Michael Critchley, Sr.
CRITCHLEY, KINUM & DENOIA, LLC
75 Livingston Ave, Suite 303
Roseland, New Jersey 07068
Telephone: (973) 422-9200

Arun S. Subramanian (*pro hac vice forthcoming*)
Jacob W. Buchdahl (*pro hac vice forthcoming*)
SUSMAN GODFREY L.L.P.
1301 Avenue of the Americas, 32nd Floor
New York, New York 10019
Telephone: (212) 336-8330

Attorneys for Plaintiffs
Nasdaq, Inc., Nasdaq ISE, LLC, and FTEN, Inc.

Additional counsel listed on signature page

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

NASDAQ, INC.; NASDAQ ISE, LLC; AND FTEN, INC.;

Plaintiffs,

v.

MIAMI INTERNATIONAL HOLDINGS, INC.; MIAMI INTERNATIONAL SECURITIES EXCHANGE, LLC; MIAX PEARL, LLC; AND MIAMI INTERNATIONAL TECHNOLOGIES, LLC;

Defendants.

Civil Action No.: _____

COMPLAINT AND DEMAND FOR JURY TRIAL

COMPLAINT

Plaintiffs Nasdaq, Inc. ("Nasdaq"), Nasdaq ISE, LLC ("Nasdaq ISE"), and FTEN, Inc. ("FTEN") (collectively, "Plaintiffs" or the "Nasdaq Entities"), by and through their attorneys, and for their Complaint against Miami International Holdings, Inc., Miami International Securities Exchange, LLC, and MIAX PEARL, LLC, and Miami International Technologies, LLC (collectively, "Defendants" or "MIAX"), allege as follows:

INTRODUCTION

This is an action for patent infringement and trade secret misappropriation relating to Nasdaq and the Nasdaq Entities' electronic trading technology and platforms. Founded in 1971, Nasdaq is the world's first electronic stock market. Over the years, Nasdaq has devoted significant resources to growing its exchange and exchange-related operations. Nasdaq has heavily invested in efforts to improve the technologies upon which its operations rely.

MIAX launched two options exchanges, MIAX Options and MIAX Pearl, in 2012 and 2017, respectively. In the course of its operations, MIAX has hired at least fifteen (15) key employees who were previously at Nasdaq so that it could avoid incurring or reduce the risk, time, and expense of independently developing its own trading technology. This calculated theft of the fruits of Nasdaq's long-

term investments and intellectual property allowed MIAX to launch both of its exchanges in record time—at Nasdaq's expense.

While Nasdaq developed its custom electronic trading technology with sustained effort over many years, MIAX leveraged information stolen by the former Nasdaq employees to shortcut the process and purportedly build two comparable electronic exchanges in a fraction of the time it took Nasdaq to build the same. Indeed, MIAX even boasted that it has "assembled a team with deep rooted experience in developing, operating and trading on options exchanges" and was able to "leverage management's expertise and relationships in the equity options space to launch" its options exchanges.[1] As the facts outlined above and elaborated further in this Complaint will show, MIAX's trading platforms were not "developed in-house and designed from the ground up,"[2] but instead implement Nasdaq's proprietary electronic trading technology.

In light of MIAX's misappropriation of Nasdaq's trade secret information and infringement of the Nasdaq Entities' patented electronic trading technology,

[1] "MIAX Receives Approval Order from the United States Securities and Exchange Commission to Become Newest Equity Options Exchange; Trading to Commence on December 7, 2012," CISION *PR Newswire*, Dec. 4, 2012, *available at* http://www.prnewswire.com/news-releases/miax-receives-approval-order-from-the-united-states-securities-and-exchange-commission-to-become-newest-equity-options-exchange-trading-to-commence-on-december-7-2012-182012321.html.

[2] "MIAX PEARL Successfully Launches Trading Operations," *MarketWatch*, Feb. 6, 2017, *available at* http://www.marketwatch.com/story/miax-pearl-successfully-launches-trading-operations-2017-02-06-17203119.

Plaintiffs bring this Complaint to prevent any further misuse of its proprietary information.

NATURE OF THE ACTION

1. This is an action under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq*., for infringement by MIAX of one or more claims of each of U.S. Patent Nos. 6,618,707, 7,246,093, 7,599,875, 7,747,506, 7,921,051, 7,933,827, and 8,386,371 (collectively referred to as the "Patents-in-Suit").

2. This is also an action for misappropriation of trade secrets in violation of (a) the Defend Trade Secrets Act, 18 U.S.C. § 1836, *et seq.*; (b) the New Jersey Trade Secrets Act, N.J. Stat. Ann. §§ 56:15-1 through 56:15-9; and (c) New Jersey common law.

PARTIES

3. Plaintiff Nasdaq, Inc. is a corporation organized and existing under the laws of the State of Delaware, having its principal place of business at One Liberty Plaza, 165 Broadway, New York, New York 10006.

4. Plaintiff Nasdaq ISE, LLC is a limited liability corporation organized and existing under the laws of the State of Delaware, having its principal place of business at One Liberty Plaza, 165 Broadway, New York, New York 10006. Nasdaq ISE, LLC is a wholly-owned subsidiary of Nasdaq, Inc. (through U.S. Exchange Holdings, Inc.).

5. Plaintiff FTEN, Inc. is a corporation organized and existing under the laws of the State of Delaware, having its principal place of business at One Liberty Plaza, 165 Broadway, 50th Floor, New York, New York 10006. FTEN is a wholly-owned subsidiary of Nasdaq, Inc.

6. Upon information and belief, Defendant Miami International Holdings, Inc. ("MIH") is a corporation organized under the laws of the State of Delaware, having its principal place of business at 7 Roszel Rd., Princeton, New Jersey 08540, and a registered agent at The Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, Delaware 19801. Upon information and belief, MIH was incorporated on November 14, 2007, as an exchange holding company. MIH is the parent company of Miami International Securities Exchange, LLC, MIAX PEARL, LLC, and Miami International Technologies, LLC, and the four entities share many common directors and officers.

7. Upon information and belief, Defendant Miami International Securities Exchange, LLC ("MIAX Options") is a limited liability company organized in Delaware and a wholly-owned subsidiary of MIH. MIAX Options has its principal place of business at 7 Roszel Rd., 5th floor, Princeton, New Jersey 08540, and a registered agent at The Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, Delaware 19801. Upon information

and belief, MIAX Options operates a fully electronic options trading platform for the trading of Options Clearing Corporation ("OCC") issued standardized options on equities and exchange traded funds ("ETFs"). Trading on MIAX Options commenced on December 7, 2012, following its approval from the U.S. Securities and Exchange Commission ("SEC") as a National Securities Exchange.

8. Upon information and belief, Defendant MIAX PEARL, LLC ("MIAX Pearl") is a limited liability company organized in Delaware and a wholly-owned subsidiary of MIH. MIAX Pearl has its principal place of business at 7 Roszel Rd., Princeton, New Jersey 08540, and a registered agent at The Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, Delaware 19801. Upon information and belief, MIAX Pearl is MIH's second fully electronic options trading exchange; its purpose is to serve as a counterpart to MIAX Options by providing a price-time allocation and maker-taker pricing model. Trading on MIAX Pearl commenced on February 6, 2017, following its approval from the SEC as a National Securities Exchange.

9. Upon information and belief, Defendant Miami International Technologies, LLC ("MIAX Tech.") is a limited liability company organized in Delaware and a wholly-owned subsidiary of MIH. MIAX Tech. has its principal place of business at 7 Roszel Rd., Princeton, New Jersey 08540, and a registered agent at The Corporation Trust Company, Corporation Trust Center, 1209 Orange

St., Wilmington, Delaware 19801. Upon information and belief, MIAX Tech. was incorporated on May 12, 2010. MIAX Tech. is in the business of selling and licensing trading technology.

JURISDICTION AND VENUE

10. This Court has subject matter jurisdiction over the Nasdaq Entities' claims for patent infringement pursuant to the Federal Patent Act, 35 U.S.C. § 101 *et seq.* and 28 U.S.C. §§ 1331 and 1338(a). This Court has subject matter jurisdiction over Nasdaq's federal trade secret claim pursuant to 18 U.S.C. §§ 1836-39 *et seq.* and 28 U.S.C. § 1331. This Court has supplemental jurisdiction over the non-federal trade secret misappropriation claims under 28 U.S.C. § 1367(a).

11. This Court has personal jurisdiction over each of the MIAX Defendants because, *inter alia*, (i) the MIAX Defendants maintain their principal places of business in this District, (ii) the MIAX Defendants have done and continue to do business in New Jersey, including regularly doing or soliciting business and engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in New Jersey and in this judicial district; (iii) the MIAX Defendants have committed and continue to commit acts of patent infringement in the State of New Jersey, including making, using, offering to sell, and/or selling accused products and

services in New Jersey, and/or importing accused products into New Jersey, and/or inducing others to commit acts of patent infringement in New Jersey; and (iv) the MIAX Defendants have acquired, used, and/or disclosed Nasdaq's trade secrets in New Jersey and in this judicial district.

12. As set forth above, all the MIAX Defendants reside in this judicial district. In addition, a substantial part of the events or omissions giving rise to the claims alleged in this Complaint occurred in this judicial district. Venue therefore is proper in this district pursuant to 28 U.S.C. §§ 1391(b), 1391(c) and 1400(b) because, *inter alia*, upon information and belief, (i) the MIAX Defendants have done and continue to do business in this district, including regularly doing or soliciting business and engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in New Jersey and in this judicial district; (ii) the MIAX Defendants have committed and continue to commit acts of patent infringement in this district, including making, using, offering to sell, and/or selling accused products and services in this district, and/or importing accused products into this district, and/or inducing others to commit acts of patent infringement in this district; and (iii) the MIAX Defendants have acquired, used, and/or disclosed Nasdaq's trade secrets in New Jersey and in this judicial district.

THE PATENTS-IN-SUIT

13. On September 9, 2003, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 6,618,707 (the "'707 Patent"), entitled "Automated Exchange for Trading Derivative Securities," based upon an application filed by inventor Gary Katz. Nasdaq ISE is the assignee of the '707 Patent.

14. On July 17, 2007, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,246,093 (the "'093 Patent"), entitled "Automated Exchange for Trading Derivative Securities," based upon an application filed by inventor Gary Katz. Nasdaq ISE is the assignee of the '093 Patent.

15. On October 6, 2009, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,599,875 (the "'875 Patent"), entitled "Dual Quote Market System," based upon an application filed by inventors Richard G. Ketchum, Alfred R. Berkeley, III, and Joseph Della Rosa. Nasdaq is the assignee of the '875 Patent.

16. On July 29, 2010, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,747,506 (the "'506 Patent"), entitled "Recipient Status Indicator System and Method," based upon an application filed

by inventors Keith Alexander, Paul Buu, Edward N. Flynn, Roberta Gail, David Gallucci, and Jay Thompson. Nasdaq is the assignee of the '506 Patent.

17. On April 5, 2011, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,921,051 (the "'051 Patent"), entitled "Security-Based Order Processing Technique," based upon an application filed by inventors Stuart Richard Serkin, Robert Miller, Timothy Vincent, and Edward A. Perrault. Nasdaq is the assignee of the '051 Patent.

18. On April 26, 2011, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,933,827 (the "'827 Patent"), entitled "Multi-Parallel Architecture and A Method of Using the Same," based upon an application filed by inventors James N. Richmann, Daniel F. Moore, John T. Hughes, Jr., Stuart Serkin, Timothy Vincent, Peter J. Martyn, and Mark DeNat. Nasdaq is the assignee of the '827 Patent.

19. On February 26, 2013, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 8,386,371 (the "'371 Patent"), entitled "Method and System for Canceling Orders for Financial Articles of Trades," based upon an application filed by inventors Douglas G. Kittelsen, Lee Arthur Cole, and John Kain. FTEN is the assignee of the '371 Patent.

20. The Patents-in-Suit generally relate to methods and systems for automated securities trading, including options trading.

21. The Nasdaq Entities own all right, title, and interest in and to the Patents-in-Suit and possess all rights of recovery.

22. The MIAX Defendants have notice of the Patents-in-Suit at least as of the date of this Complaint.

THE NASDAQ TRADE SECRETS

23. Nasdaq's renowned INET electronic trading technology platform has been an essential component in Nasdaq's business strategy and performance since 2005. As an electronic communication network, INET is the core software engine behind all Nasdaq trading systems and also the Nasdaq Financial Framework, which Nasdaq provides commercially to other exchanges, CCPs, and CSDs, globally. INET has proven to be one of the most stable and reliable exchange technologies in the world with over 100 market operators that depend on the platform as a mission-critical component of their businesses. Nasdaq has continually raised the bar by investing in INET quality and performance. The Nasdaq solution provides unparalleled capacity and speed, supporting processing of up to five million messages per second at speeds of sub-100 microseconds on average. INET is by far the highest performing, fastest trading system among U.S. exchanges by a wide margin, and believed to power the fastest exchange platforms

on the planet.[3]

24. Over the years, Nasdaq has expended significant resources to develop and improve upon INET to provide Nasdaq customers with the competitive advantage of an automated system that is highly efficient and exceptionally stable, and that reliably facilitates high-speed pairings of buy and sell orders to improve liquidity, reduce latency, assure the fair handling of orders, and diminish transaction costs to both firms and investors alike. Specifically, INET's unique middleware messaging bus, which facilitates the communication of data between different components that are connected to the messaging bus, contributes significantly to INET's reliability and performance. A number of features implemented in the messaging bus, such as its multi-tier data storage architecture and gap-fill process, have been and continue to be drivers in exchange innovation.

25. INET has been the subject of efforts on Nasdaq's part to maintain its secrecy. Such efforts include, but are not limited to, restricting access to INET (including to technical documentation, systems architecture, source code, and hardware servers) to only necessary personnel; marking INET-related documents or their storage areas with notices that the information is deemed proprietary and confidential; providing notices contained in an employee handbook and/or policy manual; requiring individuals granted access to INET-related information to

[3] *See, e.g.*, http://www.six-swiss-exchange.com/download/participants/trading/x-stream_inet_performance_measure ment_details.pdf

execute non-disclosure, non-solicitation, and confidentiality agreements; and imposing password protections on electronic access to INET and proprietary INET-related information.

26. Despite such efforts, however, on information and belief, former Nasdaq employees who have left Nasdaq to join MIAX have improperly acquired, disclosed, and/or used INET-related trade secret information ("Nasdaq Trade Secrets") for MIAX's benefit and to Nasdaq's detriment.

27. On the "About MIAX" page of MIAX's website at www.miaxoptions.com, MIAX claims that "[t]he MIAX trading platform was developed in-house and designed from the ground up for the unique functional and performance demands of derivatives trading. MIAX understands that providing a trading platform with the proper protections, latency, and throughput is essential to the success of the trading community." But rather than build the MIAX trading platform in-house from scratch, on information and belief, MIAX instead relied on or piggybacked off of the Nasdaq Trade Secrets and other technical know-how acquired by former Nasdaq employees during their tenure at Nasdaq.

28. Currently, at least fifteen (15) former Nasdaq employees are employed at MIAX. Collectively, this Complaint will refer to these former Nasdaq employees as the "Nasdaq-to-MIAX Employees" or "NTMEs." Many of these NTMEs originally joined Nasdaq as part of Nasdaq's acquisition of the

Philadelphia Stock Exchange ("PHLX") on July 24, 2008. By fall of 2011, more than a dozen NTMEs had joined MIAX. Further NTMEs joined MIAX in subsequent years.

29. Upon information and belief, NTME No. 1 is currently a senior technology executive at MIAX. According to MIAX's website, NTME No. 1 directs the development of MIAX's trading system platforms and related production systems operations. While at Nasdaq, NTME No. 1 was the VP of Global Systems Development and was extensively involved in and knowledgeable about INET, and had access to Nasdaq Trade Secrets. Upon information and belief, and after a preliminary review and investigation of NTME No. 1's emails retained on Nasdaq's servers, on at least five occasions between August 2010 and January 2011, NTME No. 1 forwarded to his personal email technical documentation containing Nasdaq Trade Secrets, as well as other confidential Nasdaq documents including employee salary information, for later use and access at MIAX.

30. Upon information and belief, NTME No. 2 is currently a senior business systems development executive at MIAX. According to MIAX's website, NTME No. 2 defines the technical strategy and oversees software development, delivery and operation of systems that support exchange business automation and operations, as well as trade clearing and post-trade processing. While at Nasdaq,

NTME No. 2 was the Director of Technology and had access to Nasdaq Trade Secrets during his employment with Nasdaq. Upon information and belief, and after a preliminary review and investigation of the emails of NTME No. 2 retained on Nasdaq's servers, NTME No. 2 had forwarded to his personal email at least one technical document containing Nasdaq Trade Secrets for later use and access at MIAX.

31. Upon information and belief, NTME No. 3 is currently a senior systems infrastructure executive at MIAX. While at Nasdaq, NTME No. 3 had access to Nasdaq Trade Secrets. Upon information and belief, and after a preliminary review and investigation of NTME No. 3's emails retained on Nasdaq's servers, on at least three occasions, NTME No. 3 had forwarded to a Hotmail.com account technical INET infrastructure and architecture documentation which included the Nasdaq Trade Secrets for later use and access at MIAX.

32. Similarly, on information and belief, NTME No. 4 is currently employed by MIAX and had access to Nasdaq Trade Secrets during his two years at Nasdaq as a Senior Unix Engineer. A preliminary review and investigation of NTME No. 4's emails retained on the Nasdaq servers revealed that he had improperly acquired and retained at least five technical documents including Nasdaq Trade Secrets for later use and access at MIAX.

33. On October 21, 2014, unbeknownst to Nasdaq, the United States Patent and Trademark Office duly issued U.S. Patent No. 8,868,461 (the "MIAX '461 Patent") to MIAX, based upon an application filed on December 6, 2013, by NTME Nos. 1, 4, 5, 6, 7, 8, and others not previously at Nasdaq.

34. Among the MIAX '461 Patent's disclosures are a messaging bus (which has a multi-tier data storage architecture and implements a specific gap-fill process) that bears a striking resemblance to Nasdaq's own highly confidential and proprietary INET design and reflects Nasdaq's trade secrets. For example, the architecture depicted in Figure 10 and the gap-fill process described in columns 20 and 21 of the MIAX '461 Patent are nearly identical to the systems architecture, processes, and configuration that are unique to Nasdaq's INET and comprise Nasdaq's trade secrets. Accordingly, Nasdaq is informed and believes, and based thereon alleges, that MIAX brazenly used the inventions that were acquired and improperly disclosed or used by the Nasdaq-to-MIAX Employees to prepare MIAX's own patent application. Nasdaq is further informed and believes, and based thereon alleges, that MIAX has, in October 2014, received the '461 Patent on inventions that were Nasdaq Trade Secrets, which were provided to the Nasdaq-to-MIAX Employees under confidentiality and nondisclosure obligations in the course of their employment with Nasdaq.

35. Based on the foregoing, Nasdaq is further informed and believes, and based thereon alleges, that MIAX's own trading platforms—MIAX Options, MIAX Pearl, and any platforms offered by MIAX Tech.—implement and utilize Nasdaq Trade Secrets, which were improperly acquired by the Nasdaq-to-MIAX Employees while they were Nasdaq employees for disclosure to and use by MIAX.

COUNT I: INFRINGEMENT OF THE '707 PATENT

36. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

37. Upon information and belief, the MIAX Defendants have infringed at least claims 1, 2, 4, 6, 10, 12, 13, 16, 22-24, 35, 36, 38, 40-44, 56-59, 70, and 75 of the '707 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the MIAX Options Exchange, MIAX Pearl, and any other platforms offered by MIAX Tech. ("Accused Exchange Platforms").

38. Upon information and belief, MIAX's Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, each comprise an automated exchange for trading a financial instrument. For example, in a publicly available manual, MIAX defines its "system" to be an automated security exchange system:

System
The term "**System**" means the automated trading system used by the Exchange for the trading of securities.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 7.

In addition, MIAX defines the term "Exchange" to refer to itself, as one example of a national securities exchange.

Exchange
The term "**Exchange**" means the national securities exchange known as Miami International Securities Exchange or MIAX.

Id. at 2.

39. Upon information and belief, MIAX's Accused Exchange Platforms have a book memory adapted to store a quotation for purchasing or selling financial instruments, the quotation having a size associated therewith.

As one example, MIAX identifies a "MIAX Book" that satisfies the "book memory" limitation which is adapted to store quotes to purchase or sell financial instruments:

The matching engines of the Exchange each handle a defined set of option classes, which may be reallocated on a periodic basis in order to ensure that system load is balanced across the MIAX System. Each matching engine compares the limit price of all incoming quotes and orders with those quotes and orders already resting on the MIAX Book. The matching engine matches liquidity as available, calculates the MIAX Best Bid and Best Offer (the MBBO), monitors the other markets' displayed prices and determines when, and if, a trade can occur. If a newly arrived quote or order is marketable against the existing MIAX Book, and the MBBO is equal to or better than the best consolidated quote, an immediate match is made and allocations are communicated back to the trade participants.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 7.[4]

As another example, MIAX specifies that quote "size," along with "price," "product ID," and "side" are required for quotes sent to MIAX in the following table template:

1 to 50 single-side quotes consisting of the following fields:			
Product ID	4	BinaryU	Product ID assigned by MIAX for the current session
Price	4	BinaryPrc4U	Quote price. Max Price: Is defined in Technical Circular
Size	4	BinaryU	Quote size (number of option contracts). Max Size: 999,999
Side	1	Alphanumeric	"B" = Bid "A" = Ask

MIAX Express Interface for Quoting and Trading Options: MEI Interface Specification, Version 2.2b, Feb. 27, 2017, *available at* https://www.miaxoptions.com/sites/default/files/pagefiles/MIAX_Express_Interface_MEI_v2.2b.pdf, at page 15.

40. Upon information and belief, and as a further example, MIAX's Accused Exchange Platforms have an interface adapted to receive an incoming order for purchase or sale, the incoming order being associated with one of a plurality of types of entities and having a size associated therewith, wherein the

[4] *See also* MIAX Options, User's Manual, revision date Mar. 22, 2017, *available at* http://www.miaxoptions.com/sites/default/files/knowledge-center/2017-05/MIAX_Options_User_Manual_0322201 7.pdf, at page 4; MIAX Pearl, User's Manual, revision date May 1, 2017, *available at* http://www.miaxoptions.com/sites/default/files/knowledge-center/2017-05/MIAX_PEARL_User_Manual_05012017.pdf, at page 4.

types of entities include public customers, professionals, and market makers on other exchanges.

As one implementation, the MIAX FIX Orders Interface (FOI) is a messaging interface adapted to receive incoming purchase and sale orders of specified size.

1 Overview

MIAX FIX Orders Interface (**FOI**) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders.

FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. This document describes the messages that will be supported by FOI. For detailed information regarding FIX protocol and session protocol, please refer to the FIX documentation provided by FIX Protocol Limited (FPL) on their website http://www.fixprotocol.org

This specification is intended to only be used by MIAX member firms and the firms that are sponsored for MIAX access by MIAX member firms.

MIAX Options, Options Order Management using FIX Protocol, FIX Interface Specification, Version 2.1, revision date June 24, 2016, at page 1.[5]

As a further example, the MIAX electronic book distinguishes orders from different types of entities, such as customer, professional, and market makers:

[5] *See also* MIAX Pearl, Options Order Management using FIX Protocol, FIX Interface Specification, Version 1.0, revision date Sept. 30, 2016, https://www.miaxoptions.com/sites/default/files/page-files/MIAX_PEARL_ FIX_ Order_Interface_FOI_v1.0.pdf, at page 1.

MIAX supports pro-rata trade allocation. Pro-rata trade allocation matches an initiating order against resting interest on the MIAX electronic book using a methodology that ensures that the best price has priority, but also allocates in a method that rewards Market Makers submitting continuous narrow and liquid two-sided quotes. When multiple participants with interest at the same price exist, MIAX uses an algorithm that groups the participants into three allocation tiers based on their participation type in the priority order defined below:

- Priority Customer Orders.
- Priority Quotes, after all Priority Customer Orders at the same price have been executed in full.
- All remaining Professional Orders and non-Priority Quotes, after all Priority Customer Orders and Priority Quotes have been executed in full.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 18.[6]

As a further example, and upon information and belief, MIAX uses the term "origin" to describe the type of entity submitting an order. Upon information and belief, permitted entity types include public customers, professionals such as broker/dealers, and non-member market makers of other exchanges.

MIAX Options Exchange
FIX Interface Specification

Document Version: 2.1
Last Revision Date: 06/24/2016

FIX Tag	FIX Name	Req'd	Details
203	CoveredOrUncovered	No	Specifies whether the option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered
204	CustomerOrFirm	Yes	Specifies the order origin type. Valid values: 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker (MM) 5 = Non-Member Market Maker 8 = Non-Priority Customer

[6] *See also* MIAX Options, User's Manual, revision date Mar. 22, 2017, *available at* http://www.miaxoptions.com/ sites/default/files/knowledge-center/2017-05/MIAX _Options_User _Manual_03222017.pdf, at page 13.

MIAX Options, Options Order Management using FIX Protocol, FIX Interface Specification, Version 2.1, revision date June 24, 2016, at page 15.

41. Upon information and belief, MIAX's Accused Exchange Platforms have a processor including a discriminator adapted to determine which of the plurality of types of entities an incoming order is associated with. As an example, and upon information and belief, MIAX specifies the processor logic and rules to allocate incoming, executable orders against pre-existing resting orders and quotes in "Rule 514":

Rule 514. Priority of Quotes and Orders

(a) **Definitions**. As provided in Rule 100, a "bid" is a quotation or limit order to buy option contracts and an "offer" is a quotation or limit order to sell option contracts. "Quote", "Quotation" and "eQuote" are defined and described in Rules 100 and 517, and may only be entered on the Exchange by Market Makers in the options classes to which they are appointed under Rule 602. The System may designate Market Maker quotes as either priority quotes or non-priority quotes in accordance with the provisions in Rule 517(b). Limit orders may be entered by Market Makers in certain circumstances as provided in the Rules and by Electronic Exchange Members (either as agent or as principal). "Priority Customer Orders" are defined in Rule 100. "Professional Interest" is defined in Rule 100 and includes, among others things, limit orders for the account of Electronic Exchange Members and Market Makers. A "Directed Order" is defined in Rule 100.

(b) **Priority on the Exchange**. The highest bid and lowest offer shall have priority on the Exchange.

(c) **Trade Allocation**. The Exchange will determine to apply for each class of options one of the rules of trade allocation as described in paragraphs (1) and (2) below. The Exchange will specify which trade allocation rules will govern which classes of options, and specify any time the Exchange changes the trade allocation rule of an options class.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 69.

Upon information and belief, in one implementation, to enable entity discriminator functionality, MIAX identifies and stores the type of entity (known as the aforementioned "origin") providing incoming orders, resting orders, and quotes.

FIX Tag	FIX Name	Req'd	Details
203	CoveredOrUncovered	No	Specifies whether the option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered
204	CustomerOrFirm	Yes	Specifies the order origin type. Valid values: 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker (MM) 5 = Non-Member Market Maker 8 = Non-Priority Customer

MIAX Options, Options Order Management using FIX Protocol, FIX Interface Specification, Version 2.1, revision date June 24, 2016, at page 15.

42. Upon information and belief, MIAX's Accused Exchange Platforms have a processor including a system memory adapted to store a set of preference quantities, the preferences quantities associated with respective ones of the plurality of entity types. As an example, and upon information and belief, the MIAX system memory is adapted to store a set of preference quantities associated with entity type in one or more forms, including: (i) number of option contracts; (ii) percent allocation relative to order/quote volume; and (iii) allocation priority relative to other entity types.

To illustrate, the below small size order provision is reserved for the entity type called "Primary Lead Market Maker":

> (2) Small size orders will be allocated in full to the Primary Lead Market Maker if the Primary Lead Market Maker has a priority quote at the NBBO. The Exchange will review this provision quarterly and will maintain the small order size at a level that will not allow small size orders executed by the Primary Lead Market Maker to account for more than 40% of the volume executed on the Exchange. Small size orders are defined as five (5) or fewer contracts.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 71.

As another illustration, proportional allocation rules apply to the entity type called "Directed Lead Market Maker":

> (1) For each incoming order, if the Directed Lead Market Maker has a priority quote at the national best bid or offer ("NBBO"), its participation entitlement is equal to the greater of (i) the proportion of the total size at the best price represented by the size of its quote, or (ii) sixty percent (60%) of the contracts to be allocated if there is only one (1) other Market Maker quotation at the NBBO and forty percent (40%) if there are two (2) or more other Market Maker quotes at the NBBO, or (iii) one (1) contract. For purposes of allocation, all Market Maker priority interest at a certain price level shall be aggregated and all Market Maker non-priority interest (including quotes and orders) at a certain price level shall be aggregated.

Id.

As a further illustration, the below MIAX rule gives allocation priority to other entity types, such as "Priority Customer":

> (1) **Priority Customer Orders**. When this priority overlay (the "Priority Customer Overlay") is in effect, the highest bid and lowest offer shall have priority except that Priority Customer Orders shall have priority over Professional Interest and all Market Maker interest at the same price. If there are two or more Priority Customer Orders for the same options series at the same price, priority shall be afforded to such Priority Customer Orders in the sequence in which they are received by the System.

Id. at 69.

43. Upon information and belief, MIAX's Accused Exchange Platforms have a processor including a trade matching process adapted to execute the trade between a portion of the quotation and the incoming order, and wherein a size of the portion is based on the preference quantity associated with the entity type determined by the discriminator. As an example, and upon information and belief, MIAX matches incoming executable orders against the pre-existing resting orders

and quotes employing stored entity (e.g. "market participant") types and preferences quantities.

> (d) **Additional Priority Overlays Applicable to the Pro-Rata Allocation Method**. In connection with the allocation methodology set forth in Rule 514(c)(2), the Exchange may determine to apply, on a class-by-class basis, one or more of the following designated market participant overlay priorities in a sequence determined by the Exchange. The Exchange will issue a Regulatory Circular periodically which will specify which classes of options are subject to these additional priorities.

Id.

44. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

45. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the '707 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers, customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in accordance with the '707 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions, and technical assistance relating to these exchanges on MIAX websites. Upon information and belief, MIAX's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

46. Upon information and belief, MIAX has committed the foregoing infringing activities without license from Nasdaq ISE and with notice of the ’707 Patent.

47. MIAX knew the ’707 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the ’707 Patent. Nasdaq ISE damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX’s willful infringement of the ’707 Patent.

48. The acts of infringement by MIAX have been performed with the knowledge of the ’707 Patent and are willful, wanton and deliberate, thus rendering this action “exceptional” within the meaning of 35 U.S.C. § 285 and entitling Nasdaq ISE to its reasonable attorney’s fees and litigation expenses.

49. The acts of infringement by MIAX will continue unless enjoined by this Court.

50. Nasdaq ISE has been and will continue to be irreparably harmed and damaged by MIAX’s acts of infringement of the ’707 Patent and has no adequate remedy at law.

COUNT II: INFRINGEMENT OF THE ’093 PATENT

51. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

52. Upon information and belief, the MIAX Defendants have infringed at least claims 1-5 and 9 of the '093 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the Accused Exchange Platforms.

53. Upon information and belief, MIAX's Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, comprise an automated trading system for operating a market to buy or sell a quantity of a financial instrument. For example, in a publicly available manual, MIAX defines its "system" to be an automated security exchange system for the trading of financial instruments:

> **System**
> The term "**System**" means the automated trading system used by the Exchange for the trading of securities.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 7.

Registered MIAX members operate markets in securities traded on the MIAX Exchange:

> **Registered Market Maker**
> The term "**Registered Market Maker**" means a Member registered with the Exchange for the purpose of making markets in securities traded on the Exchange, who is not a Lead Market Maker and is vested with the rights and responsibilities specified in Chapter VI of these Rules with respect to Registered Market Makers.

Id. at 6.

54. Upon information and belief, in one implementation, MIAX's Accused Exchange Platforms have an automated interface and a procedure for

receiving an order and a matching commitment from a first market participant, the order being an offer to sell or a bid to purchase a quantity of the instrument, and the matching commitment being an assurance that the first market participant will trade against a portion of the order. As an example, the MIAX FIX Orders Interface (FOI) is a messaging interface adapted to receive incoming purchase and sale orders:

> **1 Overview**
>
> MIAX FIX Orders Interface (**FOI**) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders.
>
> FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. This document describes the messages that will be supported by FOI. For detailed information regarding FIX protocol and session protocol, please refer to the FIX documentation provided by FIX Protocol Limited (FPL) on their website http://www.fixprotocol.org
>
> This specification is intended to only be used by MIAX member firms and the firms that are sponsored for MIAX access by MIAX member firms.

MIAX Options, Options Order Management using FIX Protocol, FIX Interface Specification, Version 2.1, revision date June 24, 2016, at page 1.[7]

As one implementation, MIAX has a specific order type, which it calls a "PRIME" order, by which a MIAX member may submit an order as an agent and also a matching commitment to trade against the order, called a "Contra" order, at a certain price:

[7] *See also* MIAX Pearl, Options Order Management using FIX Protocol, FIX Interface Specification, Version 1.0, revision date Sept. 30, 2016, *available at* https://www.miaxoptions.com/sites/default/files/page-files/MIAX_PEARL_FIX_Order_Interface_FOI_v1.0.pdf, at page 1.

> MIAX PRIME allows MIAX Electronic Exchange Members (EEMs) to enter orders they represent as agent (an Agency Order) into an auction to allow an opportunity for the Agency Order to receive price improvement.
>
> A PRIME order consists of a simple paired order of equal size, where the Contra side of the paired order guarantees the Agency side a complete fill at a price no worse than the auction start price (the stop price).

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 21.

55. Upon information and belief, MIAX's Accused Exchange Platforms also have an automated interface for receiving subsequently submitted responses from one or more second market participants in response to the order during a predetermined time period following a receipt of the order and the matching commitment, the predetermined time period having been determined prior to, or at the time of, receiving the order and the matching commitment.

For example, after receiving the "PRIME" order, MIAX issues a "Request for Responses" (RFR) to one or more second market participants and collects responses within a predetermined time period of 500 milliseconds:

> (B) When the Exchange receives a properly designated Agency Order for auction processing, a Request for Responses ("RFR") detailing the option, side, size, and initiating price will be sent to all subscribers of the Exchange's data feeds.
>
> (C) The RFR will last for 500 milliseconds.
>
> (D) Members may submit responses to the RFR (specifying prices and sizes). RFR responses shall be an Auction or Cancel ("AOC") order or an AOC eQuote. Such responses cannot cross the disseminated MBBO on the opposite side of the market from the response.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 78.

56. Upon information and belief, MIAX's Accused Exchange Platforms have a memory coupled to the interface for storing the order, the matching commitment, and the responses. For example, MIAX identifies "Book" as a memory of buy and sell orders and quotes:

> **Book**
> The term "**Book**" means the electronic book of buy and sell orders and quotes maintained by the System.

Id. at 1.

Upon information and belief, and as a further example, MIAX stores responses received "until the end of the auction":

- Responders may submit multiple responses on the opposite side of the market from the Agency Order that may be modified or canceled throughout the auction. Responses are held until the end of the auction when they may trade with unrelated liquidity.
- Auction responses shall be an Auction or Cancel ("AOC") order or AOC eQuote. Auction responses are neither published nor visible to anyone.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 23.

57. Upon information and belief, MIAX's Accused Exchange Platforms have a processor, in communication with the memory, programmed to execute an algorithm for allocating the quantity in the order, at the conclusion of the time period, according to certain parameters such as "best price."

As an example, at the conclusion of the RFR time period, MIAX specifies an algorithm to allocate the initial order to the Responses received and the Contra order:

Best Price

- At the conclusion of the PRIME auction the Agency Order trades with the best price(s) against all available interest that includes the Contra Order, auction responses, and unrelated interest.
- Allocation MIAX caps oversized auction responses to the original size of the PRIME order for allocation purposes.
- After any Priority Customer interest is satisfied, the Contra Order is entitled to its allocation as specified below and then MIAX applies its standard allocation algorithm to remaining interest at the conclusion of the auction.
- The allocation percentage for the Contra Order is determined by the number of responders at the same price as the Contra Order.

Id. at 24. According to MIAX's manual, order allocation begins with the "best price" and then proceeds to the next best price if the Responses from the RFR process at the "best price" did not fill the initial order. Collectively, the range of Contra orders and Responses that fill the initial order are the "best prices."

58. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

59. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the '093 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers, customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in accordance with the '093 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions,

and technical assistance relating to these exchanges on MIAX websites. Upon information and belief, MIAX's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

60. Upon information and belief, MIAX has committed the foregoing infringing activities without license from Nasdaq ISE and with notice of the '093 Patent.

61. MIAX knew the '093 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the '093 Patent. Nasdaq ISE's damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX's willful infringement of the '093 Patent.

62. The acts of infringement by MIAX have been performed with the knowledge of the '093 Patent and are willful, wanton and deliberate, thus rendering this action "exceptional" within the meaning of 35 U.S.C. § 285 and entitling Nasdaq ISE to its reasonable attorney's fees and litigation expenses.

63. The acts of infringement by MIAX will continue unless enjoined by this Court.

64. Nasdaq ISE has been and will continue to be irreparably harmed and damaged by MIAX's acts of infringement of the '093 Patent and has no adequate remedy at law.

COUNT III: INFRINGEMENT OF THE '875 PATENT

65. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

66. Upon information and belief, the MIAX Defendants have infringed at least claims 1-3, 6, 8, 10-13, 16, and 25 of the '875 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the Accused Exchange Platforms.

67. Upon information and belief, MIAX's Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, comprise a computer implemented method for quoting securities in a market maker quotation system executed over a networked computer system. For example, in a publicly available manual, MIAX describes its trading system as follows:

4. How MIAX Works

Architecture

Market Makers send quotes to the Exchange's systems through the MIAX Express Interface (MEI). Electronic Exchange Members send orders to the Exchange's systems through the MIAX FIX Order Interface (FOI) gateway. The MIAX Trading System is designed to be highly scalable, efficient, fast, reliable, robust and flexible.

The Exchange deploys multiple matching engines, each engine performing the trade match function for a defined set of option classes.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 6.

In another example, a network complements the MIAX trading system:

Network Infrastructure

- The MIAX network was designed to complement the MIAX Trading System and was built from the ground up to address the performance and security needs of a high speed trading platform. MIAX network infrastructure utilizes fully diverse and redundant 40Gbps backbones and 10/40Gbps switch technology for maximum throughput and minimal latency.

Id. at 7.

68. Upon information and belief, MIAX's Accused Exchange Platforms employ a method whereby they receive at least one quote reflecting at least one of a bid and offer price for a security to reflect a proprietary position of a market maker type of participant. For example, MIAX specifies the format of a "Simple Bulk Quote Message" for its market makers to send "1-50 single-side quotes" to the system for display in the market. Each quote must specify "side" as a "bid" or an "ask" according to the table below:

4.1.1 Simple Bulk Quote Message

Firms can use this message format to send up to 50 single sided quotes. Single sided quotes enables the firms to prioritize the update of more important quotes and sides ahead of other quotes.

Message Direction: Firm to MIAX

Field Name	Length	Data Type	Notes
SesM Protocol Data			*Unsequenced Pkt; Refer to SesM Protocol Specification*
Message Type	2	Alphanumeric	"QM"
Client Message ID	4	BinaryU	Unique message ID assigned by the firm
MPID	4	Alphanumeric	MIAX assigned ID of the Market Maker
Quote Count	1	BinaryU	Number of quotes in this bulk quote message.
1 to 50 single-side quotes consisting of the following fields:			
Product ID	4	BinaryU	Product ID assigned by MIAX for the current session
Price	4	BinaryPrc4U	Quote price. Max Price: Is defined in Technical Circular
Size	4	BinaryU	Quote size (number of option contracts). Max Size: 999,999
Side	1	Alphanumeric	"B" = Bid "A" = Ask

MIAX Express Interface for Quoting and Trading Options: MEI Interface Specification, Version 2.2b, Feb. 27, 2017, *available at* https://www.miaxoptions.com/sites/default/files/pagefiles/MIAX_Express_Interface_MEI_v2.2b.pdf, at page 15.

69. Upon information and belief, MIAX's Accused Exchange Platforms employ a method whereby a separate quote reflecting at least one of a bid and/or offer price for the security is used to reflect a customer order or interest. As an example, the aforementioned format for MIAX Options Simple Orders distributed in messages to MIAX members specifies the "Order Side" (buy/bid or sell-ask), the "Order Price," and the "Origin" (which may be one of several designations including "Market Maker"). *Id.*

70. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

71. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the '875 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers, customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in

accordance with the ’875 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions, and technical assistance relating to these exchanges on MIAX websites. Upon information and belief, MIAX’s inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

72. Upon information and belief, MIAX has committed the foregoing infringing activities without license from Nasdaq and with notice of the ’875 Patent.

73. MIAX knew the ’875 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the ’875 Patent. Nasdaq’s damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX’s willful infringement of the ’875 Patent.

74. The acts of infringement by MIAX have been performed with the knowledge of the ’875 Patent and are willful, wanton and deliberate, thus rendering this action “exceptional” within the meaning of 35 U.S.C. § 285 and entitling Nasdaq to its reasonable attorney’s fees and litigation expenses.

75. The acts of infringement by MIAX will continue unless enjoined by this Court.

76. Nasdaq has been and will continue to be irreparably harmed and damaged by MIAX’s acts of infringement of the ’875 Patent and has no adequate

remedy at law.

COUNT IV: INFRINGEMENT OF THE '506 PATENT

77. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

78. Upon information and belief, the MIAX Defendants have infringed at least claims 1, 2, 4-6, 9, 12, 15, 18-21, 24-26, 29, 31, 32, 35, and 36 of the '506 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the Accused Exchange Platforms.

79. Upon information and belief, MIAX's Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, comprise a system comprising a broadcast server including a processing device; main memory coupled to the processing device; and a computer readable medium storing a computer program product.

For example, and upon information and belief, MIAX is an automated trading system according to a publicly available manual:

> **System**
> The term "**System**" means the automated trading system used by the Exchange for the trading of securities.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 7.

As a further example, a description of the MIAX Opening Process shows the functioning of system broadcast of messages based on logic processing (which, on information and belief, must employ a processing device and coupled memory) of quotes that are stored in system memory:

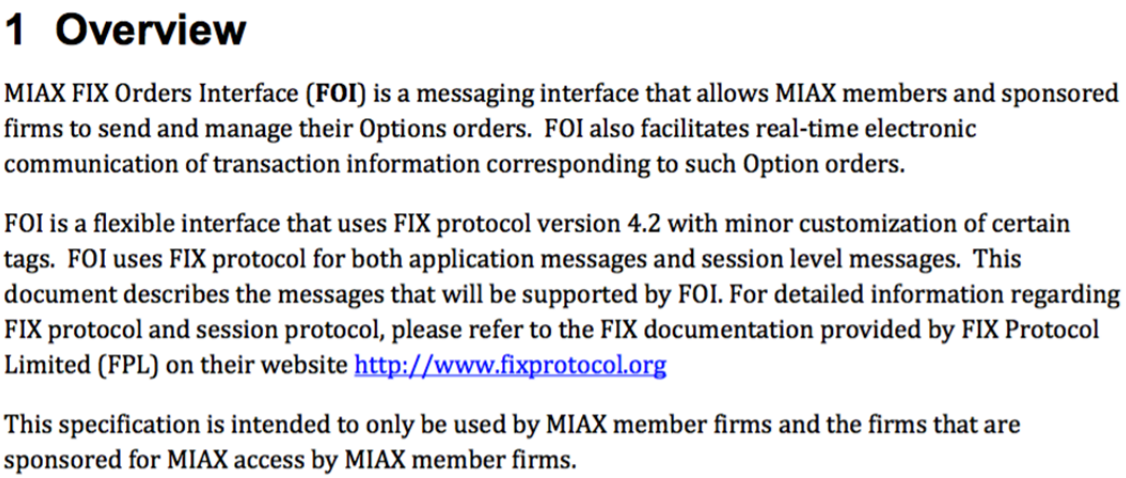
> The MIAX Opening Process begins when the quoting requirements and other provisions of MIAX Rule 503 have been satisfied.
>
> Once the Opening Process begins, if there are no quotes or orders that lock or cross each other, the System will open by disseminating the Exchange's best bid and offer among quotes and orders that exist in the System at that time. If there are quotes or orders that lock or cross each other, the System will calculate an opening price taking into consideration all valid Exchange quotes and all valid orders, together with other exchanges' markets for the option and identify the price at which the maximum number of contracts can trade. If that price is within the highest valid width quote bid and lowest valid width quote offer and leaves no imbalance, the Exchange will open at that price, executing marketable trading interest, as-long-as the opening price includes only Exchange interest. If the calculated opening price is outside of the NBBO, or equals the NBBO and requires interest from another exchange to satisfy all interest at that price, the System will broadcast a System Imbalance Message and initiate a Route Timer (not to exceed one second) to allow additional orders or quotes to be submitted. If no new interest is received during the Route Timer, the System will route to other markets disseminating prices better than the Exchange's opening price, execute marketable interest at the opening price on the Exchange, and route to other markets disseminating prices equal to the Exchange opening price if necessary. If new interest is received during the Route Timer, the System will recalculate the opening price taking such new interest into account. Then, if there is no longer an imbalance, the System will execute marketable interest at the opening price on the Exchange and route the remainder to other markets.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 20.

80. Upon information and belief, MIAX's Accused Exchange Platforms operate a computer program product comprising instructions to cause the processing device of the broadcast server to receive a sequential transmission of an indicator signal that is repeatedly broadcast by a primary intended recipient system independently of receipt of attributable security interest messages, the indicator

signal comprising an identification of the primary intended recipient system that is broadcasting the signal.

For example, as described above, MIAX employs a messaging interface it calls FOI ("FIX Orders Interface") for two-way communication of trade and administrative information with MIAX Members. The MIAX FOI sends, broadcasts, and receives messages.



1 Overview

MIAX FIX Orders Interface (**FOI**) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders.

FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. This document describes the messages that will be supported by FOI. For detailed information regarding FIX protocol and session protocol, please refer to the FIX documentation provided by FIX Protocol Limited (FPL) on their website http://www.fixprotocol.org

This specification is intended to only be used by MIAX member firms and the firms that are sponsored for MIAX access by MIAX member firms.

MIAX Options, Options Order Management using FIX Protocol, FIX Interface Specification, Version 2.1, revision date June 24, 2016, at page 1.[8]

As a further example, the MIAX list of "FOI Features" shows that the messages are transmitted and received electronically with computer devices employing Transmission Control Protocol/Internet Protocol (TCP/IP):

[8] *See also* MIAX Pearl, Options Order Management using FIX Protocol, FIX Interface Specification, Version 1.0, revision date Sept. 30, 2016, *available at* https://www.miaxoptions.com/sites/default/files/page-files/MIAX_PEARL_FIX_Order_Interface_FOI_v1.0.pdf, at page 1.

FOI Features:

FOI has been designed for flexibility, reliability, low latency and high throughput messaging. Some of the key features of the interface are:

- Use of FIX protocol that has been adopted by most of the participants in the Options industry. FIX tag/value messaging is a **flexible** messaging protocol that eliminates platform dependencies and allows to largely decouple exchange and firm deployments.
- FIX session layer is implemented over TCP/IP and facilitates sequenced transmission and recovery of messages across TCP/IP sessions thereby achieving **reliable** communication.
- FOI allows multiple connections per firm. On each FOI connection, Firms are allowed to send orders for any option symbol and any of their MPIDs. These features enable firms to achieve **load balancing** and **higher resiliency**. ClOrdID must be unique per MPID across all sessions per firm.
- FOI hides the intricacies of the Exchange architecture that includes many systems processing specific symbol ranges. FOI design, coupled with the Exchange architecture, facilitates **low latency** and **high throughput** messaging.
- FOI allows mass cancels of orders on each session thereby allowing firms to reduce their risk in bad market conditions or in case of system problems at their end.

Id. at 1.

Upon information and belief, these actions are caused by instructions in a computer program product.

81. Upon information and belief, the computer program product used by MIAX's Accused Exchange Platforms also causes the processing device of the broadcast server to determine that the primary intended recipient system is offline whenever the indicator signal is not received from the primary intended recipient system for a defined failure period.

For example, a specific message type of MIAX's FOI is a "Heartbeat." The client (MIAX member) computer sends this indicator signal or message every second to the MIAX system. The procedure declares the client to be offline (i.e.,

"link is lost") when there is no signal for a defined period (e.g., "3 Heartbeat intervals").

3.2.8.2 Client Heartbeat Packet

The client should send a Client Heartbeat packet anytime more than 1 second passes where no data has been sent to the server. The server can then assume that the link is lost if it does not receive anything for an extended period of time (3 Heartbeat intervals).

MIAX Options, TCP Session Management (SesM) Protocol Specification, Version 1.1e, revision date Aug. 13, 2015, *available at* https://www.miaxoptions.com/sites/default/files/page-files/MIAX_Options_TcpSessionMgmt_SesM_v1_1e.pdf, at page 9.

82. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

83. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the '506 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers, customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in accordance with the '506 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions,

and technical assistance relating to these exchanges on MIAX websites. Upon information and belief, MIAX's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

84. Upon information and belief, MIAX has committed the foregoing infringing activities without license from Nasdaq and with notice of the '506 Patent.

85. MIAX knew the '506 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the '506 Patent. Nasdaq's damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX's willful infringement of the '506 Patent.

86. The acts of infringement by MIAX have been performed with the knowledge of the '506 Patent and are willful, wanton and deliberate, thus rendering this action "exceptional" within the meaning of 35 U.S.C. § 285 and entitling Nasdaq to its reasonable attorney's fees and litigation expenses.

87. The acts of infringement by MIAX will continue unless enjoined by this Court.

88. Nasdaq has been and will continue to be irreparably harmed and damaged by MIAX's acts of infringement of the '506 Patent and has no adequate remedy at law.

COUNT V: INFRINGEMENT OF THE '051 PATENT

89. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

90. Upon information and belief, the MIAX Defendants have infringed at least claims 1, 2, 5-7, 9, 13, 14, 17, 18, 25, 26, 29-33, 35-37, 40, 41, 44, 45, 48, and 49 of the '051 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the Accused Exchange Platforms.

91. Upon information and belief, MIAX's Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, comprise a system in an electronic securities market. For example, in a publicly available manual, MIAX defines the "system" it uses to trade securities electronically as follows:

> **System**
> The term "**System**" means the automated trading system used by the Exchange for the trading of securities.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 7.

92. Upon information and belief, and as one example, MIAX's Accused Exchange Platforms utilize at least one processing device which it calls a "matching engine":

> The matching engines of the Exchange each handle a defined set of option classes, which may be reallocated on a periodic basis in order to ensure that system load is balanced across the MIAX System. Each matching engine compares the limit price of all incoming quotes and orders with those quotes and orders already resting on the MIAX Book. The matching engine matches liquidity as available, calculates the MIAX Best Bid and Best Offer (the MBBO), monitors the other markets' displayed prices and determines when, and if, a trade can occur. If a newly arrived quote or order is marketable against the existing MIAX Book, and the MBBO is equal to or better than the best consolidated quote, an immediate match is made and allocations are communicated back to the trade participants.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 7.[9]

93. Upon information and belief, MIAX's Accused Exchange Platforms utilize a main memory coupled to the aforementioned processing device. As an example, the MIAX system includes a "Book," which is a memory of buy and sell orders and quotes:

> **Book**
> The term "**Book**" means the electronic book of buy and sell orders and quotes maintained by the System.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 1.

94. Upon information and belief, MIAX's Accused Exchange Platforms utilize computer readable medium storing a computer program product, the computer program product comprising instructions to cause the processing device to (a) populate a configurable look-up table with assignment entries to assign each of a plurality of securities to one or more securities processors in the system, with

[9] *See also* MIAX Options, User's Manual, revision date Mar. 22, 2017, *available at* http://www.miaxoptions.com/sites/default/files/knowledge-center/2017-05/MIAX_Options_User_Manual_0322201 7.pdf, at page 4; MIAX Pearl, User's Manual, revision date May 1, 2017, *available at* http://www.miaxoptions.com/sites/default/files/knowledge-center/2017-05/MIAX_PEARL_User_Manual_0501201 7.pdf, at page 4.

each assignment determining which security processor will execute an order for that specific security, with the configurable look-up table including a specific entry table and a rule entry table and with the rule entry table including one or more id-range entries that assign a range of securities to a specific securities processor; (b) access the configurable look-up table in response to receiving an order involving a specific security, with assignment entries in the configurable look-up table to determine which securities processor the specific security is assigned to; and (c) send the received security order to the securities processor to which the specific security is assigned.

95. Using an example to illustrate, MIAX market makers and members send quotes and orders to MIAX through the MIAX Express Interface (MEI) and FIX Order Interface (FOI).

> **4. How MIAX Works**
>
> **Architecture**
>
> Market Makers send quotes to the Exchange's systems through the MIAX Express Interface (MEI). Electronic Exchange Members send orders to the Exchange's systems through the MIAX FIX Order Interface (FOI) gateway. The MIAX Trading System is designed to be highly scalable, efficient, fast, reliable, robust and flexible.
>
> The Exchange deploys multiple matching engines, each engine performing the trade match function for a defined set of option classes.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 6.

As a further example, each order/quote is then sent to a designated security processor (MIAX's "matching engine") defined for the option class of the order/quote.

> **4.1.1 FIX Order Interface (FOI)**
> The MIAX high speed FIX Order Interface gateway conveniently routes orders to our trading engines through a common entry point to our trading platform. The MIAX FIX Orders Interface (FOI) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders. FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. For the FIX Order Interface (FOI) specification, please refer to:

MIAX Options, MIAX Express Network Interconnect, Connectivity Guide, Version 1.3, revision date Aug. 17, 2015, at page 14.

As a further example, each option class with a symbol (such as "SPY" for S&P Index), and each symbol or option class is assigned by MIAX to "a single designated matching engine." This designated engine processes quotes and trades of the particular symbol or option class.

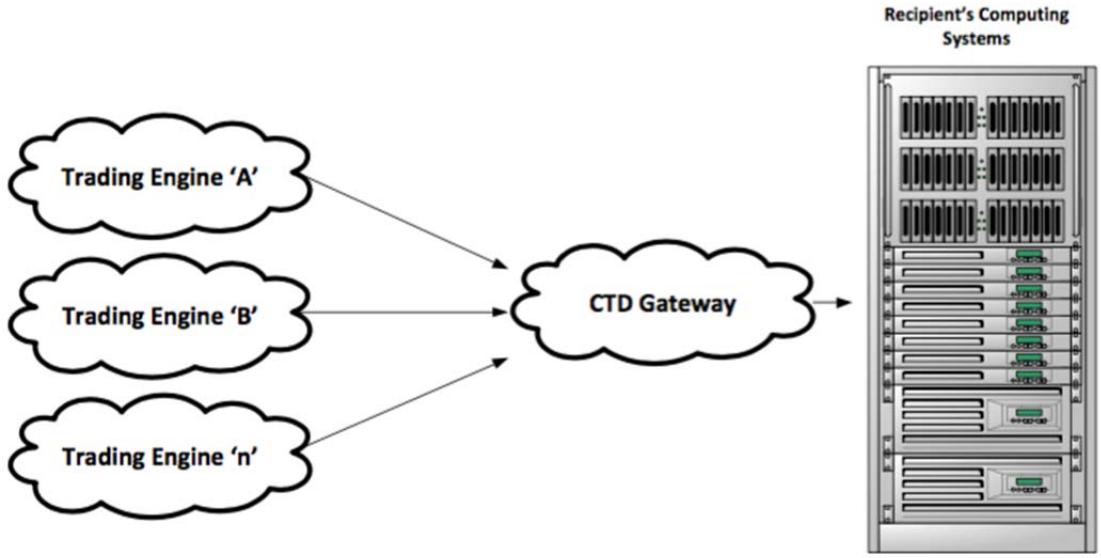
> A "matching engine" is a part of the MIAX electronic system that processes options quotes and trades on a symbol-by-symbol basis. Some matching engines will process option classes with multiple root symbols, and other matching engines will be dedicated to one single option root symbol (for example, options on SPY will be processed by one single matching engine that is dedicated only to SPY). A particular root symbol may only be assigned to a single designated matching engine. A particular root symbol may not be assigned to multiple matching engines.

MIAX Options, Fee Schedule, May 1, 2015, *available at* https://www.miaxoptions.com/sites/default/files/pdf/2016-12/MIAX_Options_Fee_Schedule_05012015.pdf, at page 13.

Upon information and belief, and as a further example, MIAX implements a configurable look-up table in its trading architecture as assignments by the

Exchange that may "be organized in any manner," i.e., a specific entry table for one option underlying per matching engine or a rule entry table for a contiguous or non-contiguous range of options underlying per matching engine.

1.3 CTD Architecture



Highlights:

- MIAX trading architecture is highly scalable and consists of multiple trade engines. Each trading engine handles trading for all options for a set of underlyings. The underlying sets may not be contiguous ranges of underlyings and could be organized in any manner as assigned by the exchange. The CTD acts as a gateway by collecting the trades from each trading engine and providing a consolidated flow of trades to the recipients of the CTD output.

MIAX Options, MIAX Clearing Trade Drop for Options, CTD Interface Specification, Version 2.1, revision date Apr. 3, 2017, at page 2.

Upon information and belief, these actions are caused by instructions in a computer program product stored on a computer readable medium.

96. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

97. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the ’051 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers, customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in accordance with the ’051 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions, and technical assistance relating to these exchanges on MIAX websites. Upon information and belief, MIAX’s inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

98. Upon information and belief, MIAX has committed the foregoing infringing activities without license from Nasdaq and with notice of the ’051 Patent.

99. MIAX knew the ’051 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the ’051 Patent. Nasdaq’s damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX’s willful infringement of the ’051 Patent.

100. The acts of infringement by MIAX have been performed with the knowledge of the ’051 Patent and are willful, wanton and deliberate, thus rendering this action “exceptional” within the meaning of 35 U.S.C. § 285 and entitling Nasdaq to its reasonable attorney’s fees and litigation expenses.

101. The acts of infringement by MIAX will continue unless enjoined by this Court.

102. Nasdaq has been and will continue to be irreparably harmed and damaged by MIAX’s acts of infringement of the ’051 Patent and has no adequate remedy at law.

COUNT VI: INFRINGEMENT OF THE ’827 PATENT

103. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

104. Upon information and belief, the MIAX Defendants have infringed at least claims 1-3, 5-8, 20-24, 33-36, 38-43, 53-55, 57, and 67-70 of the ’827 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the Accused Exchange Platforms.

105. Upon information and belief, MIAX’s Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, operate a system for securities

trading which comprises: (a) a plurality of securities processors for processing attributable security interest messages generated by market participants, the attributable security interest messages relate to securities traded on the securities trading system, each security is assigned to one or more of the securities processors based on a unique security identifier associated with the security; and (b) an order routing system for routing each attributable security interest message to one of the securities processors according to the assignment.

To illustrate using an example, upon information and belief, MIAX utilizes a system to trade securities electronically. In a publicly available manual, MIAX defines the "system" it uses to trade securities electronically as follows:

System
The term "**System**" means the automated trading system used by the Exchange for the trading of securities.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 7.

As a further example, MIAX market makers and members send quotes and orders for MIAX-traded securities to MIAX through the MIAX Express Interface (MEI) and FIX Order Interface (FOI).

4. How MIAX Works

Architecture

Market Makers send quotes to the Exchange's systems through the MIAX Express Interface (MEI). Electronic Exchange Members send orders to the Exchange's systems through the MIAX FIX Order Interface (FOI) gateway. The MIAX Trading System is designed to be highly scalable, efficient, fast, reliable, robust and flexible.

The Exchange deploys multiple matching engines, each engine performing the trade match function for a defined set of option classes.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 6.

As a further example, each order/quote is then sent to a designated security processor (MIAX's "matching engine") defined for the option class of the order/quote.

4.1.1 FIX Order Interface (FOI)

The MIAX high speed FIX Order Interface gateway conveniently routes orders to our trading engines through a common entry point to our trading platform. The MIAX FIX Orders Interface (FOI) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders. FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. For the FIX Order Interface (FOI) specification, please refer to:

MIAX Options, MIAX Express Network Interconnect, Connectivity Guide, Version 1.3, revision date Aug. 17, 2015, at page 14.

As a further example, each option class has a unique security identifier (a symbol such as "SPY" for S&P Index), and each symbol or option class is assigned by MIAX to "a single designated matching engine." This designated engine processes quotes and trades of the particular symbol or option class.

> A "matching engine" is a part of the MIAX electronic system that processes options quotes and trades on a symbol-by-symbol basis. Some matching engines will process option classes with multiple root symbols, and other matching engines will be dedicated to one single option root symbol (for example, options on SPY will be processed by one single matching engine that is dedicated only to SPY). A particular root symbol may only be assigned to a single designated matching engine. A particular root symbol may not be assigned to multiple matching engines.

MIAX Options, Fee Schedule, May 1, 2015, *available at* https://www.miaxoptions.com/sites/default/files/pdf/2016-12/MIAX_Options_Fee_Schedule_05 012015.pdf, at page 13.

In addition, and as a further example, MIAX employs a messaging interface that routes attributable security interest messages (i.e., quotes and orders) to the securities processors.

> **4.1.1 FIX Order Interface (FOI)**
> The MIAX high speed FIX Order Interface gateway conveniently routes orders to our trading engines through a common entry point to our trading platform. The MIAX FIX Orders Interface (FOI) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders. FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. For the FIX Order Interface (FOI) specification, please refer to:

MIAX Options, MIAX Express Network Interconnect, Connectivity Guide, Version 1.3, revision date Aug. 17, 2015, at page 14.

Upon information and belief, MIAX deploys multiple securities processors, also known as "matching engines":

> **4. How MIAX Works**
>
> **Architecture**
>
> Market Makers send quotes to the Exchange's systems through the MIAX Express Interface (MEI). Electronic Exchange Members send orders to the Exchange's systems through the MIAX FIX Order Interface (FOI) gateway. The MIAX Trading System is designed to be highly scalable, efficient, fast, reliable, robust and flexible.
>
> The Exchange deploys multiple matching engines, each engine performing the trade match function for a defined set of option classes.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 6.

As a further example, the MIAX system processes quotes and orders at matching engines assigned by option class. Each quote/order is routed to a single designated matching engine according to the assignment:

> A "matching engine" is a part of the MIAX electronic system that processes options quotes and trades on a symbol-by-symbol basis. Some matching engines will process option classes with multiple root symbols, and other matching engines will be dedicated to one single option root symbol (for example, options on SPY will be processed by one single matching engine that is dedicated only to SPY). A particular root symbol may only be assigned to a single designated matching engine. A particular root symbol may not be assigned to multiple matching engines.

MIAX Options, Fee Schedule, May 1, 2015, *available at* https://www.miaxoptions.com/sites/default/files/pdf/2016-12/MIAX_Options_Fee_Schedule_05012015.pdf, at page 13.

106. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

107. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the '827 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers,

customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in accordance with the ’827 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions, and technical assistance relating to these exchanges on MIAX websites. Upon information and belief, MIAX’s inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

108. Upon information and belief, MIAX has committed the foregoing infringing activities without license from Nasdaq and with notice of the ’827 Patent.

109. MIAX knew the ’827 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the ’827 Patent. Nasdaq’s damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX’s willful infringement of the ’827 Patent.

110. The acts of infringement by MIAX have been performed with the knowledge of the ’827 Patent and are willful, wanton and deliberate, thus rendering this action “exceptional” within the meaning of 35 U.S.C. § 285 and entitling Nasdaq to its reasonable attorney’s fees and litigation expenses.

111. The acts of infringement by MIAX will continue unless enjoined by this Court.

112. Nasdaq has been and will continue to be irreparably harmed and damaged by MIAX's acts of infringement of the '827 Patent and has no adequate remedy at law.

COUNT VII: INFRINGEMENT OF THE '371 PATENT

113. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

114. Upon information and belief, the MIAX Defendants have infringed at least claims 1, 7, 11, 13, 17, 20, 23-26, 28, and 30 of the '371 Patent pursuant to 35 U.S.C. § 271(a) by making, using, offering to sell, selling, and/or importing within the United States, without authority, an automated exchange platform according to the invention, including, but not limited to, the Accused Exchange Platforms.

115. Upon information and belief, MIAX's Accused Exchange Platforms, such as MIAX Options Exchange and MIAX Pearl, utilizes an apparatus configured to cancel pending orders for financial articles of trade, comprising electronic circuitry. As one example of infringement, MIAX has several distinct protocols for canceling pending orders including "Aggregate Risk Manager," "Risk Protection Monitor," and "Auto Cancel on Disconnect Protection."

MIAX Aggregate Risk Manager (ARM)

The MIAX Aggregate Risk Manager (ARM) protects Market Makers by limiting the number of contracts they execute in a class on the MIAX within a brief period of time as described in Exchange Rule 612.

MIAX Risk Protection Monitor (RPM)

The MIAX Risk Protection Monitor (RPM) protects Member Firms, Clearing Firms and EEMs by providing a configurable and flexible safeguarding system that protects against Exchange-wide risk from the transmission and execution of orders as described in Exchange Rule 519A.

Auto Cancel on Disconnect Protection (ACOD)

ACOD allows MIAX EEMs to limit their exposure during all losses of connectivity other than MIAX induced losses by instructing MIAX to automatically and instantaneously cancel designated orders upon a loss of connectivity with the MIAX Fix Order Interface (FOI).

MIAX Options, User's Manual, revision date Oct. 5, 2016, at pages 35, 37, 39.

Upon information and belief, the MIAX network enabling these protocols comprises an apparatus with electronic circuitry:

MIAX Express Network Interconnect (MENI) Document Version: 2.1
Connectivity Guide Last Revision Date: 12/21/2016

1 Executive Summary

MIAX Options® and MIAX PEARL™, collectively referred to as MIAX, provides Ultra-Low Latency network connectivity to completely diverse trading platforms, market data distribution systems, financial services, disaster recovery and test facilities through the MIAX Express Network Interconnect. The MIAX Express Network Interconnect, hereafter referred to as MENI (pronounced "MANY"), is an infrastructure comprised of Low Latency and Ultra Low Latency (ULL) proximity solutions in data center locales offering universal and equalized access to all MIAX services within the data centeracross a variety of high speed network interfaces.

MIAX offers latency equalized 1 Gigabit, 10 Gigabit and 10 Gigabit ULL connectivity options in its primary data center facility, collocated with Equinix at NY4 in Secaucus, New Jersey. MIAX's disaster recovery data center, collocated with Equinix at CH4 in Chicago, Illinois, offers 1 Gigabit and 10 Gigabit connectivity options.

MIAX Options & MIAX Pearl, MIAX Express Network Interconnect, Connectivity Guide, Version 2.1, revision date Dec. 21, 2016, at page 1.

116. Upon information and belief, the MIAX apparatus is configured to: (a) establish a communication session between an entity and a liquidity destination, wherein the communication session facilitates trading of at least one financial article of trade and associates the communication session to a connection between the entity and the liquidity destination, where a switch is associated with the connection; (b) collect data including transactions of financial articles of trade; (c) identify an event matching a defined condition in a trading market comprising one or both of submitted and executed transactions of financial articles of trade over a plurality of liquidity destinations from the collected data, wherein the condition is associated with the entity; and (d) cancel multiple pending transactions from the entity as soon as the event is identified.

117. To illustrate using exampled, MIAX market makers and members send quotes and orders to MIAX which are then routed to a designated liquidity destination (also known as a "matching engine") defined for the option class of the order/quote:

4. How MIAX Works

Architecture

Market Makers send quotes to the Exchange's systems through the MIAX Express Interface (MEI). Electronic Exchange Members send orders to the Exchange's systems through the MIAX FIX Order Interface (FOI) gateway. The MIAX Trading System is designed to be highly scalable, efficient, fast, reliable, robust and flexible.

The Exchange deploys multiple matching engines, each engine performing the trade match function for a defined set of option classes.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 6.

The MIAX communication sessions for the market makers and members employ the MIAX Express Interface (MEI) and FIX Order Interface (FOI), respectively.

Market Makers connect to the System via the MIAX Express Interface (MEI), using a proprietary protocol for the transmission of quotes and other messages to and from the Exchange. Two types of MEI ports are available:

- Full Service MEI Port
  - All input message types are supported
- Limited Service MEI Port
  - Supports all message types except bulk quotes

A Market Making Firm is allocated up to two full service and up to four limited service MEI connections for each Exchange matching engine that performs the trade matching function for option classes in which the Member is assigned as a Market Maker.

EEMs connect to the System via the MIAX FOI gateway, using the industry standard FIX protocol with MIAX specific extensions, for the transmission of orders and other messages to and from the Exchange. The MIAX FOI validates incoming orders and forwards them to the appropriate matching engine. Executions and cancelation notifications are provided through these same interfaces.

Id. at 7.

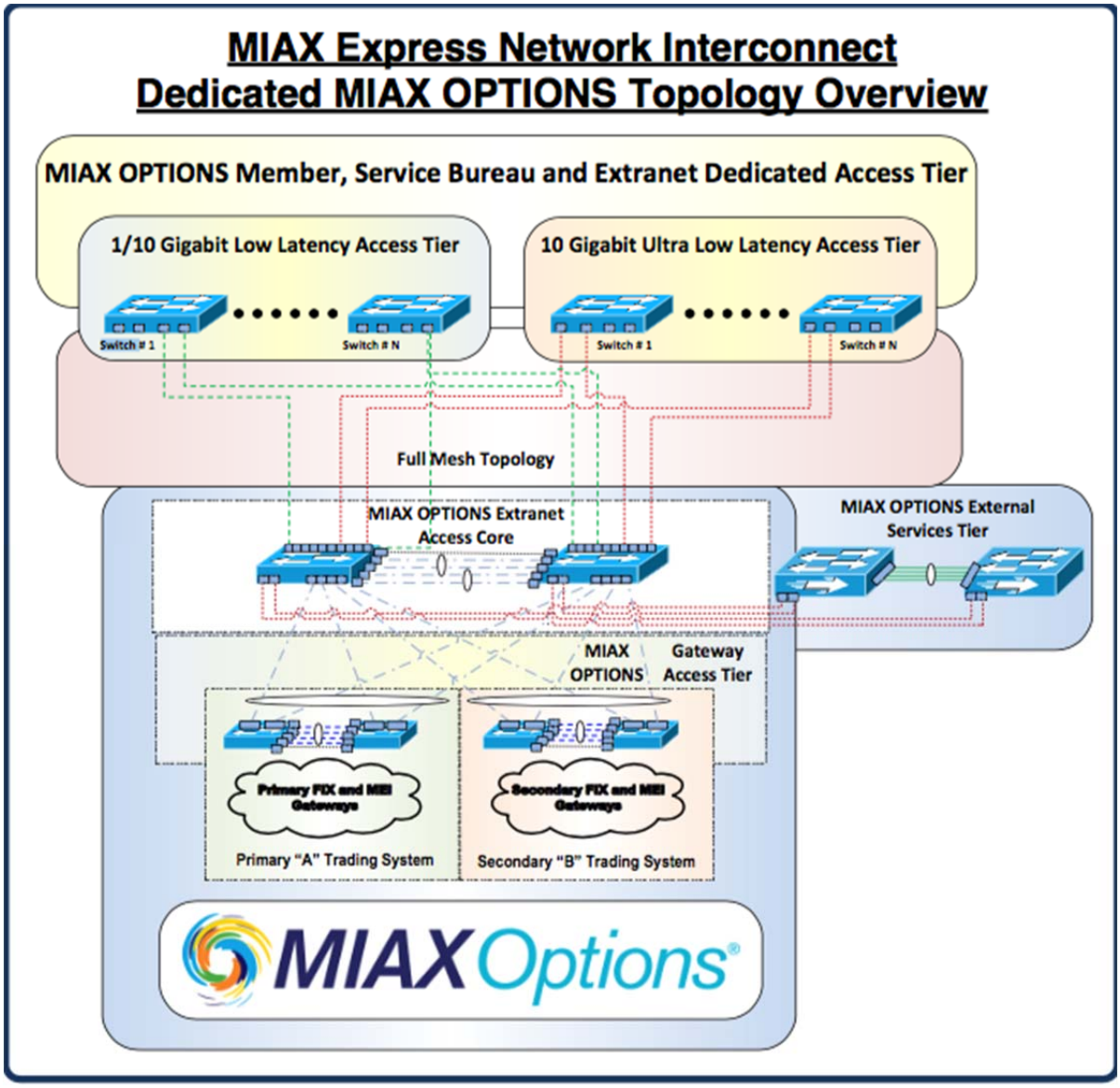
As one example, the MIAX Express Network establishes a communication session between an entity (e.g., market maker) and a liquidity destination (e.g., a

matching engine). This communication session facilities trading of financial articles of trade and provides "both primary and secondary network handoffs in each data center on dedicated facilities and access switches":

> **2.2 MIAX Express Network Interconnect Handoff and Topology**
>
> The MIAX Express Network Interconnect Topology located within each MIAX Data Center houses and provides access to the MIAX Options and MIAX PEARL "A", "B", Test and DR Trading Systems according to the specific data center facility. The MIAX Options and MIAX PEARL "A" and "B" Trading System and Test Platforms are collocated in the Equinix NY4 IBX Data Center Facility and both MIAX Options and MIAX PEARL Disaster Recovery Trading Systems are collocated in the Equinix CH4 IBX Data Center. The MIAX Express Network Interconnect provides both primary and secondary and or numerous primary or secondary network handoffs in each data center on dedicated facilities and access switches in a full mesh topology. This configuration provides the client with a high degree of flexible connectivity options for selecting the appropriate level of redundancy and diversity within the primary and disaster recovery data locations.

MIAX Options & MIAX Pearl, MIAX Express Network Interconnect, Connectivity Guide, Version 2.1, revision date Dec. 21, 2016, at page 2.

An illustration of the aforementioned MIAX Express Network Interconnect topology is below:



Id. at 5.

As a further example, MIAX routes orders and quotes to numerous "matching engines" specifically designated for each option class or quote:

> The matching engines of the Exchange each handle a defined set of option classes, which may be reallocated on a periodic basis in order to ensure that system load is balanced across the MIAX System. Each matching engine compares the limit price of all incoming quotes and orders with those quotes and orders already resting on the MIAX Book. The matching engine matches liquidity as available, calculates the MIAX Best Bid and Best Offer (the MBBO), monitors the other markets' displayed prices and determines when, and if, a trade can occur. If a newly arrived quote or order is marketable against the existing MIAX Book, and the MBBO is equal to or better than the best consolidated quote, an immediate match is made and allocations are communicated back to the trade participants.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 7. The MIAX Aggregate Risk Manager (ARM) continuously collects data in the form of number of options contracts per specified time period traded by each market maker for each designated option class. The data collection spans a plurality of matching engines.

> The MIAX ARM tracks the number of contracts traded by a Market Maker (represented as a percentage of quote size) in an assigned option class within a specified time period. The Market Maker establishes a percentage of their quotations (Allowable Engagement Percentage) and the time period for each option class. When an execution against a Market Maker's Standard quote occurs, the System looks back over the specified time period to determine whether the execution is of sufficient size to trigger the Aggregate Risk Manager.

Id. at 35.

To illustrate, the defined MIAX ARM condition occurs "in a particular option class when the counting program has determined that a Market Maker has traded the specified time period a number of contracts equal to or above their Allowable Engagement Percentage." In the MIAX system, the market maker is the entity with which this condition is associated.

> (b) (1) **Aggregate Risk Manager.** The System will engage the Aggregate Risk Manager in a particular option class when the counting program has determined that a Market Maker has traded during the specified time period a number of contracts equal to or above their Allowable Engagement Percentage. The Aggregate Risk Manager will then automatically remove the Market Maker's quotations from the Exchange's disseminated quotation in all series of that particular option class until the Market Maker sends a notification to the System of the intent to reengage quoting and submits a new revised quotation.

MIAX Options Exchange Rules, revision date Jan. 23, 2017, at page 141.

As a further example, MIAX processors convert the count of contracts traded to a class percentage and compare the class percentage to an existing value of Allowable Engagement Percentage. With this comparison, ARM identifies (trigger) events in the MIAX trading that match the defined condition.

> The MIAX ARM tracks the number of contracts traded by a Market Maker (represented as a percentage of quote size) in an assigned option class within a specified time period. The Market Maker establishes a percentage of their quotations (Allowable Engagement Percentage) and the time period for each option class. When an execution against a Market Maker's Standard quote occurs, the System looks back over the specified time period to determine whether the execution is of sufficient size to trigger the Aggregate Risk Manager.

MIAX Options, User's Manual, revision date Oct. 5, 2016, at page 35.

As a further example, MIAX routes orders and quotes to numerous "matching engines" specifically designated for each option class or trade. As the matching engines process aggregated orders to create trades, these engines comprise the liquidity destinations.

> The matching engines of the Exchange each handle a defined set of option classes, which may be reallocated on a periodic basis in order to ensure that system load is balanced across the MIAX System. Each matching engine compares the limit price of all incoming quotes and orders with those quotes and orders already resting on the MIAX Book. The matching engine matches liquidity as available, calculates the MIAX Best Bid and Best Offer (the MBBO), monitors the other markets' displayed prices and determines when, and if, a trade can occur. If a newly arrived quote or order is marketable against the existing MIAX Book, and the MBBO is equal to or better than the best consolidated quote, an immediate match is made and allocations are communicated back to the trade participants.

Id. at 7.

To further illustrate using an example, the MIAX ARM is configured to cancel multiple pending transactions by removing the market maker's standard quotations from the Exchange when it identifies the trigger event:

> The System engages the Aggregate Risk Manager when it has determined that a Market Maker has traded a number of contracts equal to or above their Allowable Engagement Percentage during the time period. The Aggregate Risk Manager then automatically cancels and removes the Market Maker's standard quotations from the Exchange's disseminated quotation in all series of that particular option class until the Market Maker sends a re-entry flag and submits new quotations in the affected class. eQuotes present in the market are not cancelled by the Aggregate Risk Manager.

Id. at 36.

118. Upon information and belief, MIAX's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

119. Upon information and belief, MIAX has induced infringement of at least the foregoing claims of the '371 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their consultants, software developers, engineers, customers, repair providers, and end users (such as primary market makers, competitive market makers, and broker-dealers) to make, use, sell, offer to sell, and/or import within the United States, an automated exchange platform made in accordance with the '371 Patent, including, but not limited to, the MIAX Options Exchange and MIAX Pearl, by, among other things, providing access, instructions, and technical assistance relating to these exchanges on MIAX websites. Upon

information and belief, MIAX's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

120. Upon information and belief, MIAX has committed the foregoing infringing activities without license from FTEN and with notice of the '371 Patent.

121. MIAX knew the '371 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly, and deliberately infringing the '371 Patent. FTEN's damages should be trebled pursuant to 35 U.S.C. § 284 because of MAX's willful infringement of the '371 Patent.

122. The acts of infringement by MIAX have been performed with the knowledge of the '371 Patent and are willful, wanton and deliberate, thus rendering this action "exceptional" within the meaning of 35 U.S.C. § 285 and entitling FTEN to its reasonable attorney's fees and litigation expenses.

123. The acts of infringement by MIAX will continue unless enjoined by this Court.

124. FTEN has been and will continue to be irreparably harmed and damaged by MIAX's acts of infringement of the '371 Patent and has no adequate remedy at law.

COUNT VIII: VIOLATION OF THE DEFEND TRADE SECRETS ACT OF 2016

125. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

126. Nasdaq owns and possesses certain confidential, proprietary, and trade secret information, as alleged above. One example of Nasdaq's trade secret information is reflected in the technical documentation that was downloaded and forwarded to their personal email accounts by Nasdaq-to-MIAX Employee Nos. 1 through 4, prior to their employment with MIAX for later use and access while at MIAX. Another example of Nasdaq's trade secret information is reflected in Figure 10 and columns 20 and 21 of the MIAX '461 Patent, on which Nasdaq-to-MIAX Employee Nos. 1, 4, 5, 6, 7, and 8 are named inventors. Nasdaq's trade secret information includes the technical and functional specifications for the INET messaging bus, which facilities the communication of data between different components connected to the messaging bus; more particularly, Nasdaq's trade secret information includes the technical and functional specifications for the resiliency layer in the messaging bus, including the resiliency layer's multi-tier architecture and the gap-fill process implemented by the resiliency layer. None of these trade secrets is disclosed in any published Nasdaq patent or patent application, nor available from other publicly accessible sources.

127. Nasdaq's confidential, proprietary, and trade secret information is used in connection with Nasdaq's products and services, including the exchanges operated by Nasdaq, which are used, sold, shipped and/or ordered in, or intended to be used, sold shipped and/or ordered in, interstate or foreign commerce. MIAX's

misappropriation of Nasdaq's trade secret information relates to its use in products and services, including the exchanges operated by MIAX, which are used, sold, shipped and/or ordered in, or intended to be used, sold shipped and/or ordered in, interstate or foreign commerce.

128. Nasdaq has implemented reasonable commercial measures to keep its trade secret information secret and confidential. Nasdaq restricts access to confidential and proprietary trade secret information to only necessary personnel. Networks and servers hosting Nasdaq's trade secret information have been and continue to be encrypted and have required passwords and other authentication mechanisms for access. Computers provided to Nasdaq employees are encrypted, password protected, and subject to other security measures. And Nasdaq secures its physical facilities by restricting access and then monitoring actual access with security cameras and guards.

129. Nasdaq also requires employees, contractors, consultants, and vendors to sign confidentiality agreements before confidential or proprietary trade secret information is disclosed to them. Outside vendors that receive confidential and proprietary trade secret information related to Nasdaq's INET trading technology have executed written non-disclosure agreements.

130. The Nasdaq Trade Secrets derive independent economic value, actual or potential, from not being generally known and not readily ascertainable by proper means.

131. In violation of Nasdaq's rights, the MIAX Defendants misappropriated Nasdaq's confidential, proprietary, and trade secret information in the improper and unlawful manner as alleged herein.

132. The Nasdaq-to-MIAX Employees, while they were employed by Nasdaq, were subject to Nasdaq's confidentiality restrictions and had a duty to maintain confidentiality and not to use for any of their own purposes the confidential trade secrets to which they had access pursuant to their employment with Nasdaq.

133. The Nasdaq-to-MIAX Employees, by working individually or collectively under MIAX and/or under the direction of one or more persons at MIAX, acquired, disclosed, and/or used the Nasdaq Trade Secrets without the express or implied consent of Nasdaq.

134. The Nasdaq-to-MIAX Employees, by working individually or collectively under MIAX and/or under the direction of one or more persons at MIAX, acquired, disclosed, used, and/or distributed the Nasdaq Trade Secrets to MIAX, which had actual or imputed knowledge that such trade secrets were acquired, disclosed, and/or distributed through improper means by way of theft,

bribery, misrepresentation, breach, or inducement of a breach of an express or implied duty to maintain the secrecy of, or to limit the use or disclosure of, the Nasdaq Trade Secrets.

135. MIAX acquired, used, and/or disclosed, and continue to acquire, use, and/or disclose, the Nasdaq Trade Secrets, without the express or implied consent of Nasdaq, and knew or had reason to know that the Nasdaq Trade Secrets were acquired by improper means.

136. MIAX's acquisition, use, and disclosure of the Nasdaq Trade Secrets provided significant competitive benefit to MIAX, particularly in its development and unveiling of MIAX Options and MIAX Pearl—two electronic exchanges launched nationally on December 7, 2012 and February 6, 2017, respectively. MIAX continues to operate these two exchanges today.

137. The aforementioned collective acts of MIAX and one or more of the Nasdaq-to-MIAX Employees in misappropriating Nasdaq's trade secret information was intentional, knowing, willful, malicious, fraudulent, and oppressive. Defendants have attempted and continue to attempt to conceal their misappropriation. The actions of MIAX, as set forth herein and occurring on or after May 11, 2016, constitute misappropriation under the Defend Trade Secrets Act, 18 U.S.C. § 1839.

138. Upon information and belief, if not enjoined by the Court, the MIAX Defendants will continue to misappropriate and use Nasdaq's trade secret information for their own benefit, causing Nasdaq irreparable harm, damage, and injury.

139. As the direct and proximate result of MIAX's conduct, Nasdaq has suffered, and if MIAX's conduct is not stopped, will continue to suffer severe competitive harm, irreparable injury, and significant damages, including lost profits, reasonable royalties, and other damages as set forth herein, in an amount to be proven at trial. Because Nasdaq's remedy at law is inadequate, Nasdaq seeks, in addition to damages, permanent injunctive relief to recover and protect its confidential, proprietary, and trade secret information and to protect other legitimate business interests.

140. Nasdaq has been damaged by all of the foregoing and is entitled to an award of exemplary damages and attorney's fees.

COUNT IX: VIOLATION OF THE NEW JERSEY TRADE SECRETS ACT

141. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

142. Nasdaq owns and possesses certain confidential, proprietary, and trade secret information, as alleged above. One example of Nasdaq's trade secret information is reflected in the technical documentation that was downloaded and

forwarded to their personal email accounts by Nasdaq-to-MIAX Employee Nos. 1 through 4, prior to their employment with MIAX for later use and access while at MIAX. Another example of Nasdaq's trade secret information is reflected in Figure 10 and columns 20 and 21 of the MIAX '461 Patent, on which Nasdaq-to-MIAX Employee Nos. 1, 4, 5, 6, 7, and 8 are named inventors. Nasdaq's trade secret information includes the technical and functional specifications for the INET messaging bus, which facilities the communication of data between different components connected to the messaging bus; more particularly, Nasdaq's trade secret information includes the technical and functional specifications for the resiliency layer in the messaging bus, including the resiliency layer's multi-tier architecture and the gap-fill process implemented by the resiliency layer. None of these trade secrets is disclosed in any published Nasdaq patents or patent application, nor available from other publicly accessible sources.

143. Nasdaq's confidential, proprietary, and trade secret information is used in connection with Nasdaq's products and services, including the exchanges operated by Nasdaq.

144. Nasdaq has implemented reasonable commercial measures to keep its trade secret information secret and confidential. Nasdaq restricts access to confidential and proprietary trade secret information to only necessary personnel. Networks and servers hosting Nasdaq's trade secret information have been and

continue to be encrypted and have required passwords and other authentication mechanisms for access. Computers provided to Nasdaq employees are encrypted, password protected, and subject to other security measures. And Nasdaq secures its physical facilities by restricting access and then monitoring actual access with security cameras and guards.

145. Nasdaq also requires employees, contractors, consultants, and vendors to sign confidentiality agreements before confidential or proprietary trade secret information is disclosed to them. Outside vendors that receive confidential and proprietary trade secret information related to Nasdaq's INET trading technology have executed written non-disclosure agreements.

146. The Nasdaq Trade Secrets derive independent economic value, actual or potential, from not being generally known and not readily ascertainable by proper means.

147. In violation of Nasdaq's rights, the MIAX Defendants misappropriated Nasdaq's confidential, proprietary, and trade secret information in the improper and unlawful manner as alleged herein.

148. The Nasdaq-to-MIAX Employees, while they were employed by Nasdaq, were subject to Nasdaq's confidentiality restrictions and had a duty to maintain confidentiality and not to use for any of their own purposes the

confidential trade secrets to which they had access pursuant to their employment with Nasdaq.

149. The Nasdaq-to-MIAX Employees, by working individually or collectively under MIAX and/or under the direction of one or more persons at MIAX, acquired, disclosed, and/or used the Nasdaq Trade Secrets without the express or implied consent of Nasdaq.

150. The Nasdaq-to-MIAX Employees, by working individually or collectively under MIAX and/or under the direction of one or more persons at MIAX, acquired, disclosed, used, and/or distributed the Nasdaq Trade Secrets to MIAX, which had actual or imputed knowledge that such trade secrets were acquired, disclosed, and/or distributed through improper means by way of theft, bribery, misrepresentation, breach, or inducement of a breach of an express or implied duty to maintain the secrecy of, or to limit the use or disclosure of, the Nasdaq Trade Secrets.

151. MIAX acquired, used, and/or disclosed, and continue to acquire, use, and/or disclose, the Nasdaq Trade Secrets, without the express or implied consent of Nasdaq, and knew or had reason to know that the Nasdaq Trade Secrets were acquired by improper means.

152. MIAX's acquisition, use, and disclosure of the Nasdaq Trade Secrets provided significant competitive benefit to MIAX, particularly in its development

and unveiling of MIAX Options and MIAX Pearl—two electronic exchanges launched nationally on December 7, 2012 and February 6, 2017, respectively. MIAX continues to operate these two exchanges today.

153. The aforementioned collective acts of MIAX and one or more of the Nasdaq-to-MIAX Employees in misappropriating Nasdaq's trade secret information was intentional, knowing, willful, malicious, fraudulent, and oppressive. Defendants have attempted and continue to attempt to conceal their misappropriation. The actions of MIAX, as set forth herein and occurring on or after January 5, 2012, constitute misappropriation under the New Jersey Trade Secrets Act, N.J.S.A. §§ 56:15-1, *et seq*.

154. Upon information and belief, if not enjoined by the Court, the MIAX Defendants will continue to misappropriate and use Nasdaq's trade secret information for their own benefit, causing Nasdaq irreparable harm, damage, and injury.

155. As the direct and proximate result of MIAX's conduct, Nasdaq has suffered, and if MIAX's conduct is not stopped, will continue to suffer severe competitive harm, irreparable injury, and significant damages, including lost profits, reasonable royalties, and other damages as set forth herein, in an amount to be proven at trial. Because Nasdaq's remedy at law is inadequate, Nasdaq seeks, in addition to damages, permanent injunctive relief to recover and protect its

confidential, proprietary, and trade secret information and to protect other legitimate business interests.

156. Nasdaq has been damaged by all of the foregoing and is entitled to an award of exemplary damages and attorney's fees and costs.

COUNT X: VIOLATION OF NEW JERSEY COMMON LAW TRADE SECRET PROTECTION

157. Plaintiffs incorporate the preceding paragraphs as if fully set forth herein.

158. Nasdaq owns and possesses certain confidential, proprietary, and trade secret information, as alleged above. One example of Nasdaq's trade secret information is reflected in the technical documentation that was downloaded and forwarded to their personal email accounts by Nasdaq-to-MIAX Employee Nos. 1 through 4, prior to their employment with MIAX for later use and access while at MIAX. Another example of Nasdaq's trade secret information is reflected in Figure 10 and columns 20 and 21 of the MIAX '461 Patent, on which Nasdaq-to-MIAX Employee Nos. 1, 4, 5, 6, 7, and 8 are named inventors. Nasdaq's trade secret information includes the technical and functional specifications for the INET messaging bus, which facilities the communication of data between different components connected to the messaging bus; more particularly, Nasdaq's trade secret information includes the technical and functional specifications for the resiliency layer in the messaging bus, including the resiliency layer's multi-tier

architecture and the gap-fill process implemented by the resiliency layer. None of these trade secrets is disclosed in any published Nasdaq patents or patent application, nor available from other publicly accessible sources.

159. Nasdaq's confidential, proprietary, and trade secret information is used in connection with Nasdaq's products and services, including the exchanges operated by Nasdaq.

160. Nasdaq has implemented reasonable commercial measures to keep its trade secret information secret and confidential. Nasdaq restricts access to confidential and proprietary trade secret information to only necessary personnel. Networks and servers hosting Nasdaq's trade secret information have been and continue to be encrypted and have required passwords and other authentication mechanisms for access. Computers provided to Nasdaq employees are encrypted, password protected, and subject to other security measures. And Nasdaq secures its physical facilities by restricting access and then monitoring actual access with security cameras and guards.

161. Nasdaq also requires employees, contractors, consultants, and vendors to sign confidentiality agreements before confidential or proprietary trade secret information is disclosed to them. Outside vendors that receive confidential and proprietary trade secret information related to Nasdaq's INET trading technology have executed written non-disclosure agreements.

162. The Nasdaq Trade Secrets derive independent economic value, actual or potential, from not being generally known and not readily ascertainable by proper means.

163. In violation of Nasdaq's rights, the MIAX Defendants have actually misappropriated and/or threaten to inevitably misappropriate Nasdaq's confidential, proprietary, and trade secret information in violation of New Jersey law, in the improper and unlawful manner as alleged herein.

164. The Nasdaq-to-MIAX Employees, while they were employed by Nasdaq, were subject to Nasdaq's confidentiality restrictions and had a duty to maintain confidentiality and not to use for any of their own purposes the confidential trade secrets to which they had access pursuant to their employment with Nasdaq.

165. The Nasdaq-to-MIAX Employees, by working individually or collectively under MIAX and/or under the direction of one or more persons at MIAX, acquired, disclosed, and/or used the Nasdaq Trade Secrets without the express or implied consent of Nasdaq.

166. The Nasdaq-to-MIAX Employees, by working individually or collectively under MIAX and/or under the direction of one or more persons at MIAX, acquired, disclosed, used, and/or distributed the Nasdaq Trade Secrets to MIAX, which had actual or imputed knowledge that such trade secrets were

acquired, disclosed, and/or distributed through improper means by way of theft, bribery, misrepresentation, breach, or inducement of a breach of an express or implied duty to maintain the secrecy of, or to limit the use or disclosure of, the Nasdaq Trade Secrets.

167. MIAX acquired, used, and/or disclosed, and continue to acquire, use, and/or disclose, the Nasdaq Trade Secrets, without the express or implied consent of Nasdaq, and knew or had reason to know that the Nasdaq Trade Secrets were acquired by improper means. Indeed, MIAX cannot hire Nasdaq employees into similar positions at MIAX without MIAX and/or the former Nasdaq employees utilizing and disclosing Nasdaq's trade secret information.

168. MIAX's acquisition, use, and disclosure of the Nasdaq Trade Secrets provided significant competitive benefit to MIAX, which, on information and belief, had improperly acquired, used or disclosed the Nasdaq Trade Secrets as early as October 2009 in its development of the two electronic exchanges, MIAX Options and MIAX Pearl, launched in 2012 and 2017, respectively. MIAX continues to operate these two exchanges today.

169. The aforementioned collective acts of MIAX and one or more of the Nasdaq-to-MIAX Employees in misappropriating Nasdaq's trade secret information was intentional, knowing, willful, malicious, fraudulent, and oppressive. Defendants have attempted and continue to attempt to conceal their

misappropriation. The actions of MIAX, as set forth herein and occurring prior to January 5, 2012, constitute violation of trade secret protection under the common law of New Jersey.

170. Upon information and belief, if not enjoined by the Court, the MIAX Defendants will continue to misappropriate and use Nasdaq's trade secret information for their own benefit, causing Nasdaq irreparable harm, damage, and injury.

171. As the direct and proximate result of MIAX's conduct, Nasdaq has suffered, and if MIAX's conduct is not stopped, will continue to suffer severe competitive harm, irreparable injury, and significant damages, including lost profits, reasonable royalties, and other damages as set forth herein, in an amount to be proven at trial. MIAX has been, will be or is being unjustly enriched by the misappropriation of Nasdaq's trade secrets and, unless retrained, will continue to threaten to use, actually use, divulge, inevitably disclose, acquire, distribute, and/or otherwise misappropriate Nasdaq's trade secrets.

172. Because Nasdaq's remedy at law is inadequate, Nasdaq seeks, in addition to damages, permanent injunctive relief to recover and protect its confidential, proprietary, and trade secret information and to protect other legitimate business interests.

173. Nasdaq has been damaged by all of the foregoing and is entitled to an award of exemplary damages and attorney's fees and costs.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for judgment in their favor against MIAX granting Plaintiffs the following relief:

A. Entry of judgment in favor of Plaintiffs against MIAX on all counts;

B. Entry of judgment that MIAX has infringed the Patents-in-Suit;

C. Entry of judgment that MIAX's infringement of the Patents-in-Suit has been willful;

D. An order permanently enjoining MIAX, together with their officers, directors, agents, servants, employees, and attorneys, and upon those persons in active concert or participation with them, from infringing the Patents-in-Suit;

E. An award of compensatory damages adequate to compensate Plaintiffs for MIAX's infringement of the Patents-in-Suit, but in no event less than a reasonable royalty for the use made of the invention by MIAX, together with interest and costs as fixed by the Court and trebled for willful infringement as provided by 35 U.S.C. § 284;

F. Plaintiffs' reasonable fees for expert witnesses and attorneys, as provided by 35 U.S.C. § 285, as well as Plaintiffs' costs;

G. An award to Nasdaq of all damages under the Defend Trade Secrets Act of 2016, 18 U.S.C. § 1832, *et seq.*, New Jersey Trade Secrets Act, N.J.S.A §§ 56:15-1, *et seq.*, and the common law, including injunctive relief, monetary damages, twice such monetary damages for the willful and malicious acts of MIAX, and all reasonable costs and attorneys' fees;

H. Pre-judgment and post-judgment interest on Plaintiffs' award; and

I. All such other and further relief as the Court deems just or equitable.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Fed. R. Civ. P., Plaintiffs hereby demand trial by jury in this action of all claims so triable.

Dated: September 1, 2017

Respectfully submitted,

By: */s/ Michael Critchley, Sr.*

Michael Critchley, Sr.
CRITCHLEY, KINUM & DENOIA, LLC
75 Livingston Ave, Suite 303
Roseland, New Jersey 07068
Telephone: (973) 422-9200
mcritchley@critchleylaw.com

Arun S. Subramanian
Jacob W. Buchdahl
SUSMAN GODFREY L.L.P.
1301 Avenue of the Americas
32nd Floor
New York, New York 10019-6023
Telephone: (212) 336-8330
asubramanian@susmangodfrey.com
jbuchdahl@susmangodfrey.com

Floyd G. Short
SUSMAN GODFREY L.L.P.
1201 Third Avenue, Suite 3800
Seattle, Washington 98101-3000
Telephone: (206) 516-3880
fshort@susmangodfrey.com

Meng Xi
SUSMAN GODFREY L.L.P.
1901 Avenue of the Stars, Suite 950
Los Angeles, California 90067-6029
Telephone: (310) 789-3100
mxi@susmangodfrey.com

Bryce T. Barcelo
SUSMAN GODFREY L.L.P.
1000 Louisiana, Suite 5100
Houston, Texas 77002-5096
Telephone: (713) 651-9366
bbarcelo@susmangodfrey.com

Attorneys for Plaintiffs Nasdaq, Inc., Nasdaq ISE, LLC, and FTEN, Inc.