



# Cboe FI FIX Order Entry Certification Procedures

August 25, 2022

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## 1 Scheduling

The Cboe FI test environment is available daily from 7:30 AM ET to 5 PM ET, Monday through Friday. In limited circumstances, the test environment will be unavailable during required maintenance and upgrades.

Cboe FI FIX Gateway supports FIX 4.4.

For questions, please contact the Cboe FI Trade Desk:

- Phone: 212-378-8558
- Email: [fitradedesk@cboe.com](mailto:fitradedesk@cboe.com)

## 2 Pre-Certification Process

Pre-certification is done by the customer in the test environment without the assistance of Cboe FI Trade Desk staff. Customers **do not** need to contact the Cboe FI Trade Desk to coordinate the pre-certification process.

Prior to scheduling a certification session with Cboe FI, please perform the following:

- Login to the certification environment.
- Send orders or quotes, both BUY and SELL, if applicable.
- Stay connected for a length of time to observe heartbeats.

### **3 Certification Requirement**

All clients are required to confirm they performed their own validation of the CUSIP for the Cboe FI instrument received in Security List Messages or Quote Requests.

## 4 General Test Cases (Making and Taking)

Clients are encouraged to independently complete as many of the General Test Cases as possible prior to scheduling with the Cboe FI Trade Desk.

1. Session Level Tests (required)
  - (a) Network Connectivity, done by the customer's network team and Cboe FI Trade Desk.
  - (b) Login Procedure.
  - (c) Automatic reconnection upon disconnection.
  - (d) Heartbeats and Test Requests.
  
2. Resequencing (required)

Resequencing is divided into two types: server-side resequencing and client-side resequencing. Clients are required to perform both as part of the certification process.

  - (a) Server-Side Resequencing:
    - i. Client submits orders to Cboe FI.
    - ii. Client closes the connection, simulating an unexpected disconnect.
    - iii. Cboe FI adjusts the client's incoming sequence number to be lower than the sequence number of the last order or cancel sent.
    - iv. Client logs back on.
    - v. Cboe FI confirms the client resequences using the GapFill flag set to 'Y'.
  
  - (b) Client-Side Resequencing:
    - i. Client submits an order and generates a trade on Cboe FI.
    - ii. Client closes the connection, simulating an unexpected disconnect.
    - iii. Client sets the incoming sequence number (from Cboe FI) to be a number lower than the last trade sent from Cboe FI. (Example: The last trade received from Cboe FI had a sequence number of 300. The customer should reset their sequence number to a number lower than 300. This simulates missing sequence numbers due to a disconnect.)
    - iv. Client logs back in with 141=N. (Note: Setting 141=Y will prevent resequencing and missed trades will not be sent. Cboe FI strongly discourages this.)
    - v. Client should detect the sequence number from Cboe FI, note it was lower than expected, and request a Resend of data (35=2).
    - vi. Cboe FI will resend any trades.

### Notes:

- Cboe FI greatly discourages the use of GapFill messages with the GapFill flag set to 'N'.
- In response to a Resend Request, Cboe FI will only respond with trades. Resent trades **do not** contain a possible duplicate flag (43=Y).

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- Client Logon messages with 141=Y are strongly discouraged other than on initial daily logon. The reason being, it is possible for trades to be sent to but never received by a client during a network outage. If a client does not choose to manually acknowledge trades, Cboe FI will assume that those trades have been received by the client. If, in this scenario, a client resequences correctly on logon, they will be resent the missed trades. However, if the client's logon message contains 141=Y, resequencing will not occur, and the missed trades will not be sent.

## 5 Taking Test Cases

The Taking Test Cases should be verified in addition to the General Test Cases.

1. Market Data Interpretation (required)
  - (a) Client to confirm that Market Data is not being aggregated by price or by VWAP. The Cboe FI Order Book is not a sweepable order book and clients performing price aggregation or a VWAP on Cboe FI market data are interpreting market data incorrectly.
  
2. Orders (required)
  - (a) New Order, BUY
    - i. Order results in a Trade (35=8, 150=F).
    - ii. Order does not fill and is canceled (35=8, 39=C).
  - (b) New Order, SELL
    - i. Order results in a Trade (35=8, 150=F).
    - ii. Order does not fill and is canceled (35=8, 39=C).
  - (c) New Order, any side, of a non-existent instrument. Client should expect a reject message.
  
3. Orders on Large Tiers (required)
  - (a) New Order, BUY on 10mio Tier. Client to confirm the 10mio BID price in their market data matches the price in their order.
  - (b) New Order, SELL on 10mio Tier. Client to confirm the 10mio OFFER price in their market data matches the price in their order.



## 6 Market Making Test Cases

The Market Making Test Cases should be verified in addition to the General Test Cases.

1. Wait for Quote Request messages then begin streaming quotes. Clients must confirm they validate the CUSIP in the QuoteRequest message before streaming pricing (see Section 3).
2. Stream pricing for any (or all) of the supported tiers indicated in the Quote Request message. Clients must confirm they will not stream prices in unsupported tiers to Cboe FI.
  - (a) (If supported) Stream only bids
  - (b) (If supported) Stream only offers
3. (If supported) Submit a Quote Cancel message. Confirm quotes are removed.

### 6.1 Firm Market Making Test Cases

1. Wait for trade from Cboe FI where maker BUYS. Verify quantity, trade direction, and price.
2. Wait for trade from Cboe FI where maker SELLS. Verify quantity, trade direction, and price.

### 6.2 Non-Firm Market Making Test Cases

1. Wait for trade from Cboe FI where maker BUYS. Verify quantity, trade direction, and price.
  - a. Return an Execution Report to accept the trade (150=F). Optional: Confirm the Final State Execution Report message is received and processed without issue.
  - b. Return an Execution Report to reject the trade (150=8). Optional: Confirm the Final State Execution Report message is received and processed without issue.
2. Wait for trade from Cboe FI where maker SELLS. Verify quantity, trade direction, and price.
  - a. Return an Execution Report to accept the trade (150=F). Optional: Confirm the Final State Execution Report message is received and processed without issue.
  - b. Return an Execution Report to reject the trade (150=8). Optional: Confirm the Final State Execution Report message is received and processed without issue.
3. Wait for a trade from Cboe FI. Do not respond during the trade accept window. Confirm an email is received from Cboe FI with timeout details. Optional: Confirm the Final State Execution Report message is received and processed without issue.

## 7 Support

Please e-mail questions or comments regarding this specification to [fitradedesk@cboe.com](mailto:fitradedesk@cboe.com) or [tradedesk@cboe.com](mailto:tradedesk@cboe.com).

## Revision History

Version	Date	Description
1.0.0	03/10/2021	Initial version.
1.0.1	08/25/2022	Minor edits