirm that purposeful selection is required to achieve this outcome.

58. For example, multimode optical fiber that is drawn according to the above-described process, even if all drawn from the same preform or optical fiber blank, will contain lengths of optical fiber that have a positive DMD Shift, lengths that have a negative DMD Shift, and a relatively small percentage of the length that has have zero, or nearly zero, DMD Shift. *See Ex. A, '027 Patent, at 5:43-6:3*(explaining that the length of fibers having a zero DMD Shift is small, and most fibers exhibit either a positive or negative shift). Moreover, as explained in Paragraph 18, a single preform will yield approximately 7 or 8 spools of 17.6 km length—potentially necessitating multiple different preforms to make a 12-fiber cable. Each individual spool of fiber is handled at multiple junctures during the cabling process, including coloring, as described above in Paragraph 24 and as shown in the video cited therein. The combination of these manufacturing realities, combined with the statistical near-impossibility described above in Paragraph 57, means that selection of fibers according to the methods claimed and described in the '026 and '115 Patents is the only way to achieve the systematic exhibition of a negative DMD Shift described above in Paragraph 56.

59. Therefore, on information and belief, the Accused Fibers, Accused Defendant Cables, and Accused Third-Party Cables have been selected by Defendant and/or third parties such as the aforementioned Third-Party Cablers who are directed, controlled and/or in a joint enterprise with Defendant, according to Accused Processes in a manner that infringes, either

literally or under the doctrine of equivalents, one or more claims of the '027 Patent and '115 Patent, as discussed above.

COUNT I – DIRECT INFRINGEMENT OF U.S. PATENT NO. 8,351,027

60. Plaintiff incorporates by reference the allegations contained in Paragraphs 8-59 above.

61. On information and belief, Defendant has performed Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent in violation of at least 35 U.S.C. § 271(a). Defendant's infringement will continue unless enjoined by this Court.

62. More specifically, on information and belief, the Accused Processes, which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent in violation of at least 35 U.S.C. § 271(a) are performed by Defendant as set forth above in Paragraphs 29-34, which are incorporated herein.

63. On information and belief, Defendant has imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Defendant Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent in violation of at least 35 U.S.C. § 271(g). Defendant's infringement will continue unless enjoined by this Court.

64. More specifically, on information and belief, Defendant's importation into the United States, or manufacture, use, offer for sale, or sale within the United States of Accused Fibers and Accused Defendant Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of

the '027 Patent in violation of at least 35 U.S.C. § 271(g) is set forth above in Paragraphs 35-50, which are incorporated herein

65. On information and belief, in connection with the acts described in paragraphs 61-64, and the paragraphs incorporated therein, Defendant has imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Defendant Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent, including claim 1, which reads as follows:

1. A method for selecting multimode optical fiber for use in a communications network comprising:

measuring the peak delay for pulses traveling through different radii of a number of multimode optical fibers;

subtracting the peak delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber; and

choosing for use in a communications network those optical fibers in which the result of subtracting the peak delay at the first radius from the peak delay at the second radius is a negative number.

66. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant selects multimode optical fiber for use in a communication network

67. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant measures the peak delay for pulses traveling through different radii of a number of multimode optical fibers.

68. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant subtracts the peak delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber.

69. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant chooses for use in a communications network those optical fibers in which the result of subtracting the peak delay at the first radius from the peak delay at the second radius is a negative number.

70. To the extent any third party performs any of the steps discussed above in Paragraphs 61-69, and the paragraphs incorporated therein, the performance of such steps is attributable to Defendant because it directs and controls the performance of those functions and/or because Defendant is in a joint enterprise with such third party.

71. Defendant's infringement has damaged and continues to damage and injure Plaintiff. Plaintiff's injury is irreparable and will continue unless and until Defendant is enjoined by this Court from further infringement.

COUNT II – INDIRECT INFRINGEMENT OF U.S. PATENT NO. 8,351,027

72. Plaintiff incorporates by reference the allegations contained in Paragraphs 8-71 above.

73. On information and belief, Defendant, with knowledge of the '027 Patent and of the infringement thereof, actively induce others, such as the aforementioned Third-Party Cablers, to import into the United States, or manufacture, use, offer for sale, or sell within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent in violation of at least 35 U.S.C. § 271(b). On information and belief, Defendant's knowledge of the '027 Patent and of the infringement thereof occurred at least on or about a December 20, 2017 meeting between Plaintiff and Defendant wherein such

was explained to Defendant. Defendant's infringement will continue unless enjoined by this Court.

74. More specifically, on information and belief, Defendant's active inducement of others, such as the aforementioned Third-Party Cablers, to import into the United States, or manufacture, use, offer for sale, or sell within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent in violation of at least 35 U.S.C. § 271(b) is set forth in Paragraphs 51-55, which are incorporated herein.

75. On information and belief, Defendant, with knowledge of the '027 Patent and of the infringement thereof, has imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent, or a material or apparatus for use in practicing, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use in violation of at least 35 U.S.C. §§ 271(c), (g). Defendant's knowledge of the '027 Patent and of the infringement thereof occurred at least on or about a December 20, 2017 meeting between Plaintiff and Defendant wherein such was explained to Defendant. Defendant's infringement will continue unless enjoined by this Court.

76. More specifically, on information and belief, Defendant's contributory infringement involving Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent in violation of at least 35 U.S.C. §§ 271(c), (g) is set forth in Paragraphs 51-55, which are incorporated herein.

77. On information and belief, in connection with the acts described in paragraphs 73-76, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, have imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '027 Patent, including claim 1, which reads as follows:

1. A method for selecting multimode optical fiber for use in a communications network comprising:

measuring the peak delay for pulses traveling through different radii of a number of multimode optical fibers;

subtracting the peak delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber; and

choosing for use in a communications network those optical fibers in which the result of subtracting the peak delay at the first radius from the peak delay at the second radius is a negative number.

78. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, select multimode optical fiber for use in a communication network

79. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, measure the peak delay for pulses traveling through different radii of a number of multimode optical fibers.

80. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, subtract the peak delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber.

81. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, choose for use in a communications network those optical fibers in which the result of subtracting the peak delay at the first radius from the peak delay at the second radius is a negative number.

82. To the extent any third party performs any of the steps discussed above in Paragraphs 73-81, and the paragraphs incorporated therein, the performance of such steps is attributable to Defendant because it directs and controls the performance of those functions and/or because Defendant is in a joint enterprise with such third party.

83. Defendant's infringement has damaged and continues to damage and injure Plaintiff. Plaintiff's injury is irreparable and will continue unless and until Defendant is enjoined by this Court from further infringement.

COUNT III – DIRECT INFRINGEMENT OF U.S. PATENT NO. 8,488,115

84. Plaintiff incorporates by reference the allegations contained in Paragraphs 8-59 above.

85. On information and belief, Defendant has performed Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. § 271(a). Defendant's infringement will continue unless enjoined by this Court.

86. More specifically, on information and belief, the Accused Processes, which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. § 271(a) are performed by Defendant as set forth above in Paragraphs 29-34, which are incorporated herein.

87. On information and belief, Defendant has imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Defendant Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. § 271(g). Defendant's infringement will continue unless enjoined by this Court.

88. More specifically, on information and belief, Defendant's importation into the United States, or manufacture, use, offer for sale, or sale within the United States of Accused Fibers and Accused Defendant Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. § 271(g) is set forth above in Paragraphs 35-50, which are incorporated herein

89. On information and belief, in connection with the acts described in paragraphs 85-88, and the paragraphs incorporated therein, Defendant has imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Defendant Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent, including claim 1, which reads as follows:

1. A method for selecting multimode optical fiber for use in a communications network, said network comprising:

measuring the pulse delay for pulses traveling through different radii of a number of multimode optical fibers;

subtracting the pulse delay at a first radius of each multimode optical fiber from the pulse delay at a second, larger radius of each multimode fiber; and

choosing for use in a communications network those optical fibers in which the result of subtracting the pulse delay at the first radius from the pulse delay at the second radius is a negative number.

90. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, select multimode optical fiber for use in a communication network

91. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, measure the pulse delay for pulses traveling through different radii of a number of multimode optical fibers.

92. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, subtract the pulse delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber.

93. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, choose for use in a communications network those optical fibers in which the result of subtracting the pulse delay at the first radius from the pulse delay at the second radius is a negative number.

94. To the extent any third party performs any of the steps discussed above in Paragraphs 85-93, and the paragraphs incorporated therein, the performance of such steps is attributable to Defendant because it directs and controls the performance of those functions and/or because Defendant is in a joint enterprise with such third party.

95. Defendant's infringement has damaged and continues to damage and injure Plaintiff. Plaintiff's injury is irreparable and will continue unless and until Defendant is enjoined by this Court from further infringement.

COUNT IV – INDIRECT INFRINGEMENT OF U.S. PATENT NO. 8,488,115

96. Plaintiff incorporates by reference the allegations contained in Paragraphs 8-59 and 85-95 above.

97. On information and belief, Defendant, with knowledge of the '115 Patent and of the infringement thereof, actively induce others, such as the aforementioned Third-Party Cablers, to import into the United States, or manufacture, use, offer for sale, or sell within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. § 271(b). On information and belief, Defendant's knowledge of the '115 Patent and of the infringement thereof occurred at least on or about a December 20, 2017 meeting between Plaintiff and Defendant wherein such was explained to Defendant. Defendant's infringement will continue unless enjoined by this Court.

98. More specifically, on information and belief, Defendant's active inducement of others, such as the aforementioned Third-Party Cablers, to import into the United States, or manufacture, use, offer for sale, or sell within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. § 271(b) is set forth in Paragraphs 51-55, which are incorporated herein.

99. On information and belief, Defendant, with knowledge of the '115 Patent and of the infringement thereof, has imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent, or a material or apparatus for use in practicing, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial non-infringing use in violation of at least 35 U.S.C. §§ 271(c), (g). Defendant's knowledge of the '115 Patent and of the infringement thereof occurred at least on or about a December 20, 2017 meeting between Plaintiff and Defendant wherein such was explained to Defendant. Defendant's infringement will continue unless enjoined by this Court.

100. More specifically, on information and belief, Defendant's contributory infringement involving Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent in violation of at least 35 U.S.C. §§ 271(c), (g) is set forth in Paragraphs 51-55, which are incorporated herein.

101. On information and belief, in connection with the acts described in paragraphs 96-99, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, have imported into the United States, or manufactured, used, offered for sale, or sold within the United States, Accused Fibers and Accused Third-Party Cables, made or selected by Accused Processes which include methods that infringe, either literally or under the doctrine of equivalents, one or more claims of the '115 Patent, including claim 1, which reads as follows:

1. A method for selecting multimode optical fiber for use in a communications network, said network comprising:

measuring the pulse delay for pulses traveling through different radii of a number of multimode optical fibers;

subtracting the pulse delay at a first radius of each multimode optical fiber from the pulse delay at a second, larger radius of each multimode fiber; and

choosing for use in a communications network those optical fibers in which the result of subtracting the pulse delay at the first radius from the pulse delay at the second radius is a negative number.

102. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, select multimode optical fiber for use in a communication network

103. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, measure the pulse delay for pulses traveling through different radii of a number of multimode optical fibers.

104. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, subtract the pulse delay at a first radius of each multimode optical fiber from the peak delay at a second, larger radius of each multimode fiber.

105. On information and belief, and as described above in Paragraphs 33, 34, 37, 49-50 and 57-59, Defendant, and/or others actively induced by Defendant, such as the aforementioned Third-Party Cablers, choose for use in a communications network those optical fibers in which the result of subtracting the pulse delay at the first radius from the pulse delay at the second radius is a negative number.

106. To the extent any third party performs any of the steps discussed above in Paragraphs 97-105, and the paragraphs incorporated therein, the performance of such steps is attributable to Defendant because it directs and controls the performance of those functions and/or because Defendant is in a joint enterprise with such third party.

107. Defendant's infringement has damaged and continues to damage and injure Plaintiff. Plaintiff's injury is irreparable and will continue unless and until Defendant is enjoined by this Court from further infringement.

JURY DEMAND

108. Plaintiff, pursuant to Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests the following relief:

A. A judgment in favor of Plaintiff that Defendant has directly and/or indirectly infringed one or more claims of the '027 Patent and/or one or more claims of the '115 Patent, literally or under the doctrine of equivalents;

B. A judgment that the '027 and '115 Patents are valid and enforceable patents;

C. That the Court preliminarily and permanently enjoin Defendant, their officers, partners, agents, servants, employees, parents, subsidiaries, divisions, affiliate corporations, joint ventures, other related business entities and all other persons acting in concert, participation, or in privity with them, and their successors and assigns, from any manufacture, use, offer to sell, or sale within the United States, or importation into the United States of fiber optic materials, including but not limited to multimode optical fiber, or any product containing such materials,

made or selected according to methods that infringe the '027 and/or '115 Patents, literally or under the doctrine of equivalents, prior to the expiration of the '027 and '115 Patents;

D. A judgment requiring Defendant to pay Plaintiff damages adequate to compensate for infringement under 35 U.S.C. § 284, which damages in no event shall be less than a reasonable royalty for the use made of the inventions of the '027 and '115 Patents, including pre- and post-judgment interest and costs, including expenses and disbursements;

E. That the Court declare this an exceptional case and award Plaintiff its attorneys' fees, as provided by 35 U.S.C. § 285; and

F. That Plaintiff be awarded such other and further relief as this Court may deem just and proper.

Dated: February 21, 2019

Respectfully submitted,

/s/ F. Hill Allen

F. Hill Allen

N.C. State Bar No. 18884

THARRINGTON SMITH, L.L.P.

Post Office Box 1151

150 Fayetteville Street, Suite 1800

Raleigh, N.C. 27602-1151

Telephone: (919) 821-4711

Facsimile: (919) 829-1583

Email: hallen@tharringtonsmith.com

Kelly J. Eberspecher*

Daniel S. Stringfield*

STEPTOE & JOHNSON LLP

115 South LaSalle Street, Suite 3100

Chicago, IL 60603

(312) 577-1300

keberspecher@steptoe.com

dstringfield@steptoe.com

Katherine D. Cappaert*
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue, N.W.
Washington, DC 20036
(202) 429-6407
kcappaert@steptoe.com

** appearing by Notice of Special Appearance*

Counsel for Plaintiff Panduit Corp.

CERTIFICATE OF SERVICE

I hereby certify that, on the 21st day of February, 2019, I electronically filed the **FIRST AMENDED COMPLAINT** with the Clerk of Court using the CM/ECF system, which will send notification to all counsel of record.

/s/ F. Hill Allen
F. Hill Allen
NC State Bar No. 18884
THARRINGTON SMITH, L.L.P.
209 Fayetteville Street
P.O. Box 1151
Raleigh, North Carolina 27602
Phone: (919) 821-4711
Facsimile: (919) 829-1583
Email: hallen@tharringtonsmith.com