

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

OYSTER OPTICS, LLC,

Plaintiff,

v.

ZTE CORPORATION, ZTE (USA) INC.
and ZTE (TX) INC.,

Defendants.

Civil Action No. 2:16-cv-1298

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

This is an action for patent infringement arising under the Patent Laws of the United States of America, 35 U.S.C. § 1 *et seq.* in which Plaintiff Oyster Optics, LLC (“Oyster” or “Plaintiff”) makes the following allegations against Defendants ZTE Corporation, ZTE (USA) Inc., and ZTE (TX) Inc. (“ZTE” or “Defendants”).

PARTIES

1. Oyster Optics, LLC is a Texas company, and has a place of business at 11921 Freedom Drive, Suite 550, Reston, VA 20190.
2. On information and belief, ZTE Corporation is a Chinese corporation with its principal place of business at No. 55, Hi-tech Road South, Shenzhen, 518057, China.
3. On information and belief, ZTE (USA) Inc. is a New Jersey corporation with its principal place of business at 2425 N. Central Expy, Suite 600, Richardson, TX 75080. ZTE (USA) Inc. can be served through its registered agent, Jing Li, 2425 N. Central Expy, Suite 323 Richardson, TX 75080.

4. On information and belief, ZTE (TX) Inc. is a Texas corporation with its principal place of business at 1900 Mccarthy Blvd, Suite 205, Milpitas, CA 95035. ZTE (TX) Inc. can be served through its registered agent, Ferguson, Braswell & Fraser, PC, 2500 Dallas Parkway, Suite 600, Plano, TX 75093.

JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Defendants in this action because, among other reasons, Defendants has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with the forum state of Texas. Defendants directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, making, using, importing, offering for sale, and/or selling products and/or services that infringe the patents-in-suit. Thus, Defendants purposefully availed itself of the benefits of doing business in the State of Texas and the exercise of jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice. Several of the Defendants entities are registered to do business in the State of Texas, and has appointed Jing Li, 2425 N. Central Expy, Suite 323 Richardson, TX 75080 and Ferguson, Braswell & Fraser, PC, 2500 Dallas Parkway, Suite 600, Plano, TX 75093 as their agents for service of process.

7. Venue is proper in this District under 28 U.S.C. §§ 1391 (b)-(c) and 1400(b) because Defendants is subject to personal jurisdiction in this District, have transacted business in this District and have committed acts of patent infringement in this District.

BACKGROUND

8. In the early 2000s, Oyster Optics, Inc., a research, development, and engineering company, was focused upon innovation in government, commercial, security, and broad-band applications of leading edge fiber optics technology. Mr. Peter (“Rocky”) Snawerdt was at Oyster Optics, Inc. when he invented the subject matter of U.S. Patent Nos. 6,469,816; 6,476,952; 6,594,055; 7,099,592; 7,620,327; 8,374,511; and 8,913,898 (collectively, “asserted patents” or “patents-in-suit”).

9. Oyster is the owner by assignment of United States Patent No. 6,469,816 (“the ’816 Patent”) entitled “Phase-Modulated Fiber Optic Telecommunications System.” The ’816 Patent was duly and legally issued by the United States Patent and Trademark Office on October 22, 2002. A true and correct copy of the ’952 Patent is included as Exhibit A.

10. Oyster is the owner by assignment of United States Patent No. 6,476,952 (“the ’952 Patent”) entitled “Phase-Modulated Fiber Optic Telecommunications System.” The ’952 Patent was duly and legally issued by the United States Patent and Trademark Office on November 5, 2002. A true and correct copy of the ’952 Patent is included as Exhibit B.

11. Oyster is the owner by assignment of United States Patent No. 6,594,055 (“the ’055 Patent”) entitled “Secure Fiber Optic Telecommunications System and Method.” The ’055 Patent was duly and legally issued by the United States Patent and Trademark Office on July 15, 2003. A true and correct copy of the ’055 Patent is included as Exhibit C.

12. Oyster is the owner by assignment of United States Patent No. 7,099,592 (“the ’592 Patent”) entitled “Telecommunications Card for Secure Optical Data Transmission and Installation Method.” The ’592 Patent was duly and legally issued by the United States Patent

and Trademark Office on August 29, 2006. A true and correct copy of the '592 Patent is included as Exhibit D.

13. Oyster is the owner by assignment of United States Patent No. 7,620,327 (“the '327 Patent”) entitled “Fiber Optic Telecommunications Card with Energy Level Monitoring.” The '327 Patent was duly and legally issued by the United States Patent and Trademark Office on November 17, 2009. A true and correct copy of the '327 Patent is included as Exhibit E.

14. Oyster is the owner by assignment of United States Patent No. 8,374,511 (“the '511 Patent”) entitled “Fiber Optic Telecommunications Card with Energy Level Monitoring.” The '511 Patent was duly and legally issued by the United States Patent and Trademark Office on February 12, 2013. A true and correct copy of the '511 Patent is included as Exhibit F.

15. Oyster is the owner by assignment of United States Patent No. 8,913,898 (“the '898 Patent”) entitled “Fiber Optic Telecommunications Card with Energy Level Monitoring.” The '898 Patent was duly and legally issued by the United States Patent and Trademark Office on December 16, 2014. A true and correct copy of the '898 Patent is included as Exhibit G.

COUNT I

INFRINGEMENT OF THE '816 PATENT

16. Oyster references and incorporates by reference paragraphs 1 through 15 of this Complaint.

17. On information and belief, Defendants make, use, offer for sale and/or sell in the United States the Accused Instrumentalities that infringe various claims of the '816 Patent, and continues to do so. These products include, for example, ZTE's platforms, their compatible modules, devices, and components such as the ZXMP M800, ZXMP M820, ZXWM M900,

ZXWM M920, ZXONE 8000, ZXONE 8300, ZXONE 8500, and ZXONE 8700.¹ The exemplary infringing products shall be referred to hereinafter as the “ZTE’s ZX-40 Accused Instrumentalities.”

18. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities are a fiber optic data transmission system. For example, ZTE advertised that “ZTE Corporation caters to the development trend of metro transmission network and launches ZXMP M800, a DWDM-based ultra-large-capacity OTN intelligent metro optical transmission platform.”² Also, ZTE advertised that “ZTE’s bearer network product line supplies the multilayer OTN solutions to meet user demands in network hierarchy, application scenario, hotspot technologies and customer types, including backbone network/metro network OTN solution, OTN & IP solution,

¹ See, e.g., *ZXMP M800 Metro DWDM Multiplexer Equipment*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268210.html (last visited Oct. 29, 2016); *ZXMP M820/M720*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268211.html (last visited Oct. 29, 2016); *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016); *ZXWM M920 Products*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016); *ZXONE 8000 Series Products*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268216.html (last visited Oct. 29, 2016); *Transport the Value and Bear the Future----ZTE ZXONE 8300 Helps Suzhou Unicom Build Its Bearer Network*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/cases/bearer/efficiency/201112/t20111205_267853.html (last visited Oct. 29, 2016).

² *ZXMP M800 Metro DWDM Multiplexer Equipment*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268210.html (last visited Oct. 29, 2016).

OTN & PTN solution, 100G/WASON solution and power enterprise OTN solution, while satisfying differentiated demands of carriers and enterprises.”³

19. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities comprise a transmitter having a laser emitting a continuous wave light. For example, ZTE advertised that “[w]hen configured as 40G system, C band 96-wavelength system framework is recommended.”⁴ In another example, ZTE advertised that its “40G system configuration supports repeaterless transmission over 2000km.”⁵ In yet another example, ZTE advertised that the “ZXWM M920 supports 80/96×10G/40G at the same time. It can be upgrade from 40 wavelengths to 80 wavelengths and from 48 wavelengths to 96 wavelengths smoothly.”⁶

20. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities comprise a phase modulator phase modulating the continuous wave light as a function of an electronic input data stream and of an electronic feedback loop with a feedback time delay, the electronic feedback loop being fed back to the electronic input data stream, so as to create an optical signal bearing information in phase- modulated form. For example, ZTE advertised that “[t]he 40Gbit/s system utilizes ODB, DPSK and RZ-DPQSK modulation formats, which provide better signal-to-noise ratio and enhanced non-linearity. With automatic dispersion compensation

³ *Overview*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/201111/t20111109_262278.html (last visited Oct. 29, 2016).

⁴ *ZXWM M920 Products*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016).

⁵ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

⁶ *ZXWM M920 Products*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016).

(TDC), it is applicable to ultra-long-haul transmission. Furthermore, 40Gbit/s service board employing ODB, DPSK technologies has high slot utilization and lower power consumption.”⁷

21. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities comprise a telecommunications optical fiber connected to at least one receiver, the phase-modulator being connected to the telecommunications fiber so that the phase-modulated information optical signal is transmitted over the telecommunications fiber without recombining with the continuous wave light. As an example, ZTE advertised that “ZTE OTN/WDM equipments support the application of 16 wavelengths and 40 wavelengths in C-band DWDM system over G.653 fiber, the rate for each channel supports 10Gbit/s, 40Gbit/s and 100Gbit/s, the maximum transmission capacity of a C-band system over G.653 fiber is 400G/1.6T/4T.”⁸

22. On information and belief, Defendants has directly infringed and continues to directly infringe the ’816 Patent by, among other things, making, using, offering for sale, and/or selling the ’816 ZTE’s ZX-40 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the ’816 Patent’s including at least claim 1.

23. By making, using, offering for sale, and/or selling the ’816 ZTE’s ZX-40 Accused Instrumentalities infringing the ’816 Patent, Defendants have injured Oyster and are liable to Oyster for infringement of the ’816 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

⁷ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

⁸ *ZTE OTN/WDM Technical Description in G.653 Fiber*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268215.html (last visited Oct. 29, 2016).

24. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE's ZX-40 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each and every claim limitation, including without limitation claim 1 of the '816 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Defendants' customers and/or end users have directly infringed and are directly infringing each and every claim limitation, including without limitation claim 1 of the '816 Patent. Defendants has actual knowledge of the '816 Patent at least as of service of this Complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe the '816 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '816 Patent.

25. Further, Defendants is contributing to the infringing acts of others, such as its customers, end users, and/or service providers in selling, offering to sell or importing in the into the United States the ZTE's ZX-40 Accused Instrumentalities or components thereof which have been especially made or especially adapted for use. For example, ZTE stated that

As all-IP and bandwidth-based telecom networks and service grow, the users expect optical networks to be more advanced, economical and converged. ZTE's bearer network product line supplies the multilayer OTN solutions to meet user demands in network hierarchy, application scenario, hotspot technologies and customer types, including backbone network/metro network OTN solution, OTN & IP solution, OTN & PTN solution, 100G/WASON solution and power enterprise OTN solution, while satisfying differentiated demands of carriers and enterprises.⁹

⁹ *Overview*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/201111/t20111109_262278.html (last visited Oct. 29, 2016).

As another example, ZTE advertised that “[w]ith considerations on both backbone DWDM network development trend and customer requirements, ZTE Corporation launches ZXWM M900, the large-capacity and ultra-long-haul DWDM system. The product integrates cutting-edge transmission technologies and efficient bandwidth management technology, applicable to building international, national, inter-provincial, provincial backbone networks, local switching network and various dedicated networks.”¹⁰ Upon information and belief, Defendants’ customers, end users, and/or service providers have directly infringed and are directly infringing each and every claim limitation of claim 1 of the ’816 Patent. Defendants has actual knowledge of the ’816 Patent at least as of service of this Complaint. Defendants is therefore a contributory infringer under 35 U.S.C. § 271(c).

26. To the extent facts learned in discovery show that Defendants’ infringement of the ’816 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

27. As a result of Defendants’ infringement of the ’816 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants’ infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants’ infringing activities are enjoined by this Court.

¹⁰ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

28. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '816 Patent, Oyster will be greatly and irreparably harmed.

COUNT II

INFRINGEMENT OF THE '952 PATENT

29. Oyster references and incorporates by reference paragraphs 1 through 28 of this Complaint.

30. On information and belief, Defendants make, use, offer for sale and/or sell in the United States ZTE's ZX-40 Accused Instrumentalities that infringe various claims of the '952 Patent, and continues to do so.

31. On information and belief, the ZTE's ZX-40 Accused Instrumentalities are optical data transmitters. For example, ZTE advertised that "ZTE Corporation caters to the development trend of metro transmission network and launches ZXMP M800, a DWDM-based ultra-large-capacity OTN intelligent metro optical transmission platform."¹¹

32. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a laser for producing light. For example, ZTE advertised that "[w]hen configured as 40G system, C band 96-wavelength system framework is recommended."¹² As another example, ZTE advertised that the "ZXWM M920 supports 80/96×10G/40G at the same time. It can be

¹¹ *ZXMP M800 Metro DWDM Multiplexer Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268210.html (last visited Oct. 29, 2016).

¹² *ZXWM M920 Products*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016).

upgrade from 40 wavelengths to 80 wavelengths and from 48 wavelengths to 96 wavelengths smoothly.”¹³

33. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities comprise a phase modulator phase modulating the light. For example, ZTE advertised that “[t]he 40Gbit/s system utilizes ODB, DPSK and RZ-DPQSK modulation formats, which provide better signal-to-noise ratio and enhanced non-linearity. With automatic dispersion compensation (TDC), it is applicable to ultra-long-haul transmission. Furthermore, 40Gbit/s service board employing ODB, DPSK technologies has high slot utilization and lower power consumption.”¹⁴

34. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities comprise an electronic control circuit for receiving an electronic input data stream and controlling the phase-modulator, the electronic control circuit including an input data circuit having an electronic delay. For example, DQPSK comprises simultaneous transmission of two DPSK signals, with 90° phase difference between the two signals. As a result, both the transmitter and receiver designs are similar to those in DPSK systems. A DPSK transmitter used for communication comprises a feedback loop in a precoder with a time delay “T” feeding into an exclusive-or gate along with the input data stream.

35. On information and belief, the ZTE’s ZX-40 Accused Instrumentalities comprise a phase compensation circuit for altering an output of the input data circuit, the phase compensation circuit including an N-bit register for storing a desired phase compensation amount, an ALU for summing without carry the desired phase compensation amount, and a

¹³ *Id.*

¹⁴ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://www.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

delayed feedback exclusive-or gate having a gate output and receiving the input data stream as an input. For example, a DPSK transmitter, which on information and belief is consistent with the design of the ZTE's ZX-40 Accused Instrumentalities, includes an exclusive-or gate receiving the input data stream as input and producing an output. On information and belief, a most significant bit of an ALU output of the ALU is fed together with the gate output through another exclusive-or gate.

36. On information and belief, Defendants has directly infringed and continues to directly infringe the '952 Patent by, among other things, making, using, offering for sale, and/or selling the '952 ZTE's ZX-40 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '952 Patent's including at least claim 13.

37. By making, using, offering for sale, and/or selling the '952 ZTE's ZX-40 Accused Instrumentalities infringing the '952 Patent, Defendants have injured Oyster and are liable to Oyster for infringement of the '952 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

38. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE's ZX-40 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each and every claim limitation, including without limitation claim 13 of the '952 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Defendants' customers and/or end users have directly infringed and are directly infringing each and every claim limitation, including without limitation claim 13 of the '952 Patent. Defendants has actual knowledge of the '952 Patent at least as of service of this Complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe

the '952 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '952 Patent.

39. To the extent facts learned in discovery show that Defendants' infringement of the '952 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

40. As a result of Defendants' infringement of the '952 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

41. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '952 Patent, Oyster will be greatly and irreparably harmed.

COUNT III

INFRINGEMENT OF THE '055 PATENT

42. Oyster references and incorporates by reference paragraphs 1 through 41 of this Complaint.

43. On information and belief, Defendants make, use, offer for sale and/or sell in the United States ZTE's ZX-40 Accused Instrumentalities that infringe various claims of the '055 Patent, and continues to do so.

44. On information and belief, the ZTE's ZX-40 Accused Instrumentalities are optical data transmitters. For example, ZTE advertised that "[w]hen configured as 40G system, C band 96-wavelength system framework is recommended."¹⁵ In another example, ZTE advertised that its "40G system configuration supports repeaterless transmission over 2000km."¹⁶

45. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a light source producing light. For example, ZTE advertised that the "ZXWM M920 supports 80/96×10G/40G at the same time. It can be upgrade from 40 wavelengths to 80 wavelengths and from 48 wavelengths to 96 wavelengths smoothly."¹⁷

46. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a phase modulator for phase modulating light from the light source. As an example, For example, ZTE advertised that "[t]he 40Gbit/s system utilizes ODB, DPSK and RZ-DPQSK modulation formats, which provide better signal-to-noise ratio and enhanced non-linearity. With automatic dispersion compensation (TDC), it is applicable to ultra-long-haul transmission. Furthermore, 40Gbit/s service board employing ODB, DPSK technologies has high slot utilization and lower power consumption."¹⁸

¹⁵ *ZXWM M920 Products*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016).

¹⁶ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

¹⁷ *ZXWM M920 Products*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016).

¹⁸ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

47. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a controller controlling the phase modulator. On information and belief, the transmitter comprise an encoder encoding an input data stream and then controlling the phase modulator accordingly to phase modulate the light. On information and belief, the transmitter comprise phase modulators which are used to modulate optical signal in the ZTE's ZX-40 Accused Instrumentalities.

48. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise the controller including a delayed-feedback exclusive-or gate. For example, DQPSK comprises simultaneous transmission of two DPSK signals, with 90° phase difference between the two signals. As a result, both the transmitter and receiver designs are similar to those in DPSK systems. A DPSK transmitter used for communication comprises a feedback loop in a precoder with a time delay "T" feeding into an exclusive-or gate along with the input data stream.

49. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a controller having a controller output electronic data stream of a plurality of bits, each bit being either a binary zero or a binary one, the phase modulator creating a phase-modulated optical signal, for each bit the phase modulator imparting on the light for each binary zero of the controller output electronic data stream either a first phase corresponding to the binary zero or a second phase offset 180 degrees from the first phase corresponding to the binary one so as to create the phase-modulated optical signal. For example, in a DQPSK transmitter, one modulator provides a phase modulation of 0 and π (i.e. 0° and 180°) similar to DPSK signals. Another modulator provides a phase modulation of $\pm\pi/2$ (i.e. $\pm 90^\circ$). Thus, both modulations employ 180° phase offsets.

50. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a transmitter having an optical output for the phase-modulated optical signal, the phase-modulated optical signal at the optical output being free of amplitude modulation as a function of the input electronic data stream.

51. For example, the DQPSK transmitter used for communications is exemplary of the type of transmitter that, on information and belief, is used in the ZTE's ZX-40 Accused Instrumentalities. On information and belief, the transmitter comprises an encoder encoding an input data stream and then controlling the phase modulator accordingly to phase modulate the light. On information and belief, the transmitter comprises phase modulators which are used to modulate optical signal in the ZTE's ZX-40 Accused Instrumentalities. On information and belief, ZTE's ZX-40 Accused Instrumentalities comprise an input data stream entering an exclusive-or function, which requires a binary/digital input. On information and belief, the modulated signal is free of amplitude modulation, consistent with both the '055 Patent and the ZTE's ZX-40 Accused Instrumentalities that, on information and belief, utilized transmitter and controller designs similar to those described herein.

52. On information and belief, Defendants has directly infringed and continues to directly infringe the '055 Patent by, among other things, making, using, offering for sale, and/or selling the '055 ZTE's ZX-40 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '055 Patent's including at least claim 15.

53. By making, using, offering for sale, and/or selling the ZTE's ZX-40 Accused Instrumentalities infringing the '055 Patent, Defendants have injured Oyster and are liable to

Oyster for infringement of the '055 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

54. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE's ZX-40 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each and every claim limitation, including without limitation claim 15 of the '055 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Defendants' customers and/or end users have directly infringed and are directly infringing each and every claim limitation, including without limitation claim 15 of the '055 Patent. Defendants has actual knowledge of the '055 Patent at least as of service of this Complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe the '055 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '055 Patent.

55. To the extent facts learned in discovery show that Defendants' infringement of the '055 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

56. As a result of Defendants' infringement of the '055 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

57. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '055 Patent, Oyster will be greatly and irreparably harmed.

COUNT IV

INFRINGEMENT OF THE '592 PATENT

58. Oyster references and incorporates by reference paragraphs 1 through 57 of this Complaint.

59. On information and belief, Defendants make, use, offer for sale and/or sell in the United States ZTE's ZX-40 Accused Instrumentalities that infringe various claims of the '592 Patent, and continues to do so.

60. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a card for transmitting data over at least one optical fiber. For example, ZTE advertised that "ZTE Corporation caters to the development trend of metro transmission network and launches ZXMP M800, a DWDM-based ultra-large-capacity OTN intelligent metro optical transmission platform."¹⁹ Also, ZTE advertised that "ZTE OTN/WDM equipments support the application of 16 wavelengths and 40 wavelengths in C-band DWDM system over G.653 fiber, the rate for each channel supports 10Gbit/s, 40Gbit/s and 100Gbit/s, the maximum transmission capacity of a C-band system over G.653 fiber is 400G/1.6T/4T."²⁰

¹⁹ *ZXMP M800 Metro DWDM Multiplexer Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268210.html (last visited Oct. 29, 2016).

²⁰ *ZTE OTN/WDM Technical Description in G.653 Fiber*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268215.html (last visited Oct. 29, 2016).

61. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a transmitter having at least one light source. For example, ZTE advertised that "ZTE Corporation caters to the development trend of metro transmission network and launches ZXMP M800, a DWDM-based ultra-large-capacity OTN intelligent metro optical transmission platform."²¹ ZTE also advertised that "[w]hen configured as 40G system, C band 96-wavelength system framework is recommended."²² As another example, ZTE advertised that the "ZXWM M920 supports 80/96×10G/40G at the same time. It can be upgrade[d] from 40 wavelengths to 80 wavelengths and from 48 wavelengths to 96 wavelengths smoothly."²³

62. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a phase modulator for phase modulating light from the source so as to create phase-modulated optical signals in the light as a function of an input electronic data stream. For example, ZTE advertised that "[t]he 40Gbit/s system utilizes ODB, DPSK and RZ-DPQSK modulation formats, which provide better signal-to-noise ratio and enhanced non-linearity. With automatic dispersion compensation (TDC), it is applicable to ultra-long-haul transmission. Furthermore, 40Gbit/s service board employing ODB, DPSK technologies has high slot utilization and lower power consumption."²⁴

²¹ *ZXMP M800 Metro DWDM Multiplexer Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268210.html (last visited Oct. 29, 2016).

²² *ZXWM M920 Products*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016).

²³ *Id.*

²⁴ *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016).

63. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a receiver having an interferometer for reading received optical signals, the interferometer having a delay loop fiber. For example, a receiver for a DQPSK system has interferometers, each with a path difference between its two arms of time "T". This path length difference has one arm of each interferometer longer than the other.

64. On information and belief, the ZTE's ZX-40 Accused Instrumentalities comprise a fastening device for securing the delay loop fiber. For example, the interferometer device for the ZTE's ZX-40 Accused Instrumentalities are, on information and belief, packaged in an industry standard module. The module, on information and belief, must be fastened and soldered to a circuit board for operation and inside the module the subcomponents, including the delay, must be secured to the package or package substrate.

65. On information and belief, Defendants have directly infringed and continue to directly infringe the '592 Patent by, among other things, making, using, offering for sale, and/or selling the ZTE's ZX-40 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '592 Patent's including at least claim 1.

66. By making, using, offering for sale, and/or selling the ZTE's ZX-40 Accused Instrumentalities infringing the '592 Patent, Defendants have injured Oyster and are liable to Oyster for infringement of the '592 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

67. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE's ZX-40 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each and every claim limitation, including without limitation claim 1 of the '592 Patent, in violation of 35 U.S.C. § 271(b). Upon

information and belief, Defendants' customers and/or end users have directly infringed and are directly infringing each and every claim limitation, including without limitation claim 1 of the '592 Patent. Defendants has actual knowledge of the '592 Patent at least as of service of this complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe the '592 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '592 Patent.

68. To the extent facts learned in discovery show that Defendants' infringement of the '592 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

69. As a result of Defendants' infringement of the '592 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

70. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '592 Patent, Oyster will be greatly and irreparably harmed.

COUNT V

INFRINGEMENT OF THE '327 PATENT

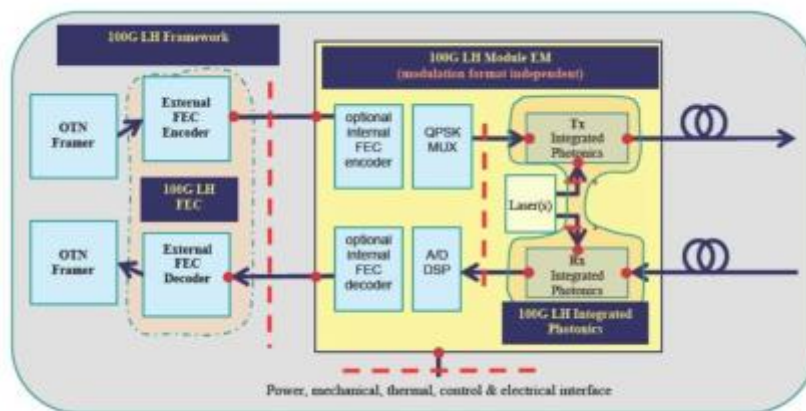
71. Oyster references and incorporates by reference paragraphs 1 through 70 of this Complaint.

72. On information and belief, Defendants make, use, offer for sale and/or sell in the United States the Accused Instrumentalities that infringe various claims of the '327 Patent, and continues to do so. These products include, for example, ZTE's platforms, their compatible modules, devices, and components such as the ZXMP M820, ZXWM M900, ZXWM M920, ZXONE 8000, and ZXONE 8700.²⁵ The exemplary infringing products shall be referred to hereinafter as the "ZTE ZX-100 Accused Instrumentalities."

1. On information and belief, the ZTE ZX-100 Accused Instrumentalities are transceiver card for a telecommunications box for transmitting data over a first optical fiber and receiving data over a second optical fiber. The ZTE ZX-100 Accused Instrumentalities, on information and belief, are designed in accordance with Optical Internetworking Forum ("OIF")

²⁵ See, e.g., *ZXMP M820/M720*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268211.html (last visited Oct. 29, 2016); *ZXWM M900 DWDM Equipment*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268213.html (last visited Oct. 29, 2016); *ZXWM M920 Products*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268214.html (last visited Oct. 29, 2016); *ZXONE 8000 Series Products*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/products/bearer/optical_transmission/wdm_otn/201112/t20111207_268216.html (last visited Oct. 29, 2016). *Transport the Value and Bear the Future----ZTE ZXONE 8300 Helps Suzhou Unicom Build Its Bearer Network*, ZTE CORPORATION, http://wwwen.zte.com.cn/pub/en/cases/bearer/efficiency/201112/t20111205_267853.html (last visited Oct. 29, 2016).

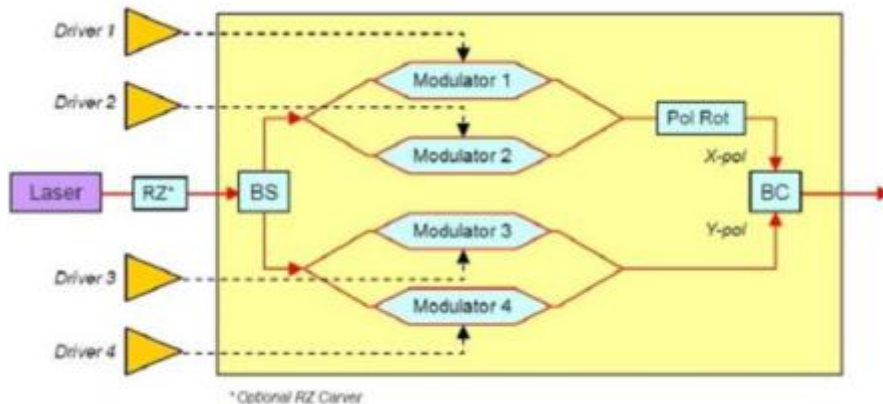
specifications. The implementation of an exemplary OIF standardized DP-QPSK transceiver for sending and receiving data over optical fibers is depicted below. The blocks shown below are printed on a single circuit board or card.



The figure below depicts a product designed in accordance with the OIF CFP2 ACO standard, which shows a module or card that is implemented in a telecommunications box or system.



73. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a transmitter for transmitting data over the first optical fiber, the transmitter having a laser, a modulator, and a controller receiving input data and controlling the modulator as a function of the input data, the transmitter transmitting optical signals for telecommunication as a function of the input data. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G standard comprise a laser and a modulator. As shown in the figure below, OIF 100G Standard devices employ lasers and modulators.



As shown in the figure below, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF CFP2 ACO Standard contain a transmitter (Tx Coherent Optics) with a laser, a modulator, and a driver which is configured to receive input data and control the modulator to generate a first optical signal as a function of the input data.

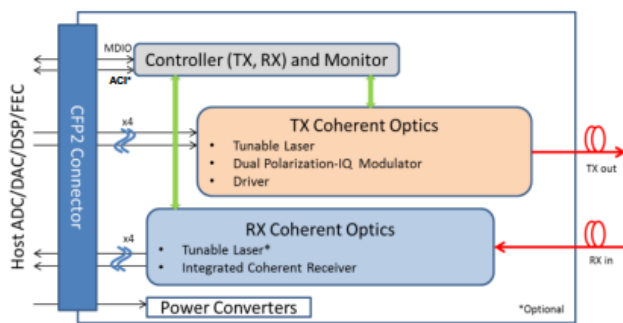


Figure 2 CFP2-ACO Module High Level Block Diagram

The figure below depicts an exemplary controller consistent with the OIF CPA2 ACO Standard, and, on information and belief, utilized by the ZTE ZX-100 Accused Instrumentalities that is configured to receive input data and control the modulator to generate a first optical signal as a function of the input data.

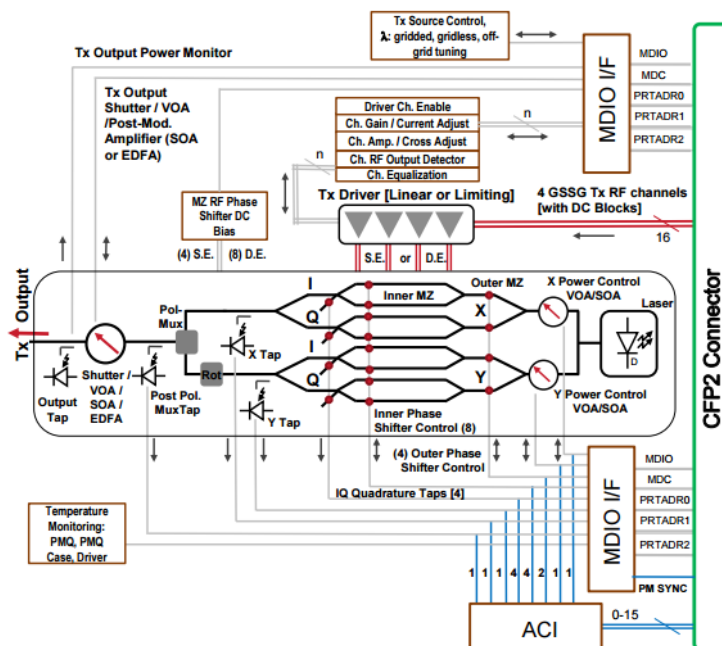


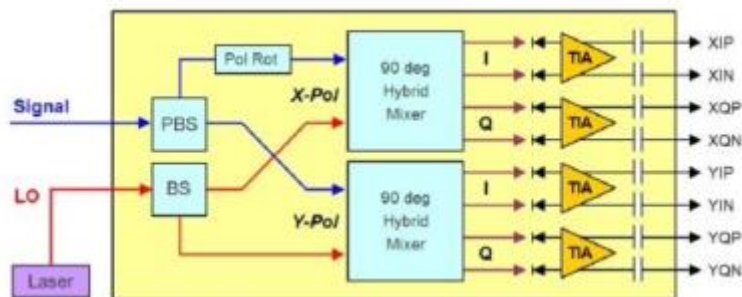
Figure 4: Superset Transmit Function Block Diagram with an MDIO plus Full Superset Analog Control Interface (ACI)

74. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a fiber output optically connected to the laser for connecting the first optical fiber to the card. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard utilize a laser’s optical output as connected through “Tx Integrated Photonics” and an output to reach the optical transmission fiber, as depicted in a previous figure. A first optical fiber is also depicted in a figure shown above at the “Tx out” of the exemplary OIF CFP2 ACO Standardized module.

75. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a fiber input for connecting the second optical fiber to the card. A previous figure depicts fiber receiving the data going into the transceiver card.

76. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a receiver optically connected to the fiber input for receiving data from the second optical fiber. For example, the figure below depicts the receiver module that receives the optical signal from

the receiver fiber at “Signal.” For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard utilize a receiver module, which receives the optical signal from the receiver fiber at “Signal”, as depicted in the figure below.



A receiver is also depicted in the figure below, between the RX Coherent optics block at the CFP2 Connector. The figure below, which further describes a module designed in accordance with the OIF CPD2 ACO Standard, also depicts a receiver.

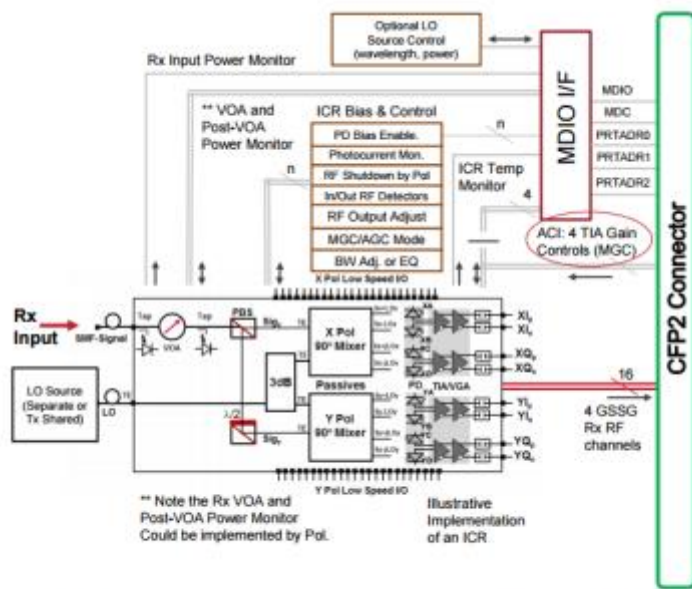
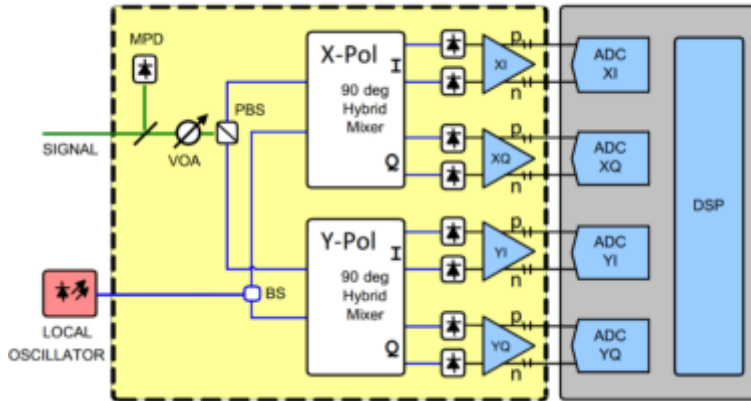


Figure 6: Superset Receive Function Block Diagram with an MDIO plus Full Superset Analog Control Interface (ACI)

77. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise an energy level detector optically connected between the receiver and the fiber input to measure an energy level of the optical signals, wherein the energy level detector includes a plurality of

thresholds. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard contain an energy level detector (power tap or monitor photodetector (“MPD”)), as the OIF 100G Standard specifies an integrated receiver module whose functional diagram is shown in the figure below.



One of the basic requirements for the coherent receiver is an optical power tap or monitor photodiode (“MPD”) in the signal input path. This MPD provides a representation of the optical signal strength in the form of an electrical signal. The electrical signal is measured, and provides an indication of the energy level of the optical signal. Table 1 specifies the opto-electrical properties of the receiver. The average optical power of the operating signal has minimum, typical and maximum threshold values.

Table 1

Table 7: Opto-electrical properties

Parameter	Units	Min	Typ	Max	Comments
Symbol Rate	GBaud			32	
Operating Signal Power	dBm	-18	-10	0	Average optical power
Local Oscillator Power	dBm				See Figure 5 for recommended operating conditions.
Linear output swing adjustment range					Peak to peak, differential, AC coupled
Standard	mVppd	300	500	700	
Extended	mVppd	400		900	

The defined parameters (e.g., current, average, minimum, and maximum) for the receiver input power are as depicted in Table 2 below.

Table 2

Rx Total Optical Power Monitoring [13.3 Provides Existing MIS Rx Input Power Monitoring Registers]						
B4E0	1	RO	15~0	Current Input Power [Total Rx	A signed 16-bit integer with the LSB =	
[2.0] [000]				Optical]	0.01dBm. [2.6 commentary: Preferred Register for CFP2-ACO Total Current Rx Input Power.]	
B4F0	1	RO	15~0	Average Input Power over PM interval [Total Rx Optical]	A signed 16-bit integer with the LSB = 0.01dBm. [2.6 commentary: Preferred Register for CFP2-ACO Average Total Current Rx Input Power.]	
[2.0] [000]						
B500	1	RO	15~0	Minimum Input Power over PM interval [Total Rx Optical]	A signed 16-bit integer with the LSB = 0.01dBm. [2.6 commentary: Preferred Register for CFP2-ACO Minimum Total Current Rx Input Power.]	
[2.0] [000]						
B510	1	RO	15~0	Maximum Input Power over PM interval [Total Rx Optical]	A signed 16-bit integer with the LSB = 0.01dBm. [2.6 commentary: Preferred Register for CFP2-ACO Maximum Total Current Rx Input Power.]	
[2.0] [000]						

Tables 1 and 2 above specify the opto-electrical properties of the receiver. The average optical power of the operating signal has minimum, typical and maximum threshold values.

78. On information and belief, Defendants has directly infringed and continues to directly infringe the '327 Patent by, among other things, making, using, offering for sale, and/or selling the ZTE ZX-100 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '327 Patent's including at least claim 1.

79. By making, using, offering for sale, and/or selling the ZTE ZX-100 Accused Instrumentalities infringing the '327 Patent, Defendants have injured Oyster and are liable to

Oyster for infringement of the '327 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

80. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE ZX-100 Accused Instrumentalities, to directly infringe each and every claim limitation, including without limitation claim 1 of the '327 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Defendants' customers and/or end users have directly infringed and are directly infringing each and every claim limitation, including without limitation claim 1 of the '327 Patent. Defendants has actual knowledge of the '327 Patent at least as of service of this Complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe the '327 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '327 Patent.

81. To the extent facts learned in discovery show that Defendants' infringement of the '327 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

82. As a result of Defendants' infringement of the '327 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

83. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '327 Patent, Oyster will be greatly and irreparably harmed.

COUNT VI

INFRINGEMENT OF THE '511 PATENT

84. Oyster references and incorporates by reference paragraphs 1 through 83 of this Complaint.

85. On information and belief, Defendants make, use, offer for sale and/or sell in the United States the ZTE ZX-100 Accused Instrumentalities that infringe various claims of the '511 Patent, and continues to do so.

86. On information and belief, the ZTE ZX-100 Accused Instrumentalities practice a method for operating an optical fiber multiplexor in a phase modulation mode. The '511 Accused Instrumentalities, on information and belief, are designed in accordance with the OIF 100G Standard specifying DP-QPSK as the modulation format for 100G. On information and belief, the ZTE ZX-100 Accused Instrumentalities are also designed in accordance with the OIF CFP2 ACO Standard. The exemplary figures above illustrate the implementation of an exemplary OIF standardized DP-QPSK transceiver for sending and receiving data over optical fibers. The blocks depicted in a previous figure are typically printed on a single circuit board or card used in optical fiber multiplexor systems. The exemplary figures above also depict a product designed in accordance with the OIF CFP2 ACO standard, which shows a module or card that is implemented in optical fiber multiplexor systems.

87. On information and belief, the ZTE ZX-100 Accused Instrumentalities perform the step of feeding input data to a controller of a transmitter of a telecommunications box, the

telecommunications box having an electronic data input for the input data and an electronic data output. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G standard comprise a laser and a modulator. As shown above, OIF 100G Standard devices employ lasers and modulators. The signal passes to the transceiver module. Data is converted to drive signals to control the optical modulators. A transmit laser provides the light source for the modulators. On the receive side the incoming signal is mixed with a local oscillator, demodulated into components, detected, amplified, digitized, then passed into the DSP module.

88. On information and belief, the ZTE ZX-100 Accused Instrumentalities perform the step of using the controller, controlling a modulator to phase modulate light from a laser as a function of the input data. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard utilized a transceiver where data is converted to drive signals to control the optical modulators, as previously shown.

89. On information and belief, the ZTE ZX-100 Accused Instrumentalities perform the step of sending the modulated light as an optical signal from the transmitter over an optical fiber. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G transmit phase modulated optical signal over an optical fiber, as previously shown. An exemplary fiber input optically connected to the receiver and configured to optically connect the second optical fiber to the transceiver card is also depicted above at the “Rx in” of the exemplary OIF-CFP2-ACO Standardized module, and at the connection between the RX Coherent Optics block and the CFP2 Connector.

90. On information and belief, the ZTE ZX-100 Accused Instrumentalities perform the step of receiving the optical signals from the optical fiber at a receiver of a further

telecommunications box and converting the optical signals to electronic output data. For example, on information and belief, ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF-DPC-RX Standard utilize an integrated receiver module as shown above.

91. On information and belief, the ZTE ZX-100 Accused Instrumentalities perform the step of passing the phase-modulated optical signals to a photodetector to produce an electric signal. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G and OIF-DPC-RX Standards utilize a monitoring photodiode (MPD) that taps and receives the phase-modulated incoming optical signal and produces an electrical signal in response, as depicted above.

92. On information and belief, the ZTE ZX-100 Accused Instrumentalities perform the step of filtering the electrical signal to produce an average optical power. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard contain an energy level detector (power tap or monitor photodiode (MPD)), as the OIF 100G Standard specifies an integrated receiver module whose functional diagram is shown in a previous figure. One of the basic requirements for the coherent receiver is an optical power tap or MPD in the signal input path. Table 1 specifies the opto-electrical properties of the receiver. The average optical power of the operating signal has minimum, typical and maximum threshold values. The OIF CFP2 ACO Standard also requires an Intradyne Coherent Receiver optical power monitoring functionality, as depicted in Table 2.

93. On information and belief, Defendants has directly infringed and continues to directly infringe the '511 Patent by, among other things, making, using, offering for sale, and/or

selling the ZTE ZX-100 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '511 Patent's including at least claim 9.

94. By making, using, offering for sale, and/or selling the ZTE ZX-100 Accused Instrumentalities infringing the '511 Patent, Defendants have injured Oyster and are liable to Oyster for infringement of the '511 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

95. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE ZX-100 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each and every claim limitation, including without limitation claim 9 of the '511 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Defendants' customers and/or end users have directly infringed and are directly infringing each and every claim limitation, including without limitation claim 9 of the '511 Patent. Defendants has actual knowledge of the '511 Patent at least as of service of this Complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe the '511 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '511 Patent.

96. To the extent facts learned in discovery show that Defendants' infringement of the '511 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

97. As a result of Defendants' infringement of the '511 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

98. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '511 Patent, Oyster will be greatly and irreparably harmed.

COUNT VII

INFRINGEMENT OF THE '898 PATENT

99. Oyster references and incorporates by reference paragraphs 1 through 98 of this Complaint.

100. On information and belief, Defendants make, use, offer for sale and/or sell in the United States the ZTE ZX-100 Accused Instrumentalities that infringe various claims of the '898 Patent, and continues to do so.

101. On information and belief, the ZTE ZX-100 Accused Instrumentalities are a transceiver card for a telecommunications box for transmitting data over a first optical fiber and receiving data over a second optical fiber. The ZTE ZX-100 Accused Instrumentalities, on information and belief, are designed in accordance with OIF 100G Standard. OIF has focused on DP-QPSK as the modulation format for 100G. On information and belief, the ZTE ZX-100 Accused Instrumentalities are also designed in accordance with the OIF CFP2 ACO Standard. The exemplary figures above illustrate the implementation of an exemplary OIF standardized DP-QPSK transceiver for sending and receiving data over optical fibers. The blocks depicted

above are typically printed on a single circuit board or card. The exemplary figures above depict a product designed in accordance with the OIF CFP2 ACO standard, which shows a module or card that is implemented in a telecommunications box or system.

102. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a transmitter having a laser, a modulator, and a controller configured to receive input data and control the modulator to generate a first optical signal as a function of the input data. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G standard comprise a laser and a modulator. As previously shown, OIF 100G Standard devices employ lasers and modulators. As previously shown, the Accused Instrumentalities designed in accordance with the OIF CFP2 ACO Standard contain a transmitter (Tx Coherent Optics) with a laser, a modulator, and a driver which is configured to receive input data and control the modulator to generate a first optical signal as a function of the input data. The exemplary figures above depict an exemplary controller consistent with the OIF CPA2 ACO Standard, and, on information and belief utilized by the ZTE ZX-100 Accused Instrumentalities, that is configured to receive input data and control the modulator to generate a first optical signal as a function of the input data.

103. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a fiber output optically connected to the transmitter and configured to optically connect the first optical fiber to the transceiver card. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard utilize a laser's optical output as connected through the "Tx Integrated Photonics" depicted in a previous figure. Also depicted above is an output to reach the optical transmission fiber. A first optical fiber is also depicted above at the "Tx out" of the exemplary OIF CFP2 ACO Standardized module.

104. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a receiver configured to receive a second optical signal from the second optical fiber and to convert the second optical signal to output data. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard utilize a receiver module depicted above that receives the optical signal from the receiver fiber at “Signal.” A receiver is also depicted above between the RX Coherent optics block at the CFP2 Connector. The exemplary figures above which further describe a module designed in accordance with the OIF CPD2 ACO Standard also depicts a receiver.

105. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise a fiber input optically connected to the receiver and configured to optically connect the second optical fiber to the transceiver card. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard connect the laser’s optical output through the “Rx Integrated Photonics”, and also specify an output to reach the optical transmission fiber, as depicted above. An exemplary fiber input optically connected to the receiver and configured to optically connect the second optical fiber to the transceiver card is also depicted above at the “Rx in” of the exemplary OIF CFP2 ACO Standardized module, and at the connection between the RX Coherent Optics block and the CFP2 Connector.

106. On information and belief, the ZTE ZX-100 Accused Instrumentalities comprise an energy level detector optically connected between the receiver and the fiber input to measure an energy level of the second optical signal, wherein the energy level detector includes a plurality of thresholds. For example, the ZTE ZX-100 Accused Instrumentalities designed in accordance with the OIF 100G Standard and, for example, the OIF DPC RX Standard, contain an energy level detector depicted by the monitoring photodiode (“MPD”). The OIF 100G and OIF

DPC RX Standards specify an integrated receiver module whose functional diagram is shown above. One of the basic requirements for the coherent receiver is an optical power tap (monitor photodiode or “MPD”) in the signal input path. This MPD provides a representation of the optical signal strength in the form of an electrical signal. The electrical signal is measured, and provides an indication of the energy level of the optical signal. Table 1 specifies the opto-electrical properties of the receiver. The average optical power of the operating signal has minimum, typical and maximum threshold values. The OIF CFP2 ACO Standard also requires an Intradyme Coherent Receiver optical power monitoring functionality, (Rx Input Power Monitor) as shown above. The defined parameters (e.g., current, average, minimum, and maximum) for the receiver input power are as depicted in Table 2.

107. On information and belief, Defendants has directly infringed and continues to directly infringe the '898 Patent by, among other things, making, using, offering for sale, and/or selling the ZTE ZX-100 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '898 Patent's including at least claim 1.

108. By making, using, offering for sale, and/or selling the ZTE ZX-100 Accused Instrumentalities infringing the '898 Patent, Defendants have injured Oyster and are liable to Oyster for infringement of the '898 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

109. In addition, Defendants actively induce others, including without limitation customers and end users of ZTE ZX-100 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each and every claim limitation, including without limitation claim 1 of the '898 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Defendants' customers and/or end users have directly infringed and are

directly infringing each and every claim limitation, including without limitation claim 1 of the '898 Patent. Defendants has actual knowledge of the '898 Patent at least as of service of this Complaint. Defendants is knowingly inducing its customers and/or end users to directly infringe the '898 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Defendants' inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '898 Patent.

110. To the extent facts learned in discovery show that Defendants' infringement of the '898 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

111. As a result of Defendants' infringement of the '898 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court, and Oyster will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

112. Unless a permanent injunction is issued enjoining Defendants and its agents, employees, representatives, affiliates, and all others acting or in active concert therewith from infringing the '898 Patent, Oyster will be greatly and irreparably harmed.

PRAYER FOR RELIEF

Plaintiff respectfully requests the following relief from this Court:

A. A judgment that Defendants has infringed one or more claims of the '816, '952, '055, '592, '327, '511, and/or '898 Patents;

B. A permanent injunction enjoining Defendants and its officers, directors, agents, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in active concert or participation with Defendants, from infringing the '816, '952, '055, '592, '327, '511, and/or '898 Patents;

C. A judgment and order requiring Defendants to pay Oyster its damages, costs, expenses, and prejudgment and post-judgment interest for Defendants' acts of infringement in accordance with 35 U.S.C. § 284;

D. A judgment and order requiring Defendants to provide accountings and to pay supplemental damages to Oyster, including, without limitation, prejudgment and post-judgment interest;

E. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Oyster its reasonable attorneys' fees against Defendant; and

F. Any and all other relief to which Oyster may show itself to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Oyster requests a trial by jury of any issues so triable by right.

Dated: November 23, 2016

Respectfully submitted,

/s/ Marc A. Fenster

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