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10 Attorneys for Plaintiff  
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12 UNITED STATES DISTRICT COURT  
 13 CENTRAL DISTRICT OF CALIFORNIA  
 14 SOUTHERN DIVISION

15 CORE OPTICAL TECHNOLOGIES,  
 16 LLC,

17 Plaintiff,

18 v.

19 JUNIPER NETWORKS, INC., a  
 Delaware Corporation, and DOES 1  
 20 through 10, inclusive,

21 Defendants.

CASE NO: 8:19-cv-2189

**SECOND AMENDED COMPLAINT  
 FOR PATENT INFRINGEMENT**

**JURY TRIAL DEMANDED**

23 Plaintiff Core Optical Technologies, LLC (“Plaintiff” or “Core”), through its  
 24 undersigned counsel, hereby files this Second Amended Complaint against  
 25 Defendants Juniper Networks, Inc. (“Juniper”) and Does 1 through 10, inclusive  
 26 (“Does”) (collectively, “Defendants”). For its complaint, Core alleges as follows:  
 27  
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**THE PARTIES**

1  
2 1. Core is a limited liability company organized and existing under the laws  
3 of the State of California. Core has a principal place of business located at 18792 Via  
4 Palatino, Irvine, California 92603.

5 2. Defendant Juniper is a corporation organized and existing under the laws  
6 of the State of Delaware, which maintains its principal place of business at 1194  
7 Mathilda Avenue, Sunnyvale, California. Juniper also maintains a regular and  
8 established place of business at 6868 Cortona Drive, Goleta, CA 93117.

9 3. Defendants Does are: (i) customers and/or end-users of Juniper’s fiber  
10 optic cross polarization interference cancelling devices; (ii) other end-users of  
11 Juniper’s fiber optic cross polarization interference cancelling devices; (iii) persons,  
12 such as third-party vendors or contractors, who have assisted Juniper or the other Doe  
13 Defendants in using Juniper’s fiber optic cross polarization interference cancelling  
14 devices in a manner that infringes the Asserted Claims (as defined below); and/or (iv)  
15 other persons, all of whom have infringed the Asserted Claims, or who have assisted  
16 other Defendants in infringing the Asserted Claims, by or through their use of  
17 Juniper’s fiber optic cross polarization interference cancelling devices

18 4. The true names and identities of the Doe Defendants are unknown at this  
19 time. Therefore, they are being sued under their fictitious names. At such time as their  
20 true names are ascertained, this Complaint will be amended to so reflect.

21 5. On information and belief, each Doe Defendant has directly and/or  
22 indirectly infringed the Asserted Claims, either by themselves or in concert with other  
23 Defendants, by using Juniper’s fiber optic cross polarization interference cancelling  
24 devices in the United States. Core reserves the right to amend this Complaint to  
25 identify the specific infringing acts of each Doe Defendant once it learns such facts.  
26 Core expect that most, or all, of such facts are non-public. Core expects to uncover  
27 such facts in discovery.  
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**JURISDICTION AND VENUE**

1  
2           6.       This is an action for infringement of method claims, and *only* method  
3 claims, of U.S. Patent No. 6,782,211, entitled “Cross Polarization Interface [sic]  
4 Canceler,” which was duly issued by the United States Patent and Trademark Office  
5 on August 24, 2004 (“the ’211 patent”). The asserted claims in this case are *only*  
6 method claims 30, 32, 33, 35 and 37 of the ’211 patent (“the Asserted Claims”).

7           7.       This Court has subject matter jurisdiction over this case under 28 U.S.C.  
8 §§ 1331 and 1338(a), because the claims arise under the patent laws of the United  
9 States, 35 U.S.C. §§ 1, *et seq.*

10           8.       This Court has personal jurisdiction over Defendants, because  
11 Defendants conduct continuous and systematic business in California, including, upon  
12 information and belief, in this judicial district.

13           9.       This Court also has personal jurisdiction over Defendants because  
14 Defendants maintain regular and established places of business in this judicial district.  
15 In particular, Defendant Juniper maintains a regular and established place of business  
16 at its facility located at 6868 Cortona Drive, Goleta, CA 93117.

17           10.       This Court also has personal jurisdiction over Defendants because, on  
18 information and belief, Defendants have committed acts of infringement in California,  
19 and in this judicial district. Specifically, on information and belief, Defendants have  
20 marketed, manufactured, used, offered for sale, sold, imported, and/or distributed  
21 within California, and in this judicial district, devices that can be configured to cancel  
22 cross polarization interference in received fiber optic signals—which, as so used and  
23 configured, perform all the steps of the Asserted Claims. Also, on information and  
24 belief, Defendants have performed all the steps of at least one of the Asserted Claims  
25 in California, and in this judicial district. Also, on information and belief, Defendants  
26 have induced and/or contributed to customers' infringing uses of the cross-  
27 polarization interference canceling devices in California, and in this judicial district.

28           11.       Venue is proper in this judicial district against Defendants, because: (i)

1 Defendant Juniper has a regular and established place of business in this judicial  
2 district, including its facility at 6868 Cortona Drive, Goleta, CA 93117; and (ii) on  
3 information and belief, each Defendant has committed acts of infringement in this  
4 judicial district, including performing all steps of the method(s) claimed in the  
5 Asserted Claims in this judicial district; and/or performing acts of contributory or  
6 induced infringement in this judicial district. *See* 28 U.S.C. § 1400(b).

7 12. In addition, venue is proper because Core resides in this judicial district,  
8 and Core has and continues to suffer harm in this judicial district. Moreover, a  
9 substantial part of the events giving rise to this action occurred in this judicial district,  
10 including the inventive activities giving rise to the '211 patent.

### 11 **THE ASSERTED PATENT**

12 13. Mark Core, the sole named inventor of the '211 patent, earned his Ph.D.  
13 in electrical and computer engineering from the University of California, Irvine, and  
14 is the Manager of Core Optical Technologies, LLC. The pioneering technology set  
15 forth in the '211 patent greatly increases data transmission rates in fiber optic  
16 networks, by enabling two optical signals transmitted in the same frequency band, but  
17 at generally orthogonal polarizations, to be recovered at a receiver. The patented  
18 technology that enables the recovery of these signals includes coherent optical  
19 receivers and related methods that mitigate cross-polarization interference associated  
20 with the transmission of the signals through the fiber optic network. The coherent  
21 receivers and their patented methods mitigate the effects of polarization dependent  
22 loss and dispersion effects that limit the performance of optical networks, greatly  
23 increasing the transmission distance and eliminating or reducing the need for a variety  
24 of conventional network equipment such as amplifiers, regenerators, and  
25 compensators. The patented technology set forth in the '211 patent has been adopted  
26 by Defendants in, at least, their packet-optical transport solutions described below.

27 14. On November 5, 1998, Mark Core filed with the United States Patent  
28 and Trademark Office (“USPTO”) Provisional Patent Application No. 60/107,123

1 (“the ’123 application”) directed to his pioneering inventions. On November 4, 1999,  
2 Mark Core filed with the USPTO a non-provisional patent application, U.S. Patent  
3 Application No. 09/434,213 (“the ’213 application”), claiming priority to the ’123  
4 application. On August 24, 2004, the USPTO issued the ’211 patent from the ’213  
5 application. The entire right, title, and interest in and to the ’211 patent, including all  
6 rights to past damages, has been assigned to Core in an assignment recorded with the  
7 USPTO. The ’211 patent is attached as Exhibit 1 to this Complaint.

8 15. The Asserted Claims of the ’211 patent are all method claims. One of  
9 these is claim 33, an independent method claim. Claim 33 is reproduced below, with  
10 parenthetical annotations to identify the different elements of the claim:

11 33. A method comprising:

12 (33a) receiving an optical signal over a single fiber optic  
13 transmission medium,

14 (33a1) the optical signal being at least two  
15 polarized field components independently  
16 modulated with independent information bearing  
17 waveforms; and

18 (33b) mitigating cross polarization interference  
19 associated with the at least two modulated polarized field  
20 components to reconstruct the information bearing  
21 waveforms

22 (33b1) using a plurality of matrix coefficients  
23 being complex values to apply both amplitude  
24 scaling and phase shifting to the at least two  
25 modulated polarized field components.

26 **DEFENDANTS’ CROSS POLARIZATION CANCELLING DEVICES**

27 16. Defendants and/or their divisions, subsidiaries, and/or agents are  
28 engaged in the business of making, using, distributing, importing, offering for sale  
and/or selling devices that can be configured to mitigate and/or cancel cross

1 polarization interference in received fiber optic signals. As so configured, the devices,  
2 when used, perform all the steps of the methods claimed in the Asserted Claims  
3 during normal use. These devices include, but are not limited to: (i) the PTX 3000  
4 and PTX 5000 Optical Transport Platforms (the “PTX Family”), (ii) the BTI7800  
5 Series Optical Transport Platform (the “BTI 7800”); (iii) the MX Series routers (the  
6 “MX Series”); and (iv) the modules, line cards and interface cards which are used  
7 with the foregoing to implement Juniper’s polarization-division multiplexing  
8 (“PDM”) and cross-polarization interference (“XPI”) mitigation functionality,  
9 including the relevant Universal Forwarding Modules (UFMs), BTI Interface Cards  
10 (BICs), transceivers, Dense Port Concentrators (DPCs), Physical Interface Cards  
11 (PICs), Flexible PIC Concentrators (FPCs), Modular Interface Cards (MICs),  
12 Modular Port Concentrators (MPCs), and other relevant modules and cards (the  
13 “Modules and Cards”) (collectively, “the Fiber Optic XPIC Devices”).

14 17. Each Fiber Optic XPIC Device is, or can be, configured to perform all of  
15 the steps recited in the Asserted Claims of the ’211 Patent, during normal use. On  
16 information and belief, each Defendant has actually used the Fiber Optic XPIC  
17 Devices to perform each step of the methods recited in the Asserted Claims of the  
18 ’211 Patent, within the United States, either itself, through intermediaries, or in  
19 conjunction with one or more joint venturers or customers.

#### 20 The PTX Family

21 18. The PTX Family is a family of optical networking equipment with  
22 “100GbE coherent dense wavelength-division multiplexing (DWDM)”  
23 communication capability. Exh. 2 (Juniper Datasheet, “PTX5000 and PTX3000  
24 PICs”) at 2; *see also* Exh. 3 (Juniper publication, “PTX5000 100G Packet Optical  
25 Solution”) at 3 (stating that the PTX5000 uses “100G DWDM optics”).

26 19. Element 33(a) recites “receiving an optical signal over a single fiber  
27 optic transmission medium.” The PTX Family includes optical receivers that receive  
28 optical signals over a single fiber optic transmission medium. *See, e.g.*, Exh. 2 at 3

1 (PTX Family “contains a coherent *receiver* to correct linear and nonlinear effects that  
2 have accumulated traversing the *fiber span*”). Thus, the PTX Family is configured to  
3 perform element 33(a) during normal use.

4 20. Element 33(a1) recites “the optical signal being at least two polarized  
5 field components independently modulated with independent information bearing  
6 waveforms.” When used with appropriate components, the PTX Family is configured  
7 to perform polarization-division multiplexing (“PDM”), in which the optical signal  
8 contains two “polarized field components,” at orthogonal polarizations, which are  
9 “independently modulated with independent information bearing waveforms.” *See*,  
10 *e.g.*, Exh. 2 at 2 (“The 2-port 100GbE coherent DWDM PIC transmits a **DP-QPSK**  
11 **signal**” - “DP-QPSK” means “**Dual Polarization** – Quadrature Phase Shift Keying.”  
12 Thus, the PTX Family, when used with the 2-port 100GbE PIC, performs  
13 polarization-division multiplexing); Exh. 3 at 3 (the PTX Family, when used with  
14 “100G DWDM optics,” uses “**dual-polarization** quadrature phase shift keying (DP-  
15 QPSK)”). Thus, when used with appropriate components, the PTX Family is  
16 configured to perform element 33(a1), during normal use.

17 21. Element 33(b) recites “mitigating cross polarization interference  
18 associated with the at least two modulated polarized field components to reconstruct  
19 the information bearing waveforms.” Publicly available information demonstrates that  
20 the PTX Family, when used with appropriate components, is configured to perform  
21 this step during normal use.

22 22. For instance, the PTX Family Datasheet (Exh. 2) states that the PTX  
23 Family “contains a *coherent receiver* to *correct linear and nonlinear effects* that  
24 have accumulated traversing the fiber span.” Exh. 2 at 2. On information and belief,  
25 one of the “linear and non-linear effects” that is “corrected” by the coherent receiver  
26 in the PTX Family is “cross polarization interference,” which accumulates in the  
27 signal as it “travers[es] the fiber span.” *Id.*

28 23. Similarly, Exhibit 3 states that the PTX Family receivers use “DSP

1 [Digital Signal Processing] for compensation of chromatic and polarization mode  
2 dispersion.” Exh. 3 at 3. On information and belief, the “compensation” performed by  
3 the “Digital Signal Processor” in the PTX Family mitigates “cross polarization  
4 interference” that accumulates in the signal as it propagates down the line.

5 24. Moreover, the PTX Family Datasheet (Exh. 2) states that the PTX  
6 Family “leverages the latest Optical Internetworking Forum (*OIF-complaint*) optical  
7 technology.” Exh. 2 at 2. Thus, any documents that describe the technical  
8 characteristics of “OIF-compliant optical technology,” for 100G DWDM DP-QPSK  
9 transmission, also describe the technical characteristics of the PTX Family.

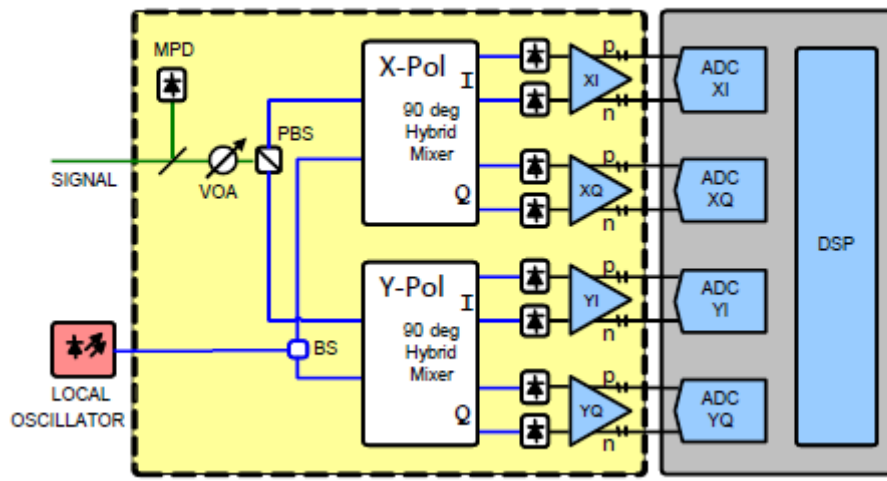
10 25. One such document is the OIF’s “100G Ultra Long Haul DWDM  
11 Framework Document.” See Exh. 4. According to this document, the “coherent  
12 receivers” in OIF-complaint 100G DWDM DP-QPSK transceivers, such as those in  
13 the PTX Family, include an “electronic equalizer” which is “used to recover both  
14 polarizations” of the DP-QPSK signal, and also used “to *compensate for a number of*  
15 *signal impairments*, including chromatic dispersion and polarization mode  
16 dispersion, *caused by long distance propagation.*” Exh. 4 at 5 (emphasis added). On  
17 information and belief, one of the “signal impairments” that is “compensated for” in  
18 the “electronic equalizer” in the PTX Family is cross-polarization interference. Thus,  
19 the OIF document confirms that the PTX Family, when used with appropriate  
20 components, is configured to perform element 33(b) during normal use.

21 26. Element 33(b1) of claim 33 recites “using a plurality of matrix  
22 coefficients being complex values to apply both amplitude scaling and phase shifting  
23 to the at least two modulated polarized field components.” On information and belief,  
24 and based on publicly available information, the PTX Family performs this step,  
25 when it is used with appropriate components, during normal use.

26 27. For instance, OIF document “Implementation Agreement for Integrated  
27 Dual Polarization Intradyne Coherent Receivers” (Exh. 5), dated November 14, 2013,  
28 shows the structure of the “OIF-compliant” receiver in the PTX Family, as follows



1 (Exh. 5 at 9, Fig. 1):



11  
12 28. As seen above, the PTX Family's coherent receiver separates the  
13 incoming optical signal into four components: (i) an in-phase X-polarized component,  
14  $X_i$ ; (ii) a quadrature ( $90^\circ$  offset) X-polarized component,  $X_q$ ; (iii) an in-phase Y-  
15 polarized component,  $Y_i$ ; and (iv) a quadrature Y-polarized component,  $Y_q$ . Those  
16 four components are then sent to the "DSP" (Digital Signal Processing), to  
17 compensate for "signal impairments . . . caused by long distance propagation." Exh. 4  
18 at 5. On information and belief, the DSP in the PTX Family's coherent receiver  
19 performs this "compensation" via a computation that uses "a plurality of matrix  
20 coefficients being complex values to apply both amplitude scaling and phase shifting"  
21 to the components. Thus, when used with appropriate components, the PTX Family is  
22 configured to perform element 33(b1) during normal use.

23 29. Accordingly, the PTX Family, when used with appropriate components,  
24 is configured to perform all the elements of claim 33 during normal use.

### 25 The BTI 7800

26 30. The BTI 7800 is a "line of packet optical transport systems" that "can be  
27 equipped with 10 Gbps, 100 Gbps, and 200 Gbps interfaces . . . to support a wide  
28 range of muxponders and transponder connectivity." Exh. 7 (Datasheet, BTI7800

1 Packet Optical Transport Systems) at 1.

2 31. Element 33(a) of claim 33 recites “receiving an optical signal over a  
3 single fiber optic transmission medium.” The BTI 7800 performs this initial step. *See,*  
4 *e.g.*, Exh. 7 at 2 (diagram showing BTI 7800 units transmitting and receiving optical  
5 signals over a single fiber optic transmission medium). Thus, the BTI 7800 is  
6 configured to perform element 33(a) during normal use.

7 32. Element 33(a1) recites “the optical signal being at least two polarized  
8 field components independently modulated with independent information bearing  
9 waveforms.” Publicly available information shows that the BTI 7800, when used with  
10 appropriate components, is configured to perform this step during normal use.

11 33. For instance, the document “BTI7800 Series Software Configuration  
12 Guide, v. 2.1” (Exh. 8) states that the BTI 7800 can send and receive both an “X-  
13 polarization signal” *and* a “Y-polarization signal.” Exh. 8 at 11-4. Thus, the BTI  
14 7800, when used with appropriate components, receives an “optical signal” having “at  
15 least two polarized field components independently modulated with independent  
16 information.” Accordingly, when used with appropriate components, the BTI 7800 is  
17 configured to perform element 33(a1) during normal use.

18 34. Element 33(b) recites “mitigating cross polarization interference  
19 associated with the at least two modulated polarized field components to reconstruct  
20 the information bearing waveforms.” Publicly available information shows that the  
21 BTI 7800, when used with appropriate components, is configured to perform this step  
22 during normal use.

23 35. For instance, the Datasheet “BTI 7800 Series Intelligent Networking  
24 Systems” (Exh. 9), dated 2015 (*id.* at 3), states that the BTI 7800 includes “100G  
25 Coherent modules.” Exh. 9 at 1. The Datasheet further states that the BTI 7800 is  
26 “[o]ptimized for metro and regional networks;” thus, the BTI 7800 is designed for  
27 long-distance communication. *Id.* The Datasheet further states that the BTI 7800’s  
28 “Coherent Optics” achieve a Polarization-Mode Dispersion (“PDM”) tolerance of 15

1 picoseconds, and a Polarization-Dependent Loss (“PDL”) tolerance of 3 dB.

2 36. On information and belief, the only way to achieve these tolerances with  
3 a coherent optical receiver, in long-haul operation, is to mitigate cross-polarization  
4 interference, as described and claimed in the ’211 patent. Thus, on information and  
5 belief, the BTI 7800, when used with appropriate components, is configured to  
6 perform element 33(b) during normal use.

7 37. Element 33(b1) recites “using a plurality of matrix coefficients being  
8 complex values to apply both amplitude scaling and phase shifting to the at least two  
9 modulated polarized field components.” On information and belief, the BTI 7800 can  
10 be used with OIF-complaint coherent optical receivers, just like the PTX Family, as  
11 described in Paragraphs 22-24 *supra*. Thus, for the same reasons as the PTX Family,  
12 the BTI 7800, when used with appropriate components, is configured to perform  
13 element 33(b1) during normal use.

#### 14 The MX Series

15 38. The MX Series are a “robust portfolio of SDN-enabled routing platforms  
16 that provide industry-leading system capacity, density, security, and performance with  
17 unparalleled longevity.” Exh. 6 ([https://www.juniper.net/us/en/products-  
18 services/routing/mx-series/](https://www.juniper.net/us/en/products-services/routing/mx-series/)) at 1.

19 39. Element 33(a) of claim 33 recites “receiving an optical signal over a  
20 single fiber optic transmission medium.” The MX Series does this. *See, e.g.*, Exh. 18  
21 (Datasheet, MX2000 Universal Routing Platforms) at 4 (MX Series has “high system  
22 capacity, high FIB scale, high-density 400GbE interfaces as well as **DWDM and**  
23 **IP/optical** support”); *see also id.* at 9 (listing various Modular Interface Cards, or  
24 “MICs,” which can be used with the MX Series to perform “OTN” (Optical Transport  
25 Network) communication; this necessarily involves receiving optical signals over a  
26 single fiber optic transmission medium). Thus, the MX Series is configured to  
27 perform element 33(a) during normal use.

28 40. Element 33(a1) recites “the optical signal being at least two polarized

1 field components independently modulated with independent information bearing  
2 waveforms.” Publicly available information shows that the MX Series, when used  
3 with appropriate components, is configured to perform this step during normal use.

4 41. For instance, the Juniper web page “Understanding Optical Transport  
5 Network (OTN)” ([https://www.juniper.net/documentation/en\\_US/junos/topics/topic-  
6 map/ethernet-otn-options-overview.html](https://www.juniper.net/documentation/en_US/junos/topics/topic-map/ethernet-otn-options-overview.html)), attached as Exhibit 17, states that the  
7 “MX240, MX480, MX960, MX2010, and MX2020 routers” can be used with the  
8 “MIC3-100G-DWDM MIC” card. Exh. 17. at 16. This card uses “*DP-QPSK* with  
9 *coherent reception* and OTU4 and OTU4 (v) framing modes.” *Id.* As discussed  
10 above, DP-QPSK is *dual polarization*-quadrature phase shift keying. Thus, at least  
11 when they are used with the MIC3-100G-DWDM MIC card, the MX Series routers  
12 are configured to perform element 33(a1) during normal use.

13 42. Element 33(b) recites “mitigating cross polarization interference  
14 associated with the at least two modulated polarized field components to reconstruct  
15 the information bearing waveforms.” Publicly available information shows that the  
16 MX Series, when used with appropriate components, is configured to perform this  
17 step during normal use.

18 43. As discussed above, the MX Series can be used with the MIC3-100G-  
19 DWDM MIC card, to perform “100-Gigabit” communication via “DP-QPSK with  
20 coherent reception.” Exh. 17 at 16. This card uses a “CFP2-ACO DWDM optical  
21 transceiver.” *Id.* On information and belief, a CFP2-ACO DWDM optical transceiver,  
22 performing DP-QPSK communication, necessarily mitigates cross-polarization  
23 interference (XPI) to reconstruct the information-bearing waveforms. Thus, at least  
24 when they are used with the MIC3-100G-DWDM MIC card, the MX Series routers  
25 are configured to perform element 33(b) during normal use

26 44. Element 33(b1) recites “using a plurality of matrix coefficients being  
27 complex values to apply both amplitude scaling and phase shifting to the at least two  
28 modulated polarized field components.” On information and belief, the CFP2-ACO

1 DWDM optical transceiver in the MIC3-100G-DWDM MIC card mitigates XPI by  
 2 performing a computation which uses a plurality of matrix coefficients, being  
 3 complex values, to apply both amplitude scaling and phase shifting to the  
 4 orthogonally-polarized field components. Thus, at least when they are used with the  
 5 MIC3-100G-DWDM MIC card, the MX Series routers are configured to perform  
 6 element 33(b1) during normal use.

#### 7 The Modules and Cards

8 45. Juniper makes, sells, offers for sale, uses and/or imports various line  
 9 cards, interface cards and modules for use with its optical networking platforms.  
 10 These Modules and Cards can be used with the BTI 7800, the PTX Family, the MX  
 11 Series, and/or with other Juniper networking platforms.

12 46. Many of these Modules and Cards are configured to perform all the  
 13 elements of claim 33, during normal use, either alone or in conjunction with other  
 14 equipment.

15 47. For instance, Juniper sells the “CFP transceiver” with part number “CFP-  
 16 100GBASE-ZR.” *See* Exh. 10 ([https://m.cdw.com/product/juniper-100gbase-zr-cfp-  
 17 pluggable/5294431](https://m.cdw.com/product/juniper-100gbase-zr-cfp-pluggable/5294431)) at 1. This Module is a “pluggable optical interface transceiver  
 18 module” that “uses *DP-QPSK modulation* and *coherent receiver technology* with an  
 19 *optimized DSP* and FEC implementation.” *Id.* (emphasis added). Since the module  
 20 uses “DP-QPSK modulation,” it receives PDM signals; thus, it is configured to satisfy  
 21 elements 33(a) and 33(a1) during normal use. Since it has a “coherent receiver” with  
 22 “an optimized DSP,” on information and belief, it also mitigates XPI; thus, it is  
 23 configured to satisfy elements 33(b) and 33(b1) during normal use. Thus, this Module  
 24 is configured to perform all the elements of claim 33 during normal use.

25 48. Similarly, Juniper sells the “PTX-2-100G-WDM” Physical Interface  
 26 Card (PIC). *See* Exh. 11 ([https://www.juniper.net/documentation/en\\_US/release-  
 27 independent/junos/topics/reference/general/pic-ptx-series-100-ge-dwdm.html](https://www.juniper.net/documentation/en_US/release-independent/junos/topics/reference/general/pic-ptx-series-100-ge-dwdm.html)) at 1.  
 28 This Module, which is “designed for metro, regional, or long-haul applications,” uses

1 “DP-QPSK” modulation. *Id.* at 2. Thus, this Module is configured to perform  
2 elements 33(a) and 33(a1) during normal use. Meanwhile, on information and belief,  
3 either this Module, or a component with which it is used, is configured to perform  
4 elements 33(b) and 33(b1) during normal use.

5 49. Other Juniper Modules and Cards that are configured to perform all the  
6 elements of claim 33 during normal use include: (i) the PTX-5-100G-WDM Physical  
7 Interface Card, which uses “DP-QPSK” modulation (*see* Exh. 12); (ii) the MIC3-  
8 100G-DWDM Modular Interface Card, which “supports DP-QPSK with coherent  
9 reception” (*see* Exh. 13); (iii) the CFP2-DCO-T-WDM-1 transceiver, which uses  
10 “DP-QPSK” modulation (*see* Exh. 14); (iv) the QFX10000-Series Coherent DWDM  
11 Line Cards, which use “DP-QPSK” modulation (*see* Exh. 15 at 2); and (v) the  
12 PTX10K-LC1101 Line Card, which uses “DP-QPSK” modulation (*see* Exh. 16).

13 50. The foregoing is merely an illustrative list of some of the Juniper  
14 Modules and Cards that are configured to perform all the elements of claim 33 during  
15 normal use. On information and belief, additional Juniper Modules and Cards are also  
16 configured to perform all the elements of claim 33 during normal use. Core reserves  
17 the right to amend this Complaint to identify such additional Modules and Cards as it  
18 identifies them in discovery.

19 Marking – 35 U.S.C. § 287(a)

20 51. Core has never made, sold, used, offered to sell, or imported into the  
21 United States any article that practices any claim of the ‘211 Patent. Core has never  
22 sold, commercially performed, or offered to commercially perform any service that  
23 practices any claim of the ‘211 Patent.

24 52. Prior to October 21, 2014, Core had never authorized, licensed, or in any  
25 way permitted any third party to practice any claim of the ‘211 Patent.

26 53. Moreover, Core alleges that Defendants infringe *only* method claims of  
27 the ‘211 patent. Core does not allege that Defendants infringe any apparatus claims of  
28 the ‘211 patent. The marking requirement of 35 U.S.C. § 287(a) does not apply when

1 a patentee only asserts infringement of method claims. *See Crown Packaging Tech.,*  
2 *Inc. v. Rexam Beverage Can Co.*, 559 F.3d 1308, 1316 (Fed. Cir. 2009); *Hanson v.*  
3 *Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1082-83 (Fed.Cir.1983).

4 54. Because Core has never directly marketed any product or service that  
5 practices any of the claimed inventions of the '211 Patent, and no third party was  
6 authorized to practice any claimed inventions of the '211 patent prior to October 21,  
7 2014, 35 U.S.C. § 287(a) cannot prevent or otherwise limit Core's entitlement to  
8 damages for acts of infringement that occurred prior to October 21, 2014.

9 55. Because Core alleges that Defendants infringe only method claims of the  
10 '211 patent, 35 U.S.C. § 287(a) does not apply, even for acts of infringement that  
11 occurred after October 21, 2014. Thus, 35 U.S.C. § 287(a) does not limit Core's  
12 entitlement to damages against Defendants, in any way, for any period of time.

13 **COUNT I – DIRECT PATENT INFRINGEMENT (35 U.S.C § 271(a))**

14 56. Plaintiff repeats and realleges each and every allegation contained in  
15 Paragraphs 1-55 above, as if fully set forth herein.

16 57. Defendants have made, used, offered for sale, and/or sold, directly and/or  
17 through intermediaries, in this judicial district and/or elsewhere in the United States,  
18 one or more of the Fiber Optic XPIC Devices, and/or imported into the United States  
19 one or more of the Fiber Optic XPIC Devices.

20 58. Defendants' acts complained of herein, including their use of the Fiber  
21 Optic XPIC Devices, directly infringes the Asserted Claims, because—as shown in  
22 Paragraphs 16-50 *supra* (for claim 33)—the Fiber Optic XPIC Devices are configured  
23 to perform all of the steps recited in those claims, during normal use.

24 59. Defendants have directly infringed the Asserted Claims of the '211  
25 Patent by performing all of the steps of those claims within the U.S., either  
26 themselves, through intermediaries, or in conjunction with joint venturers and/or  
27 customers. Specifically, on information and belief, Defendants have performed all of  
28 the steps recited in each Asserted Claim, either personally, through intermediaries, or

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1 in conjunction with joint venturers and/or customers, by operating the Fiber Optic  
2 XPIC Devices within the U.S.. Such operation necessarily performs all of the steps  
3 recited in those claims, as shown in Paragraphs 16-50 *supra* (for claim 33).

4 **COUNT II – INDUCEMENT OF INFRINGEMENT (35 U.S.C § 271(b))**

5 60. Plaintiff repeats and realleges each and every allegation contained in  
6 Paragraphs 1-59 *supra*, as if fully set forth herein.

7 61. Defendants have actively induced infringement of the Asserted Claims of  
8 the '211 patent, in violation of 35 U.S.C. § 271(b).

9 62. Defendants have actively induced infringement of the Asserted Claims  
10 by selling the Fiber Optic XPIC Devices to one or more customers in the U.S., along  
11 with documentation and instructions demonstrating how to use the Devices to infringe  
12 the claims, and/or by providing service, maintenance, technical support, or other  
13 active assistance to their customers in using the Devices in the U.S.

14 63. On information and belief, when Defendants' customers use the Fiber  
15 Optic XPIC Devices in the U.S., such use meets all the elements recited in the  
16 Asserted Claims of the '211 patent. Thus, Defendants have committed affirmative  
17 acts (i.e., selling the Fiber Optic XPIC Devices, providing documentation on how to  
18 use the Fiber Optic XPIC Devices, and/or providing service, maintenance, technical  
19 support, or other active assistance to their customers) which have resulted in direct  
20 infringement of the '211 patent by their customers in the United States.

21 64. On information and belief, Defendants had actual knowledge of the  
22 existence and relevance of the '211 patent, or were willfully blind to its existence and  
23 relevance, prior to the filing of the Complaint.

24 65. For example, on information and belief, Juniper knew of the '211  
25 patent's existence and relevance due to Core's filing of complaints for infringement  
26 of that patent in: (1) Central District of California Case No. SACV 12-1872 AG,  
27 styled *Core Optical Technologies, LLC v. Ciena Corporation, et al.* (filed October 29,  
28 2012); (2) Central District of California Case No. SACV 16-0437 AG, styled *Core*



1 *Optical Technologies, LLC v. Fujitsu Network Communications, Inc.* (filed March 7,  
2 2016); and (3) Central District of California Case No. SACV 8:17-cv-00548AG,  
3 styled *Core Optical Technologies, LLC v. Infinera Corp.* (filed March 24, 2017).

4 66. On information and belief, as a major participant in the optical  
5 networking industry, Juniper monitors patent suits against other participants in the  
6 industry. On information and belief, through such monitoring, Juniper knew of—or  
7 was willfully blind to—the existence of the '211 patent, prior to the filing of this  
8 Complaint, due to Core's three prior lawsuits against other industry participants.  
9 Through such monitoring, Juniper knew—or was willfully blind—that the Fiber Optic  
10 XPIC Devices are configured to infringe the '211 patent during normal use.

11 67. On information and belief, when Defendants sold the Fiber Optic XPIC  
12 Devices to customers within the United States, and/or provided service, maintenance,  
13 technical support, or other active assistance to such customers, they did so with the  
14 specific intent to encourage the customers to perform acts that constitute direct  
15 infringement of the '211 patent. Specifically, on information and belief, Defendants  
16 performed such acts despite knowing (or being willfully blind) that their customers'  
17 use of the Fiber Optic XPIC Devices, as configured, would perform all of the steps of  
18 the Asserted Claims during normal use.

19 68. Therefore, Defendants have unlawfully induced infringement of the '211  
20 patent, in violation of 35 U.S.C. § 271(b).

21 **COUNT III – CONTRIBUTORY INFRINGEMENT (35 U.S.C. § 271(c))**

22 69. Plaintiff repeats and realleges each and every allegation contained in  
23 Paragraphs 1-68 *supra*, as if fully set forth herein.

24 70. Defendants have committed contributory infringement of each Asserted  
25 Claim of the '211 patent, in violation of 35 U.S.C. § 271(c).

26 71. Defendants have committed contributory infringement by selling,  
27 offering to sell and/or importing into the United States the Fiber Optic XPIC Devices.  
28 As shown in Paragraphs 16-50 *supra*, the Fiber Optic XPIC Devices contain certain

1 components—including the coherent optical receivers, and accompanying electronics,  
2 in the “interface cards” or “line cards”—which, as configured, perform cross-  
3 polarization interference mitigation on polarization-multiplexed optical signals. These  
4 components, when used as configured during normal operation, practice the  
5 inventions claimed in the Asserted Claims.

6 72. The components of the Fiber Optic XPIC Devices that can be used to  
7 perform cross-polarization interference mitigation practice a material part of the  
8 Asserted Claims, because they perform one of the key inventive functions of the ’211  
9 Patent – i.e. they mitigate the effects of cross-polarization interference, using matrix  
10 operations, to reconstruct the original polarization-division-multiplexed signals.

11 73. On information and belief, prior to the filing of the Complaint,  
12 Defendants had actual knowledge, or were willfully blind, that these components of  
13 the Fiber Optic XPIC Devices were especially made or adapted for use in an  
14 infringement of the ’211 patent. As shown in Paragraphs 64-67 *supra*, Defendants  
15 knew, or were willfully blind, that the Fiber Optic XPIC Devices are configured to  
16 infringe the ’211 patent upon use, at least because of Core’s prior litigations against  
17 others in the optical networking industry, and because of Defendant Juniper’s  
18 attorneys’ prior experience representing Infinera in litigation over the ’211 patent. For  
19 at least the reasons set forth in Paragraphs 64-67 *supra*, and on information and belief,  
20 Defendants knew, or were willfully blind, that normal use of the Fiber Optic XPIC  
21 Devices infringes each Asserted Claim of the ’211 patent. Despite that knowledge (or  
22 willful blindness), Defendants actively sold and used the Fiber Optic XPIC Devices in  
23 the United States, knowing that their customers would use the Fiber Optic XPIC  
24 Devices in the United States, and knowing (or being willfully blind) that such use  
25 would constitute direct infringement of the Asserted Claims.

26 74. The components of the Fiber Optic XPIC Devices that are configured to  
27 perform cross-polarization interference mitigation are not staple articles of commerce,  
28 and—as configured to perform cross-polarization interference mitigation during

1 normal operation—are not capable of substantial noninfringing use. To the contrary,  
2 these components, as configured, are *especially adapted* to perform the claimed cross-  
3 polarization interference mitigation methods, during normal use. *Id.*

4 75. Accordingly, Defendants have unlawfully contributed to infringement of  
5 the '211 patent, in violation of 35 U.S.C. § 271(c).

6 **REMEDIES, ENHANCED DAMAGES, EXCEPTIONAL CASE**

7 76. Plaintiff repeats and realleges each and every allegation contained in  
8 Paragraphs 1-75 *supra*, as if fully set forth herein.

9 77. Defendants' direct infringement (Count I), induced infringement (Count  
10 II), and contributory infringement (Count III) of the '211 patent have caused, and will  
11 continue to cause, significant damage to Core. As a result, Core is entitled to an award  
12 of damages adequate to compensate it for Defendants' infringement, but in no event  
13 less than a reasonable royalty pursuant to 35 U.S.C. § 284. Core is also entitled to  
14 recover prejudgment interest, post-judgment interest, and costs.

15 78. For at least the reasons set forth in Paragraphs 64-67 *supra*, prior to the  
16 filing of this Complaint, Defendants knew (or were willfully blind) that the Fiber  
17 Optic XPIC Devices are configured to infringe the Asserted Claims, during normal  
18 use. Despite this known, objectively-high risk that their actions constituted  
19 infringement, Defendants continued to directly and indirectly infringe the Asserted  
20 Claims of the '211 patent, up to the filing of this Complaint. Thus, Defendants'  
21 infringement of the Asserted Claims has been (and is) willful.

22 79. In addition to being willful, Defendants' conduct has been egregious.

23 80. As set forth in Paragraphs 64-67 *supra*, despite knowing of (or being  
24 willfully blind to) its infringement, Defendants continued to infringe, on a large scale,  
25 up to the very date when the '211 patent expired. Defendant Juniper is a massive  
26 company, with over \$4 billion in annual revenue.<sup>1</sup> Meanwhile, Plaintiff is a small  
27

28 <sup>1</sup> See <https://craft.co/juniper-networks>.

1 company, owned by an individual inventor. On information and belief, Defendants  
 2 persisted in their willful infringement, at least in part, because they believed they  
 3 could use their superior financial resources to overwhelm Plaintiff in litigation. This  
 4 constitutes “egregious” conduct, warranting an award of enhanced damages.

5 81. Moreover, the validity of the ’211 patent has been twice confirmed by  
 6 the Patent Trial and Appeal Board (“PTAB”), in: (i) IPR2016-01618, filed by Fujitsu  
 7 Network Communications, Inc.; and (ii) IPR2018-01259, filed by Infinera  
 8 Corporation. IPR2018-01259 was filed by the same law firm currently representing  
 9 Juniper. In both *Inter Partes* Review proceedings, the Petitioners—who were  
 10 defendants in the prior litigations—cited numerous prior art references, to attempt to  
 11 establish that claims of the ’211 patent, including the Asserted Claims, were invalid.  
 12 Yet, in both cases, the PTAB *denied* review, finding that the Petitioners had failed to  
 13 establish a “reasonable likelihood” that *any* claim of the ’211 patent was invalid. *See*  
 14 Ex. 19 (decision denying review in IPR2016-01618); Ex. 20 (decision denying review  
 15 in IPR2018-01259). Because the PTAB has already rejected two extensive invalidity  
 16 challenges to the ’211 patent, Defendants cannot reasonably believe they have a  
 17 viable invalidity defense. Defendants’ decisions to persist in known, clearly-  
 18 infringing conduct, despite the lack of any viable invalidity defense, is further  
 19 evidence of “egregiousness,” warranting an award of enhanced damages.

20 82. For at least the foregoing reasons, Defendants’ conduct has been willful  
 21 and egregious. Accordingly, under 35 U.S.C. § 284, the Court should enhance Core’s  
 22 damages in this case by up to three times the amount found or assessed.

23 83. For at least the foregoing reasons, this case is an “exceptional” case  
 24 within the meaning of 35 U.S.C. § 285. Accordingly, Core is entitled to an award of  
 25 attorneys’ fees and costs, and the Court should award such fees and costs.

### PRAYER FOR RELIEF

27 WHEREFORE, Core prays for relief as follows:

- 28 1. That judgment be entered in favor of Core, and against Defendants;

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2. That Core be awarded damages adequate to compensate it for Defendants’ infringement of the Asserted Claims of the ’211 patent, in an amount to be determined at trial, as well as interest thereon;

3. That Core be awarded the costs of suit;

4. That Defendants’ infringement be declared willful and egregious;

5. That the Court increase Core’s damages up to three times the amount assessed under 35 U.S.C. § 284;

5. That the Court declare this an exceptional case under 35 U.S.C. § 285, and award Core its attorneys' fees and costs incurred in this action; and

6. That the Court grant such further relief as it deems just and proper.

**JURY TRIAL DEMAND**

Core demands a jury trial on all issues so triable.

DATED: March 27, 2020

GLASER WEIL FINK HOWARD  
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