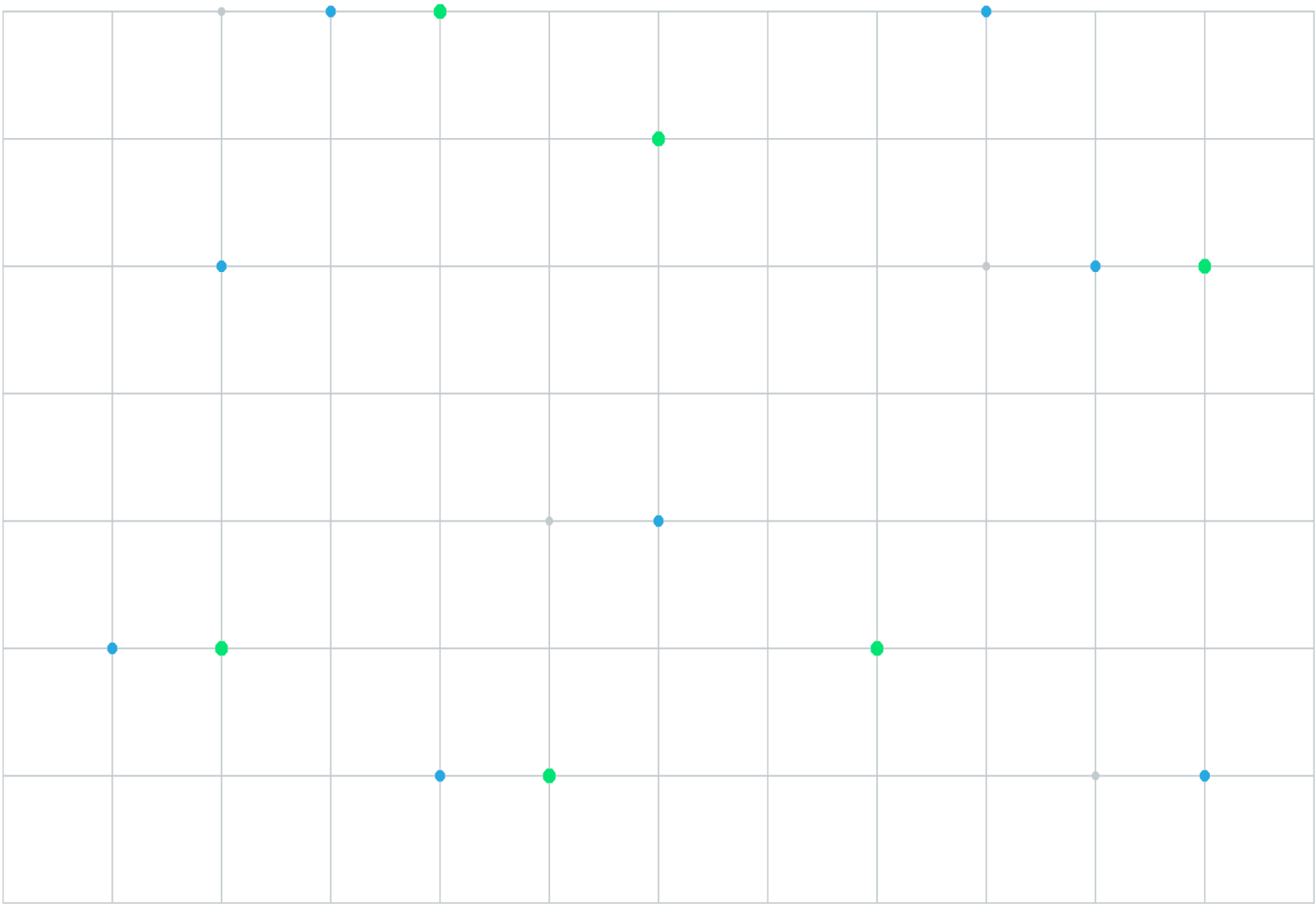
CME Group

AutoCert+ BrokerTec Market Data User Manual

24 October 2022



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Getting Started

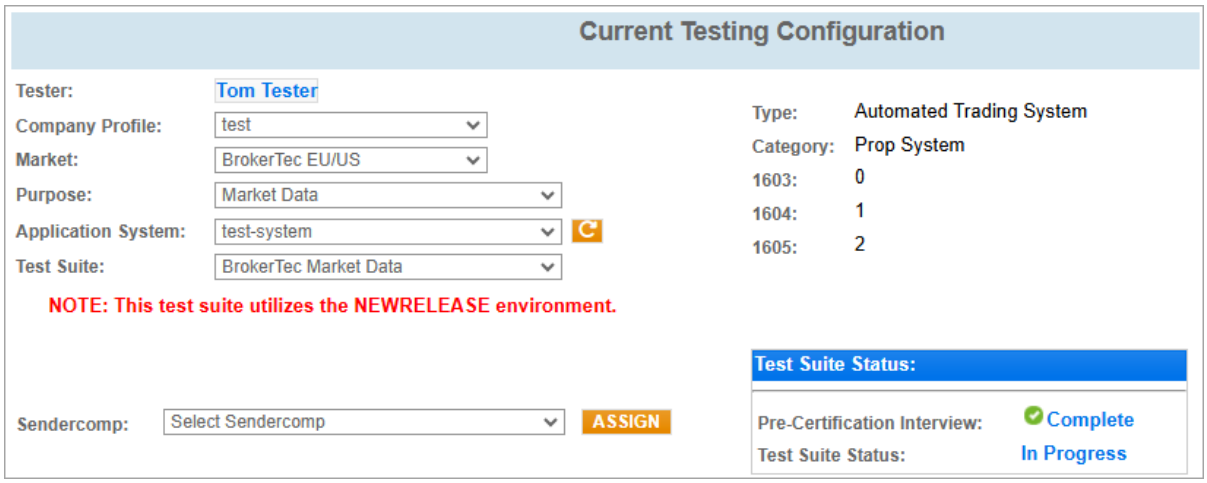
The AutoCert+ tool is an automated testing tool for validating application functionality. It provides an easy-to-use web interface for walking through CME Group certification scenarios.

To facilitate the process of connecting a customer application, CME Group provides a dedicated certification environment to allow customers to test their systems before they complete certification.

This Help system accompanies the AutoCert+ BrokerTec Market Data test suite.

To run and navigate AutoCert+:

1. Complete the steps detailed in the "Process Summary: BrokerTec New Release Testing Setup" topic.
2. Log into the automated certification tool.
3. Review general AutoCert+ test suite navigation and general interview information.
4. Navigate to the AutoCert+ BrokerTec Market Data test suite.



   a. Select a **Company Name**.
   b. For **Market**, select *BrokerTec*.
   c. For **Purpose**, select *Market Data*.
   d. Select an **Application System**.

      Use the refresh ( ) button to update the list to include recently created Application Systems.

   a. For **Test Suite**, select *BrokerTec Market Data*.
5. Complete the Interview for this test suite.
6. Complete applicable test cases.
7. Complete the certification process from the Post Certification tab.

What's New

The list below illustrates the updates made to the AutoCert+ BrokerTec Market Data Help system.

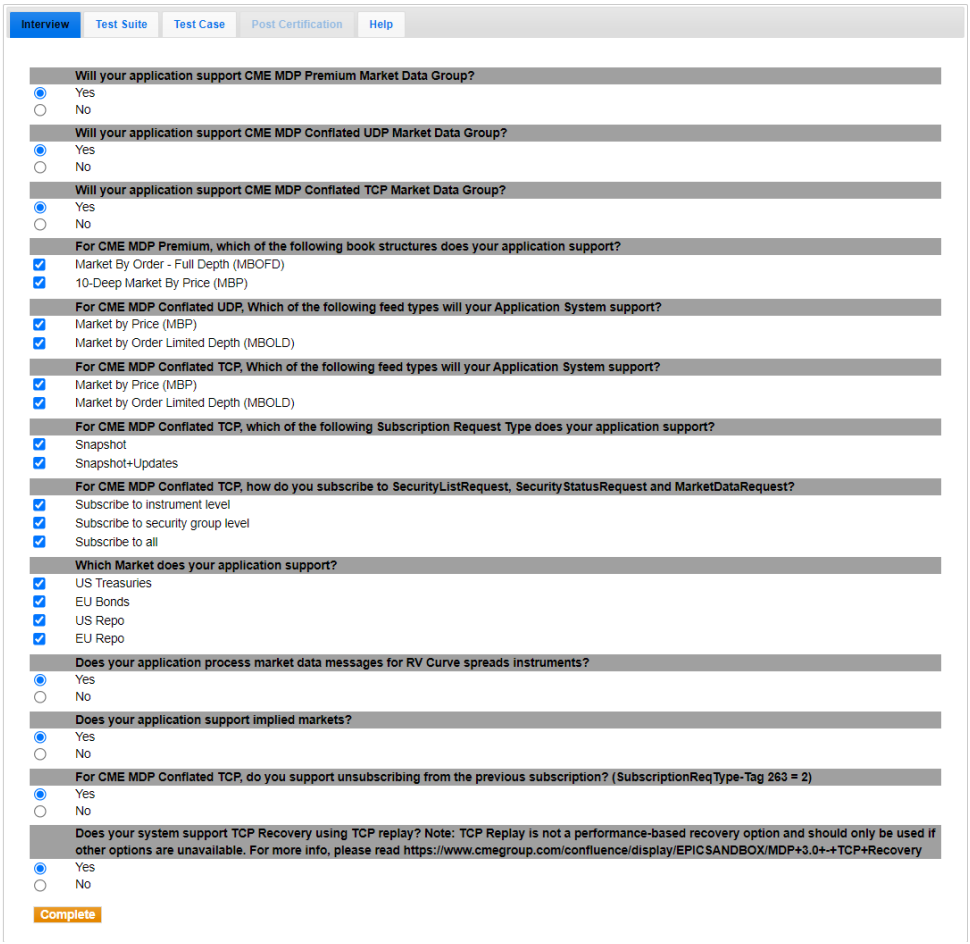
Date	Description
24 Oct 2022	Website and PDF format only.
17 Nov 2021	Added topic: TCP Recovery
18 Aug 2021	Added topics: • Security Status Request Verification (Snapshot and Updates) for US Treasuries • Market State Message for US Treasuries
25 Sep 2020	Added topics: • Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo EU Updated test names and screenshots • Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo US • Security Status Request Workup Verification for Repo
02 Sep 2020	Added topics: • Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Non-Repo • Statistic Messages for Conflated TCP Market Data Group (Snapshot Only) for Non-Repo Updated test names and screenshots • Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo • Statistic Messages for Conflated TCP Market Data Group (Snapshot Only) for Repo
11 Aug 2020	Removed topic: " Market Data Request by Instrument Level Request Verification" Added topics: • Market Data Request by Instrument Level Request Verification (Snapshot and Updates) • Market Data Request by Instrument Level Request Verification (Snapshot Only)
23 July 2020	Initial release.

Interview

The interview consists of a series of questions about your trading application. Based on your responses, certain tests are required and others are optional. You must complete the pre-certification interview before running the test cases.

To complete the interview:

Answer each question and click **Complete** when finished.



Certification Tests

This section contains information on the certification tests for the AutoCert+ BrokerTec Market Data test suite.

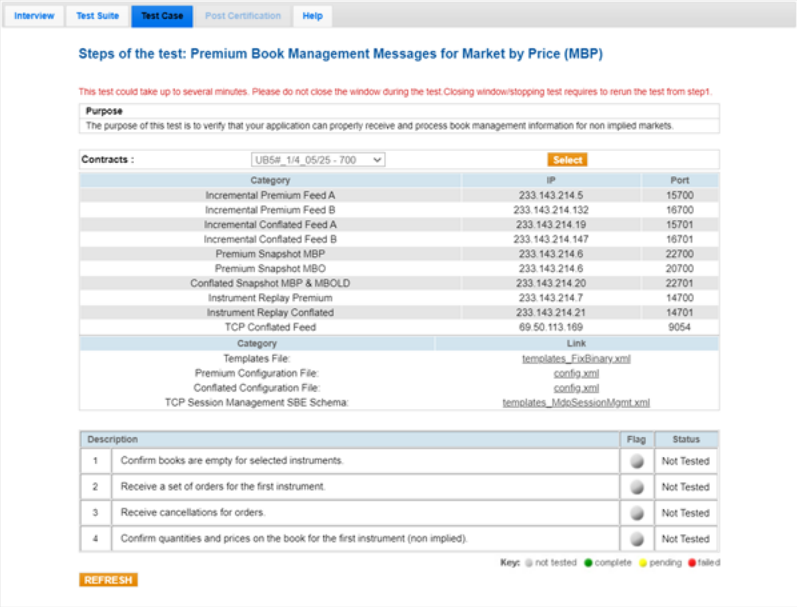
Book Management Messages

This section contains information about the BrokerTec Book Management Message tests.

Premium Book Management Messages for Market by Price (MBP)

This test verifies that your application can properly receive and process book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



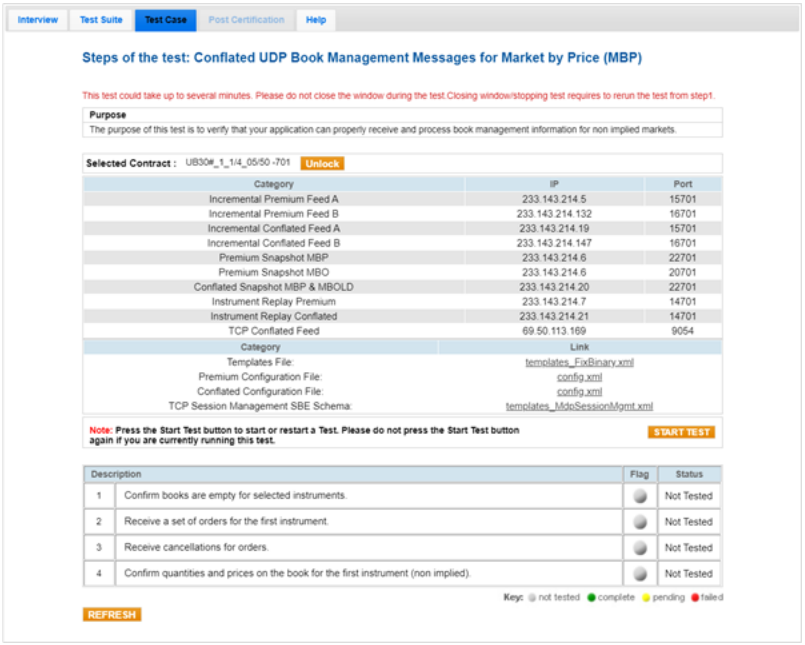
To run the Premium Book Management Messages for Market by Price (MBP) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated UDP Book Management Messages for Market by Price (MBP)

This test verifies that your application can properly receive and process book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Conflated UDP Book Management Messages for Market by Price (MBP) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

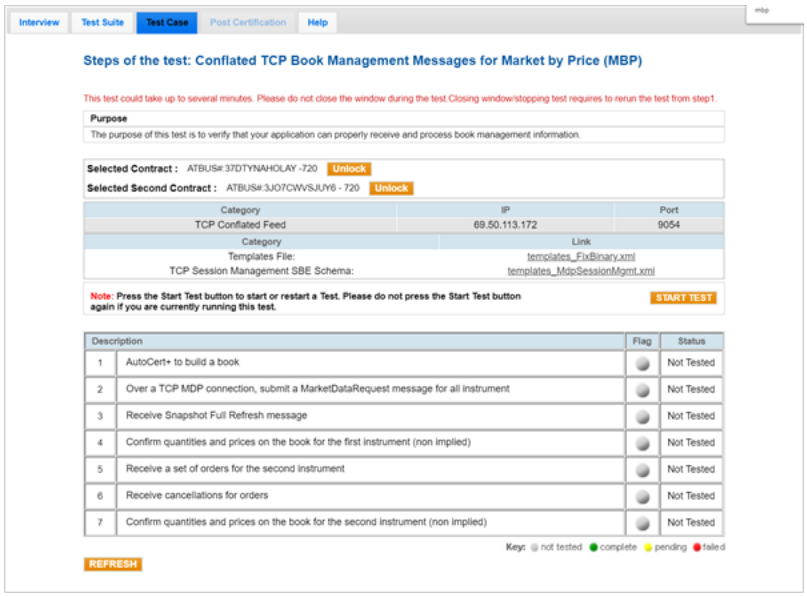
Conflated TCP Book Management Messages for Market by Price (MBP)

This test verifies that your application can properly receive and process book management information.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.

- Conflated TCP Book Management Messages for Market by Price (MBP)
- Conflated TCP Book Management Messages for Market by Price (MBP) (Snapshot Only)

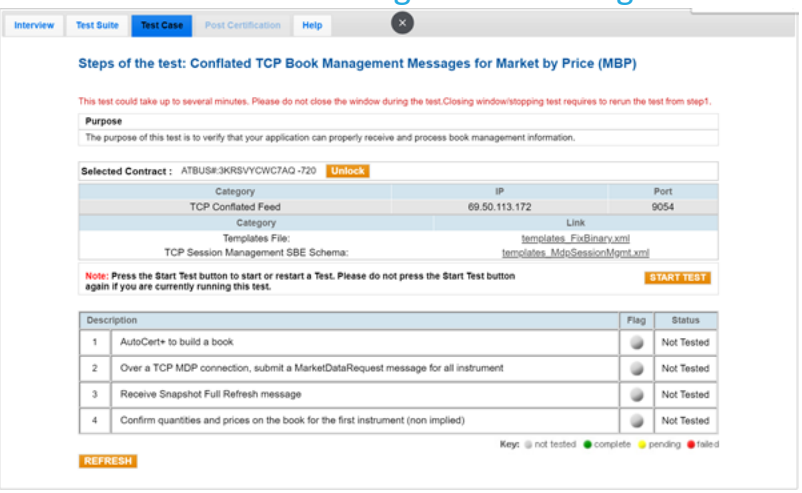
Conflated TCP Book Management Messages for Market by Price (MBP)



To run the Conflated TCP Book Management Messages for Market by Price (MBP) test:

1. AutoCert+ will build a book.
2. Over a TCP MDP connection, submit a MarketDataRequest message for all instruments.
3. Receive a SnapshotFullRefresh message.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
5. Receive a set of orders for the second instrument
6. Receive cancellations for orders
7. Enter the quantities and prices on the book for the second instrument (non-implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated TCP Book Management Messages for Market by Price (MBP) (Snapshot Only)



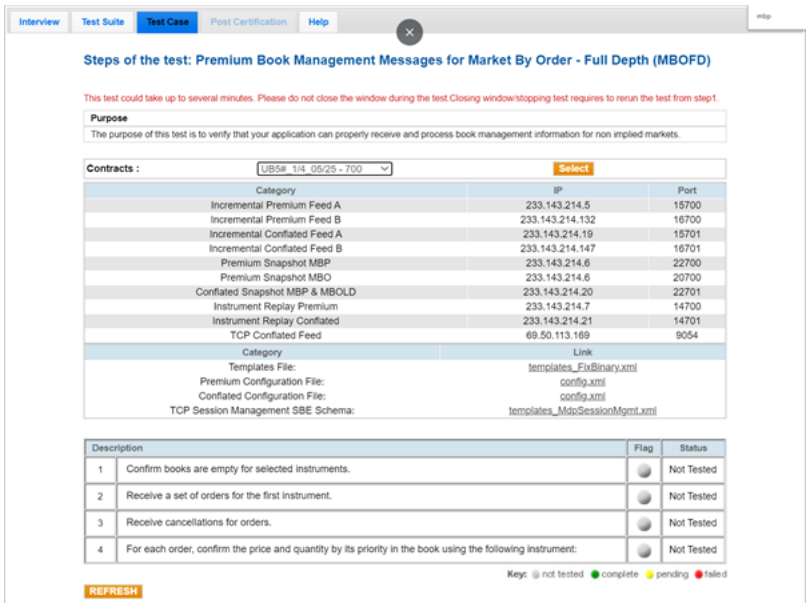
To run the Conflated TCP Book Management Messages for Market by Price (MBP) (Snapshot Only) test:

1. AutoCert+ will build a book.
2. Over a TCP MDP connection, submit a MarketDataRequest message for all instruments.
3. Receive a SnapshotFullRefresh message.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Book Management Messages for Market By Order - Full Depth (MBOFD)

This test verifies that your application can properly receive and process book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



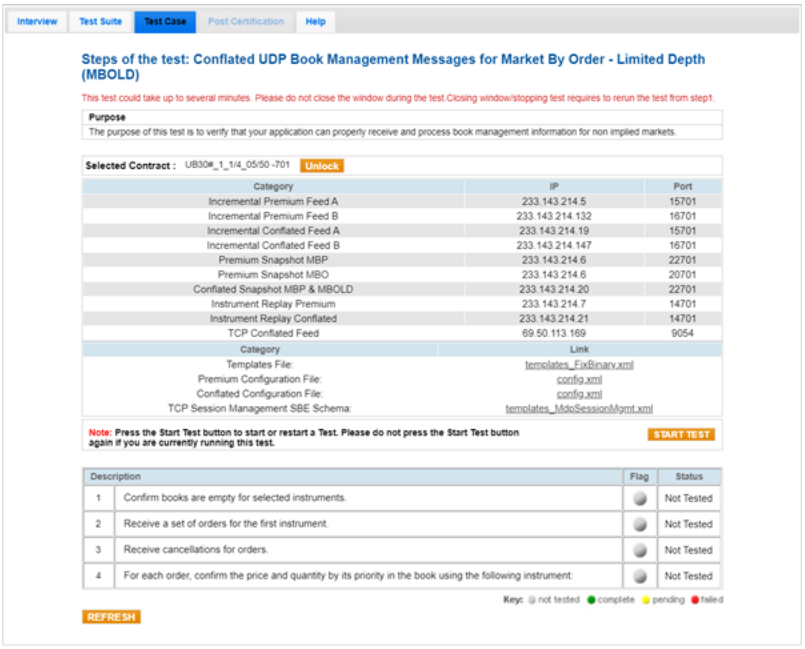
To run the Premium Book Management Messages for Market By Order - Full Depth (MBOFD) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. For each order, confirm the price and quantity by its priority in the book using the following instrument (instrument will vary):
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated UDP Book Management Messages for Market By Order - Limited Depth (MBOLD)

This test verifies that your application can properly receive and process book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Conflated UDP Book Management Messages for Market By Order - Limited Depth (MBOLD) test:

1. Select **Yes** or **No** to confirm that the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. For each order, confirm the price and quantity by its priority in the book using the following instrument: (instrument will vary.)
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

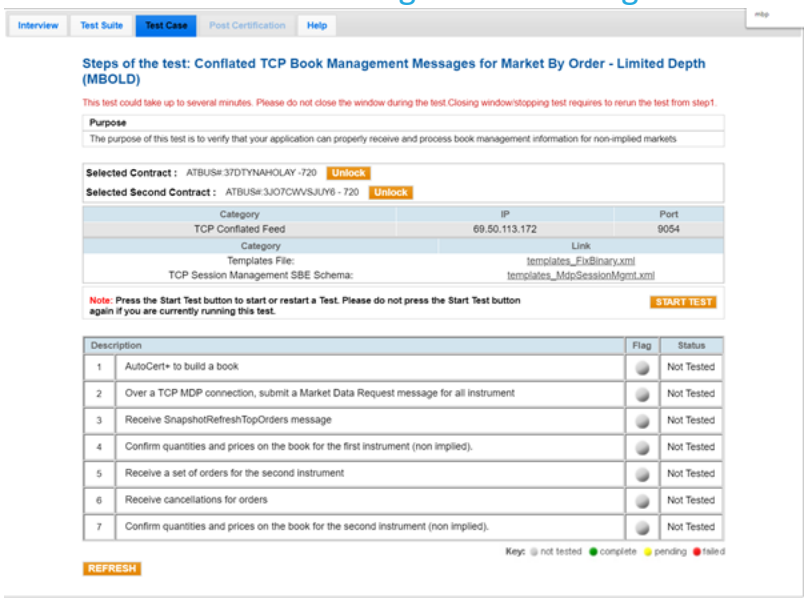
Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD)

This test verifies that your application can properly receive and process book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.

- Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD)
- Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD) (Snapshot Only)

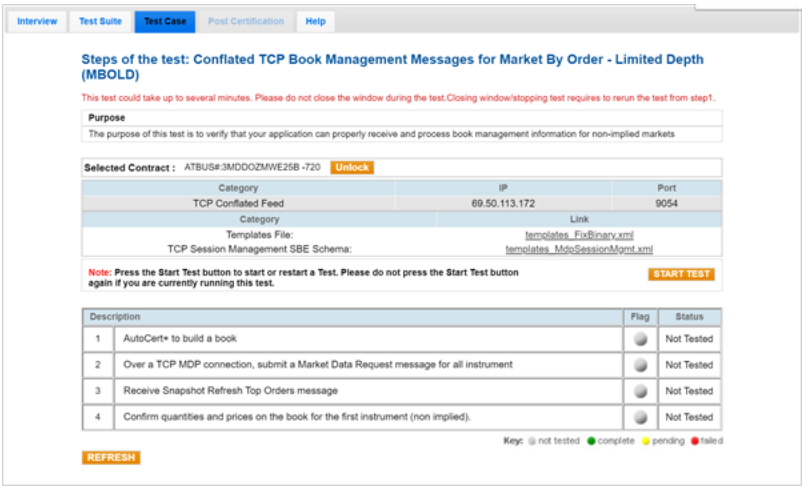
Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD)



To run the Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD) test:

1. AutoCert+ will build a book
2. Over a TCP MDP connection, submit a MarketDataRequest message for all instruments.
3. Receive a SnapshotRefreshTopOrders message.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
5. Receive a set of orders for the second instrument
6. Receive cancellations for orders
7. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD) (Snapshot Only)



To run the Conflated TCP Book Management Messages for Market By Order - Limited Depth (MBOLD) (Snapshot Only) test:

1. AutoCert+ will build a book
2. Over a TCP MDP connection, submit a MarketDataRequest message for all instruments.
3. Receive a SnapshotRefreshTopOrders message.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

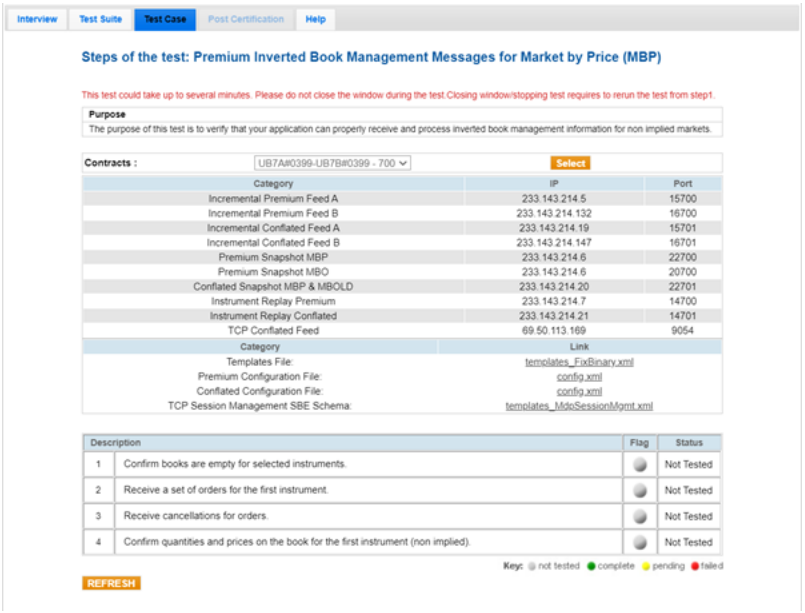
Inverted Book Management Message Tests

This section contains information about the Inverted Book Management Message tests.

Premium Inverted Book Management Messages for Market by Price (MBP)

This test verifies that your application can properly receive and process inverted book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



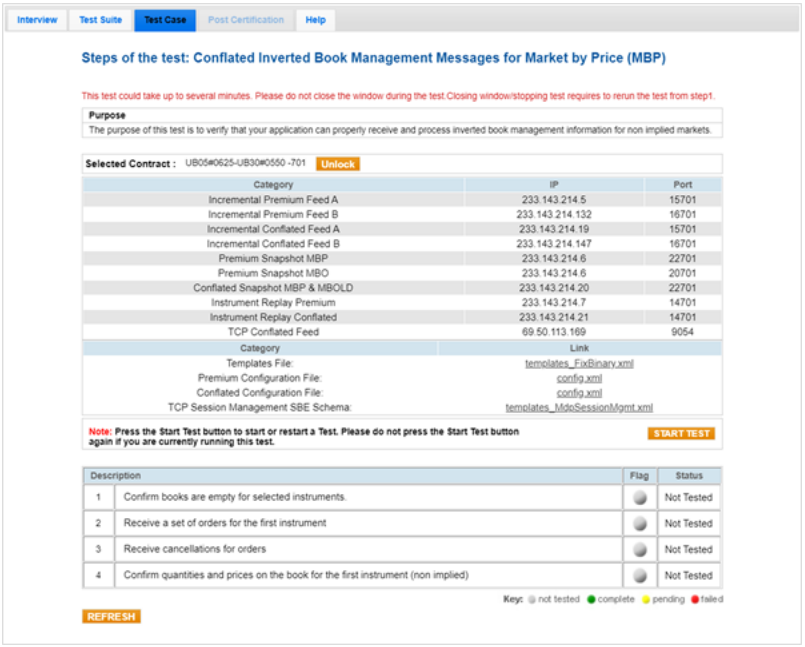
To run the Premium Inverted Book Management Messages for Market by Price test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated Inverted Book Management Messages for Market by Price (MBP)

This test verifies that your application can properly receive and process inverted book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



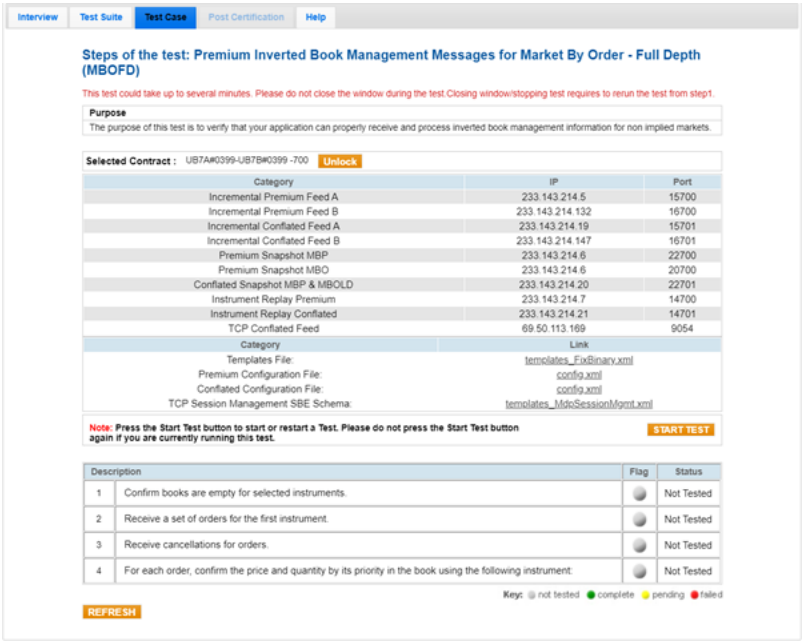
To run the Conflated Inverted Book Management Messages for Market by Price (MBP) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. Enter the quantities and prices on the book for the first instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Inverted Book Management Messages for Market By Order - Full Depth (MBOFD)

This test verifies that your application can properly receive and process inverted book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



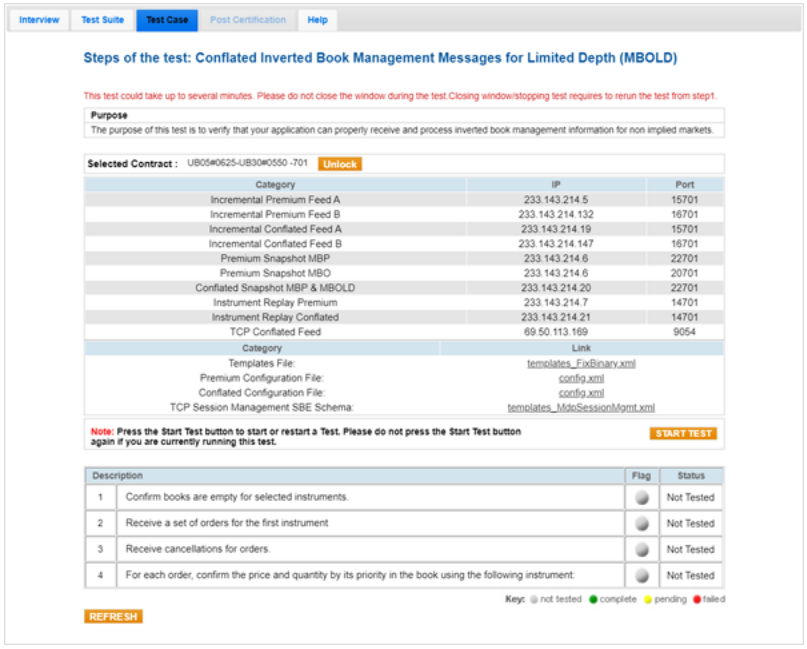
To run the Premium Inverted Book Management Messages for Market By Order - Full Depth (MBOFD) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. For each order, enter the price and quantity by its priority in the book using the following instrument (instrument will vary):
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated Inverted Book Management Messages for Limited Depth (MBOLD)

This test verifies that your application can properly receive and process inverted book management information for non-implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



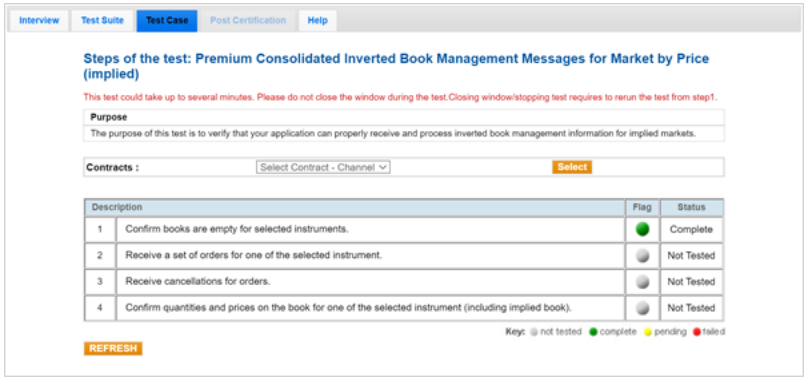
To run the Conflated Inverted Book Management Messages for Limited Depth (MBOLD) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the first instrument.
3. Receive cancellations for orders.
4. For each order, enter the price and quantity by its priority in the book using the following instrument (instrument will vary):
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Consolidated Inverted Book Management Messages for Market by Price (Implied)

This test verifies that your application can properly receive and process inverted book management information for implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



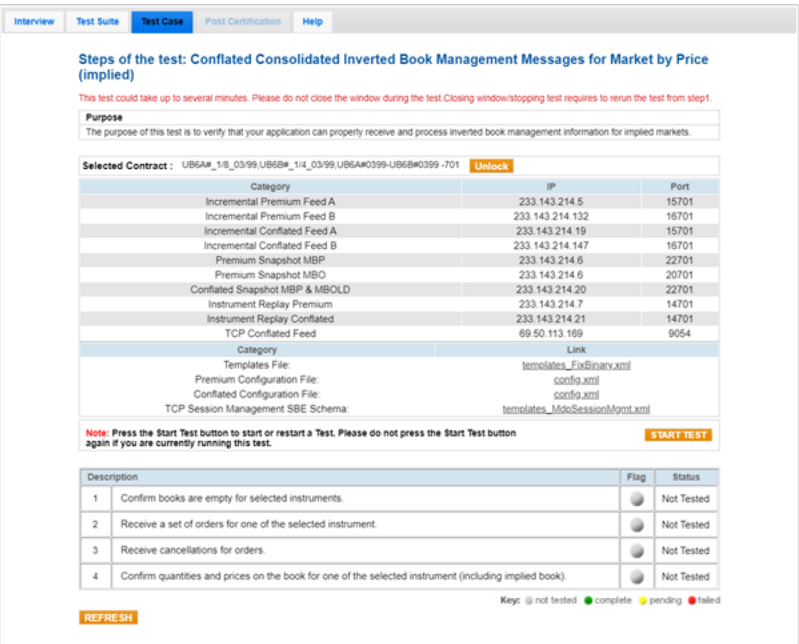
To run the Premium Consolidated Inverted Book Management Messages for Market by Price (implied) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the selected instrument.
3. Receive cancellations for orders.
4. Enter the quantities and prices on the book for one of the selected instruments (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated Consolidated Inverted Book Management Messages for Market by Price (Implied)

This test verifies that your application can properly receive and process inverted book management information for implied markets.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



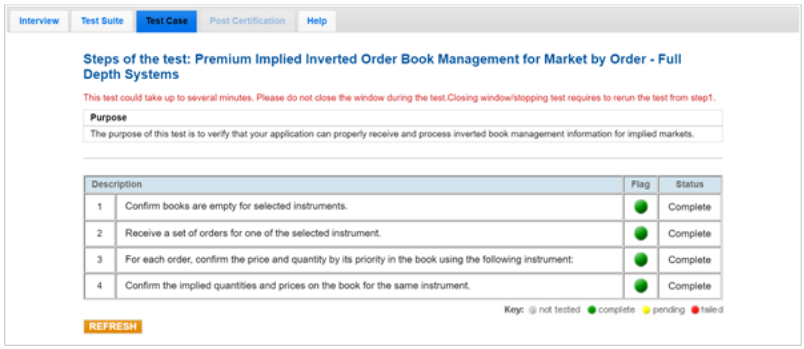
To run the Conflated Consolidated Inverted Book Management Messages for Market by Price (implied) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for the selected instrument.
3. Receive cancellations for orders.
4. Enter the quantities and prices on the book for one of the selected instruments (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Implied Inverted Order Book Management for Market by Order - Full Depth Systems

This test verifies that your application can properly receive and process inverted book management information for implied markets.

1. Select **START TEST**.



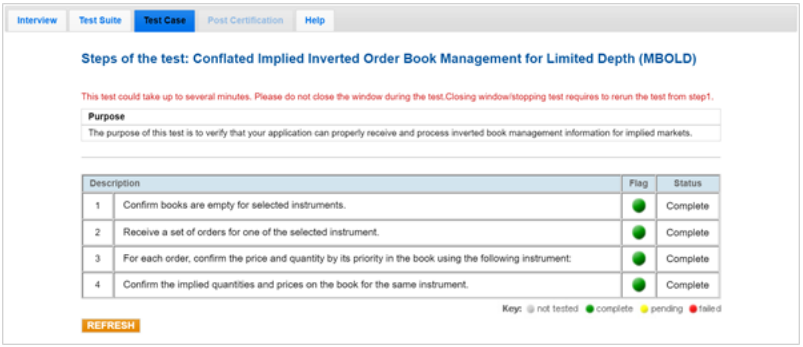
To run the Premium Implied Inverted Order Book Management for Market by Order - Full Depth Systems test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for one of the selected instruments.
3. For each order, enter the price and quantity by its priority in the book using the following instrument (instrument will vary):
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
4. Enter the implied quantities and prices on the book for the same instrument:
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated Implied Inverted Order Book Management for Limited Depth (MBOLD)

This test verifies that your application can properly receive and process market by inverted book management information.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Conflated Implied Inverted Order Book Management for Limited Depth (MBOLD) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive a set of orders for one of the selected instruments.
3. For each order, enter the price and quantity by its priority in the book using the following instrument (instrument will vary):
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
4. Enter the implied quantities and prices on the book for the same instrument:
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

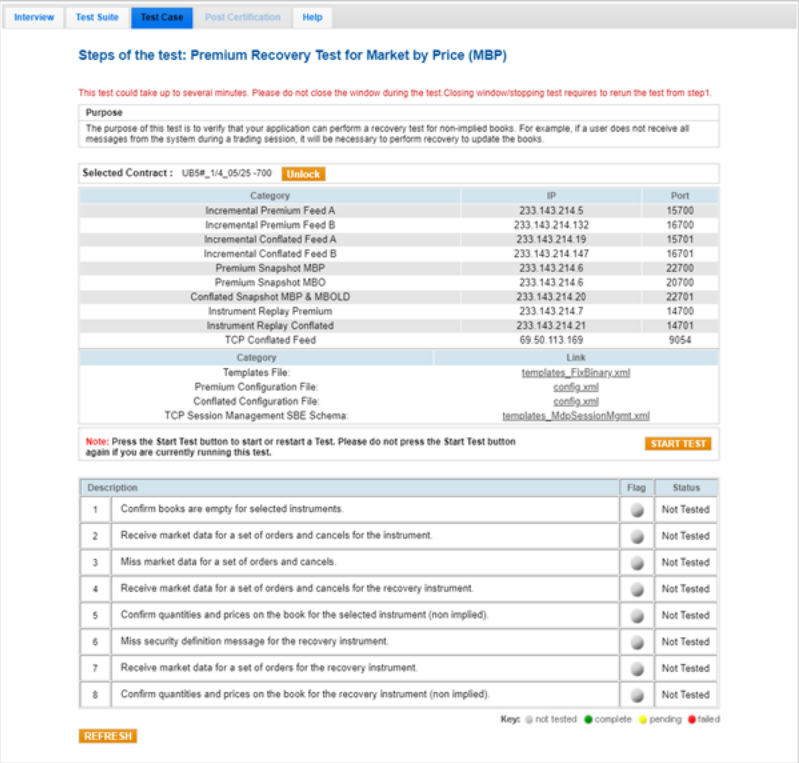
Recovery Tests

This section contains information about the BrokerTec Recovery tests.

Premium Recovery Test for Market by Price (MBP)

This test verifies that your application can perform a recovery test for non-implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



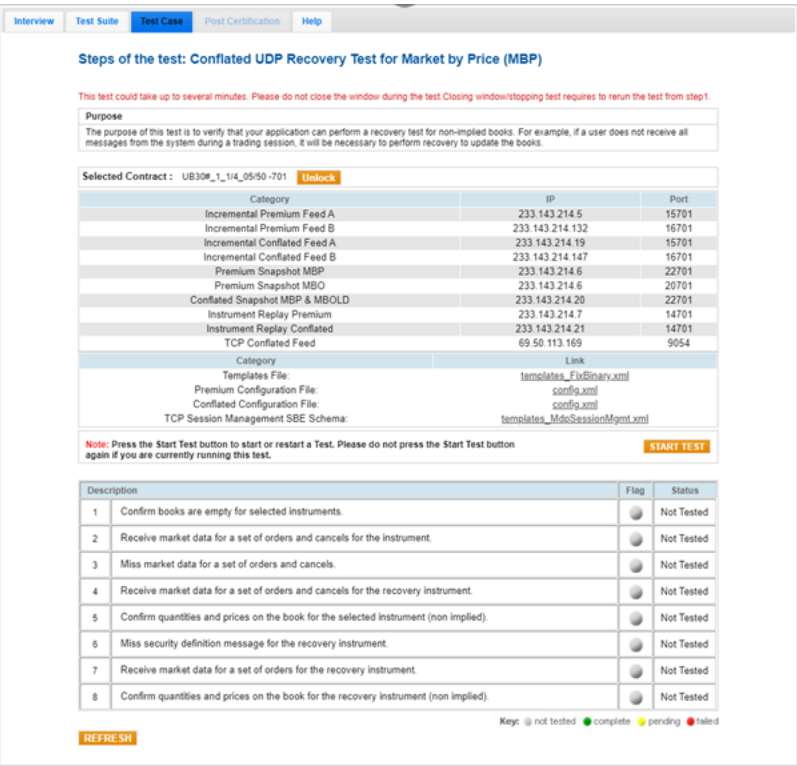
To run the Premium Recovery Test for Market by Price (MBP) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the recovery instrument.
5. Confirm quantities and prices on the book for the selected instrument (non-implied).
6. Enter the quantities and prices on the book for the selected instrument (non implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
7. Miss security definition message for the recovery instrument.
8. Receive market data for a set of orders for the recovery instrument.
9. Enter the quantities and prices on the book for the recovery instrument (non-implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated UDP Recovery Test for Market by Price (MBP)

This test verifies that your application can perform a recovery test for non-implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



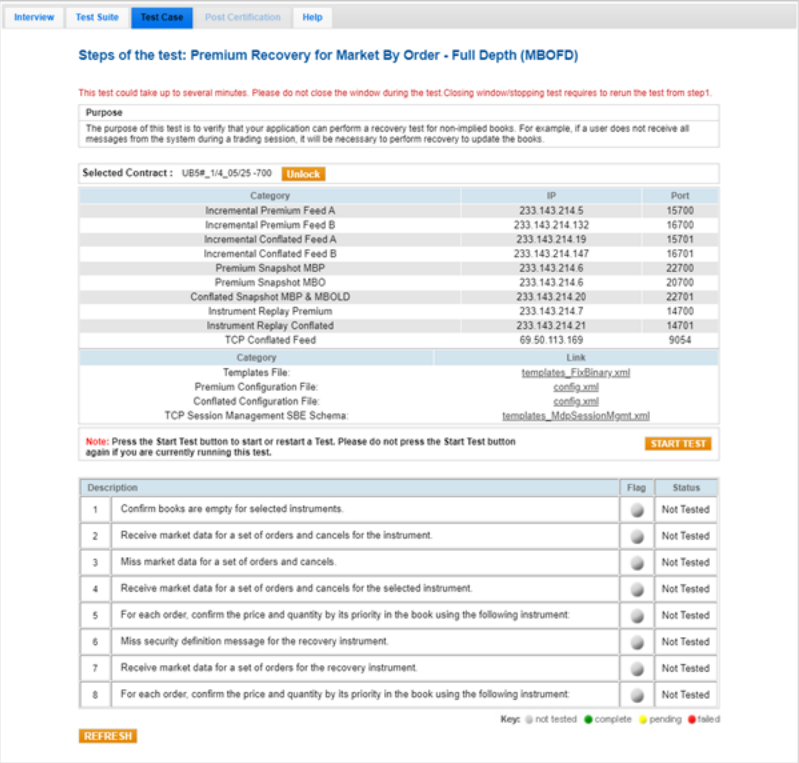
To run the Conflated UDP Recovery Test for Market by Price (MBP) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the recovery instrument.
5. Confirm quantities and prices on the book for the selected instrument (non-implied).
7. Miss security definition message for the recovery instrument.
8. Receive market data for a set of orders for the recovery instrument.
9. Enter the quantities and prices on the book for the recovery instrument (non-implied).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Recovery for Market By Order - Full Depth (MBOFD)

This test verifies that your application can perform a recovery test for non-implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



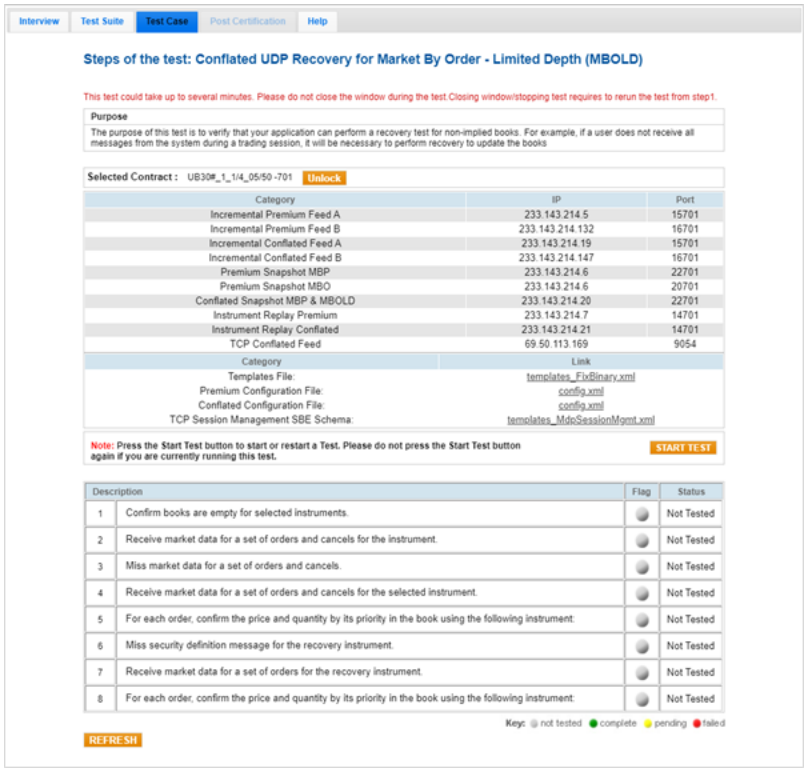
To run the Premium Recovery for Market By Order - Full Depth (MBOFD) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the selected instrument.
5. For each order, confirm the price and quantity by its priority in the book using the following instrument (instrument will vary).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
7. Miss security definition message for the recovery instrument.
8. Receive market data for a set of orders for the recovery instrument.
9. For each order, confirm the price and quantity by its priority in the book using the following instrument (instrument will vary).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated UDP Recovery for Market By Order - Limited Depth (MBOLD)

This test verifies that your application can perform a recovery test for non-implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



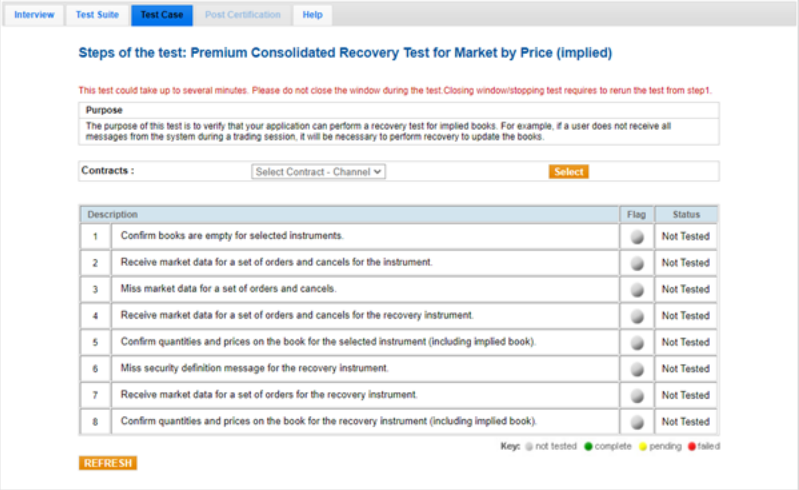
To run the Conflated UDP Recovery for Market By Order - Limited Depth (MBOLD) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the selected instrument.
5. For each order, confirm the price and quantity by its priority in the book using the following instrument (instrument will vary).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
7. Miss security definition message for the recovery instrument.
8. Receive market data for a set of orders for the recovery instrument.
9. For each order, confirm the price and quantity by its priority in the book using the following instrument (instrument will vary).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Consolidated Recovery Test for Market by Price (Implied)

This test verifies that your application can perform a recovery test for implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



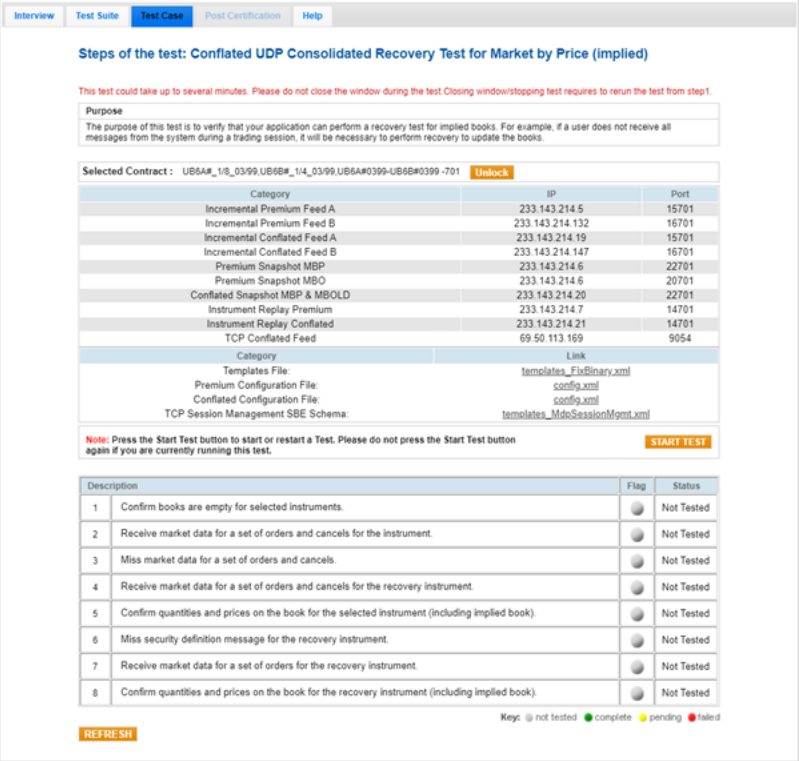
To run the Premium Consolidated Recovery Test for Market by Price (Implied) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the recovery instrument.
5. Enter the quantities and prices on the book for the selected instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
6. Miss security definition message for the recovery instrument.
7. Receive market data for a set of orders for the recovery instrument.
8. Enter the quantities and prices on the book for the recovery instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated UDP Consolidated Recovery Test for Market by Price (Implied)

This test verifies that your application can perform a recovery test for implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



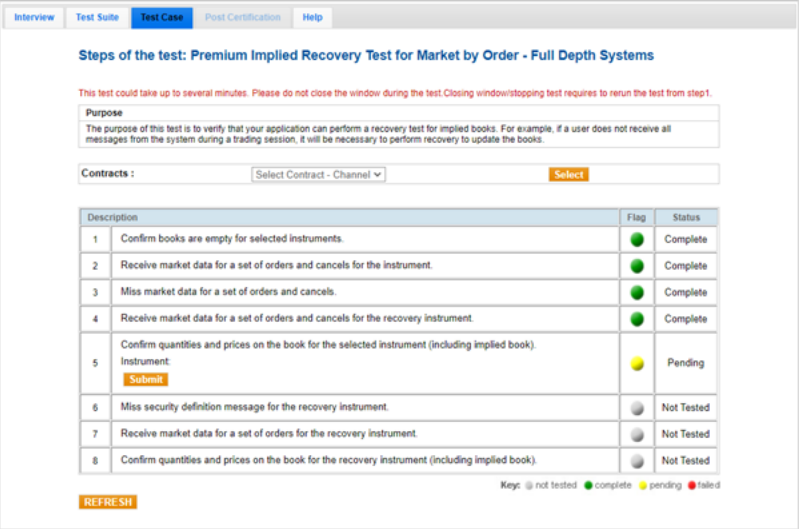
To run the Conflated UDP Consolidated Recovery Test for Market by Price (Implied) test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the recovery instrument.
5. Enter the quantities and prices on the book for the selected instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
6. Miss security definition message for the recovery instrument.
7. Receive market data for a set of orders for the recovery instrument.
8. Enter the quantities and prices on the book for the recovery instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Premium Implied Recovery Test for Market by Order - Full Depth Systems

This test verifies that your application can perform a recovery test for implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



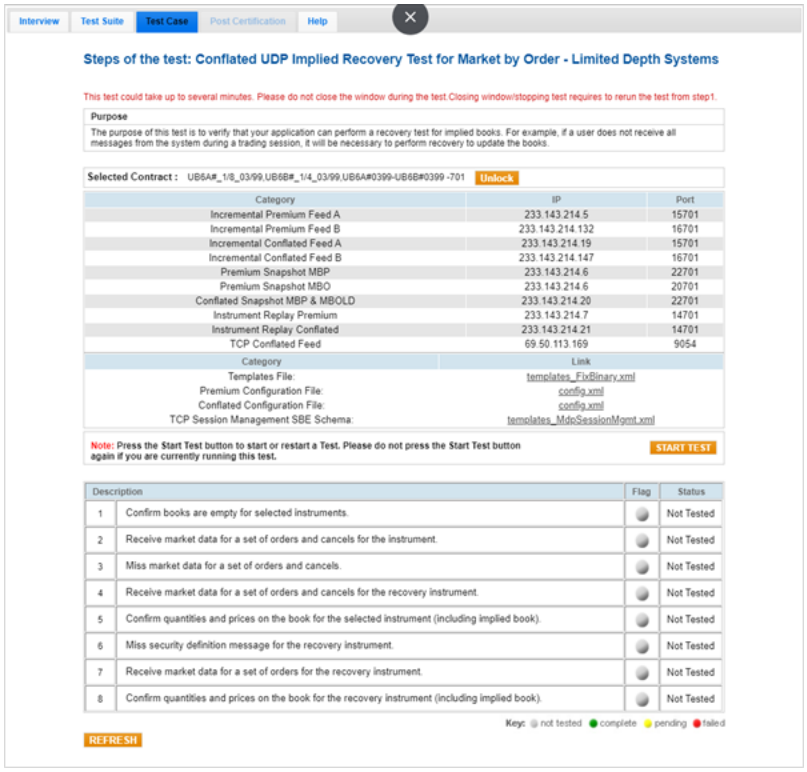
To run the Premium Implied Recovery Test for Market by Order - Full Depth Systems test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the recovery instrument.
5. Enter the quantities and prices on the book for the selected instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
6. Miss security definition message for the recovery instrument.
7. Receive market data for a set of orders for the recovery instrument.
8. Enter the quantities and prices on the book for the recovery instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Conflated UDP Implied Recovery Test for Market by Order - Limited Depth Systems

This test verifies that your application can perform a recovery test for implied books. For example, if a user does not receive all messages from the system during a trading session, it will be necessary to perform recovery to update the books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



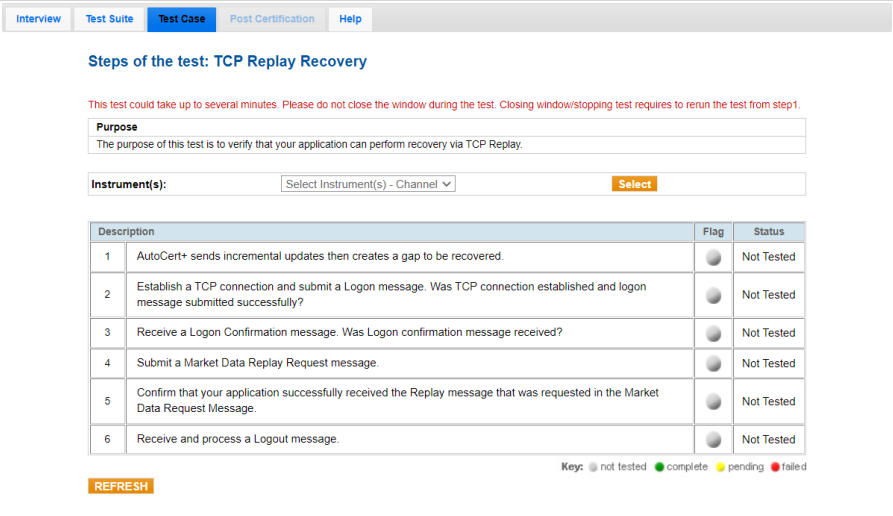
To run the Conflated UDP Implied Recovery Test for Market by Order - Limited Depth Systems test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders and cancels for the instrument.
3. Miss market data for a set of orders and cancels.
4. Receive market data for a set of orders and cancels for the recovery instrument.
5. Enter the quantities and prices on the book for the selected instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
6. Miss security definition message for the recovery instrument.
7. Receive market data for a set of orders for the recovery instrument.
8. Enter the quantities and prices on the book for the recovery instrument (including implied book).
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

TCP Recovery

This test verifies that the application can perform a recovery via TCP Replay Recovery.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To complete a TCP Replay Recovery test:

1. Receive incremental updates with a gap that needs to be recovered.
2. Select **Yes** or **No** to indicate whether a TCP connection was established and a Logon message was submitted successfully.
3. Select **Yes** or **No** to indicate whether a Logon confirmation message was received.
4. Submit a Market Data Replay Request (35=V) message.
5. Enter the tag 270-MDEntryPx value to confirm that your application successfully received the replayed message that was requested in the Market Data Replay Request (35=V) message.
6. Receive and process a Logout message.

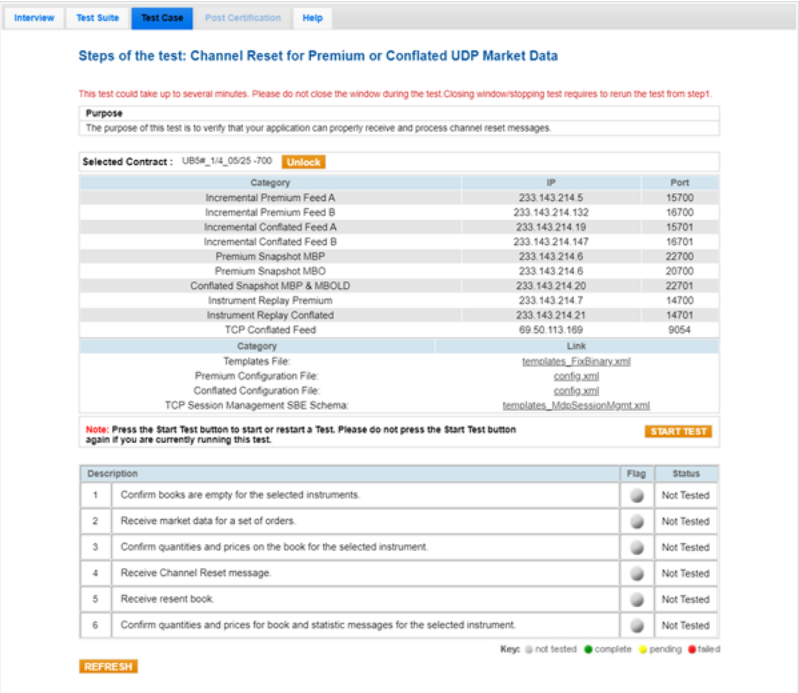
Channel Reset Tests

This section contains information about the BrokerTec Channel Reset tests.

Channel Reset for Premium or Conflated UDP Market Data

This test verifies that your application can properly receive and process channel reset messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



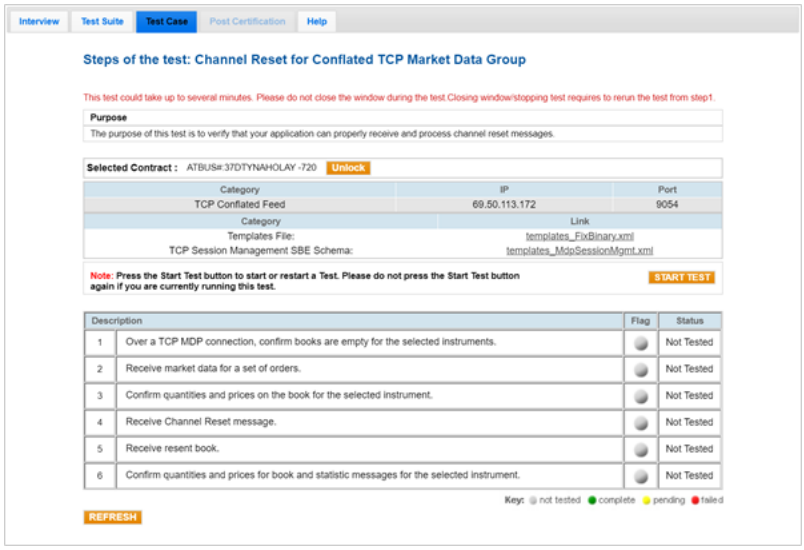
To run the Channel Reset for Premium or Conflated UDP Market Data test:

1. Select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders.
3. Enter the quantities and prices on the book for the selected instrument.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
4. Receive Channel Reset message.
5. Receive resent book.
6. Enter the quantities and prices for the book and statistic messages for the selected instrument.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Channel Reset for Conflated TCP Market Data Group

This test verifies that your application can properly receive and process channel reset messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



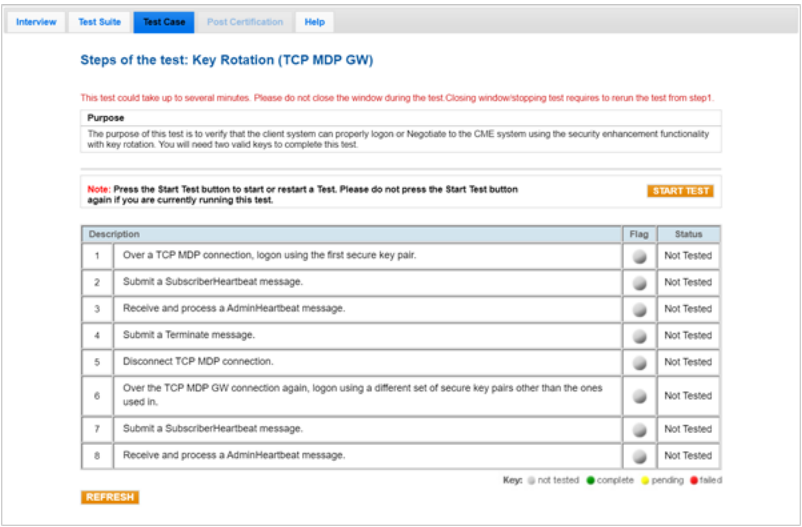
To run the Channel Reset for Conflated TCP Market Data Group test:

1. Over a TCP MDP connection, select **Yes** or **No** to indicate whether the books are empty for the selected instruments.
2. Receive market data for a set of orders.
3. Enter the quantities and prices on the book for the selected instrument.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
4. Receive Channel Reset message.
5. Receive resent book.
6. Enter the quantities and prices for the book and statistic messages for the selected instrument.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize

Key Rotation (TCP MDP GW)

This test verifies that your application can properly logon or Negotiate to the CME system using the security functionality with key rotation. You will need two valid keys to complete this test.

1. Select **START TEST**.



To run the Key Rotation (TCP MDP GW) test:

1. Over a TCP MDP GW connection, logon using the first secure key pair.
2. Submit a SubscriberHeartbeat message.
3. Receive and process an AdminHeartbeat message.
4. Submit a Terminate message.
5. Disconnect the TCP MDP connection.
6. Over the TCP MDP GW connection again, logon using a different set of secure key pairs other than the ones used in step 1.
7. Submit a SubscriberHeartbeat message.
8. Receive and process an AdminHeartbeat message.

Security Definition Messages

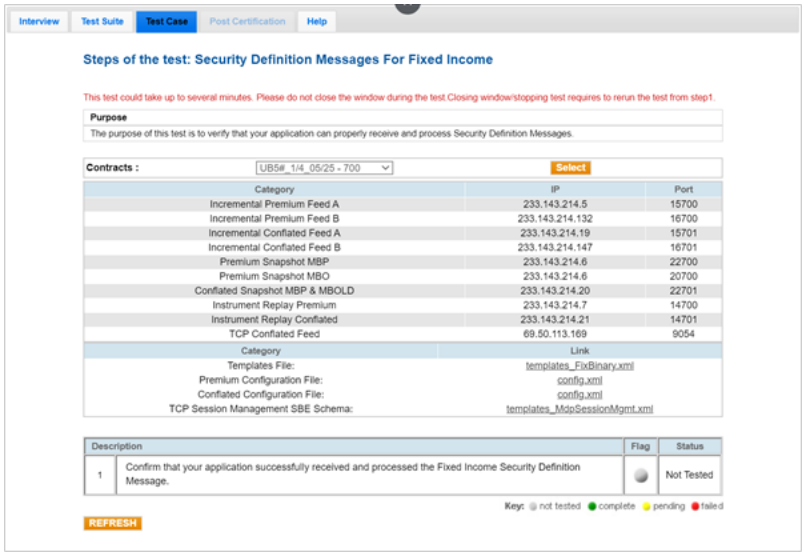
This section contains information about the BrokerTec Security Definition message tests.

Security Definition Messages For Fixed Income

This test verifies that your application can properly receive and process Security Definition messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.

To run the Security Definition Messages For Fixed Income test:

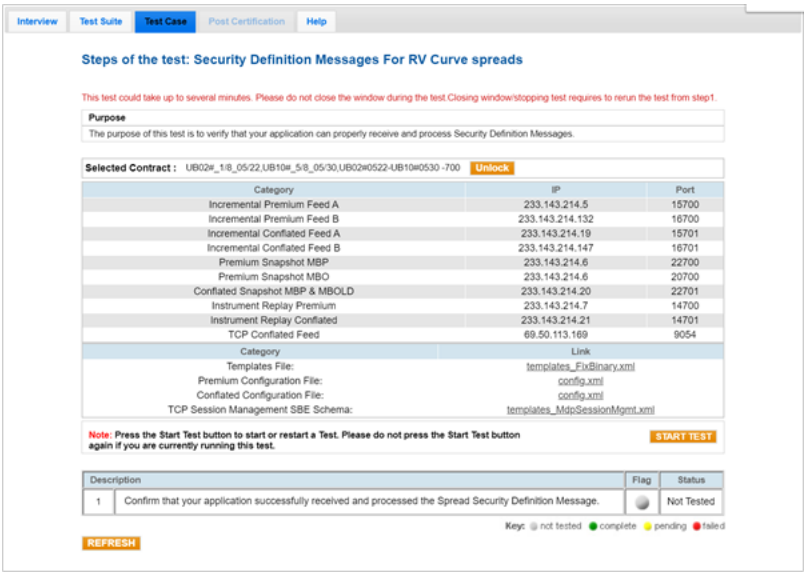


1. Enter the following tag values to confirm that your application successfully received and processed the Fixed Income Security Definition Message.
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID

Security Definition Messages For RV Curve Spreads

This test verifies that your application can properly receive and process Security Definition messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



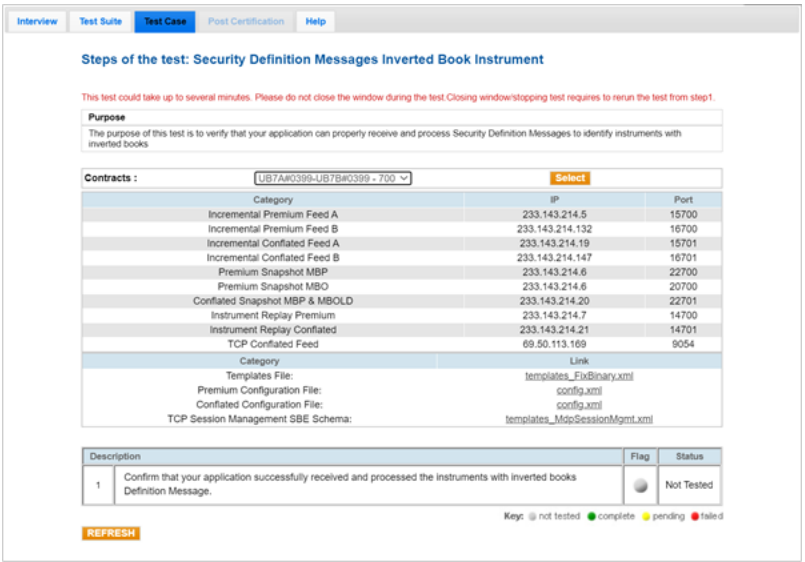
To run the Security Definition Messages For RV Curve spreads test:

1. Enter the following tag values to confirm that your application successfully received and processed the Spread Security Definition Message.
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID

Security Definition Messages Inverted Book Instrument

This test verifies that your application can properly receive and process Security Definition messages to identify instruments with inverted books.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Security Definition Messages Inverted Book Instrument test:

1. Enter the following tag values to confirm that your application successfully received and processed the Fixed Income Security Definition Message.
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID
    - tag 872-InstAttribValue (bit 22: Inverted Book)

SecurityListRequest Tests

This section contains information about the BrokerTec SecurityListRequest tests.

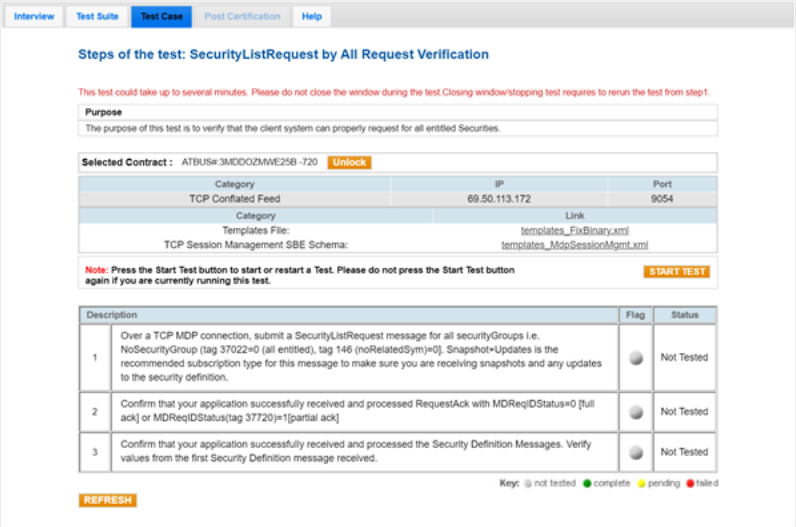
SecurityListRequest by All Request Verification

This test verifies that your application can send requests for all entitled securities.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.

- SecurityListRequest by All Request Verification (Without Unsuscribe)
- SecurityListRequest by All Request Verification (With Unsubscribe)

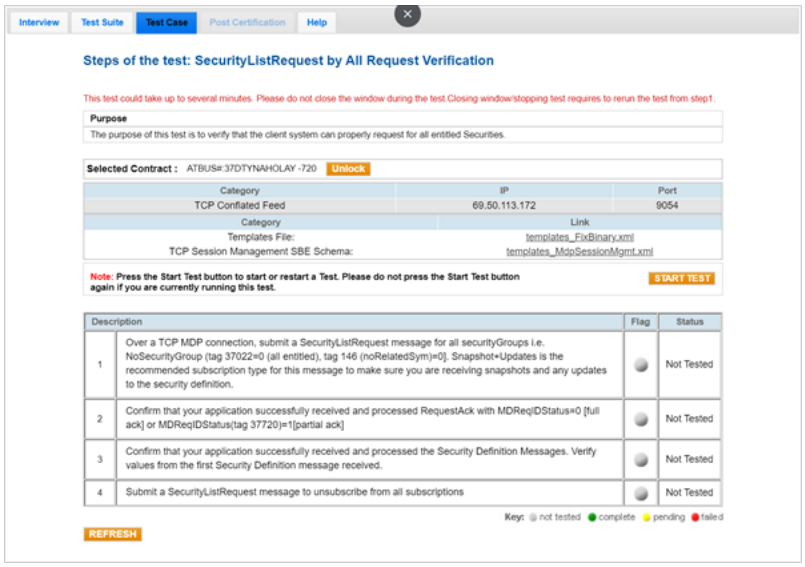
SecurityListRequest by All Request Verification (Without Unsuscribe)



To run the SecurityListRequest by All Request Verification (Without Unsubscribe) test:

1. Over a TCP MDP connection, submit a SecurityListRequest message for all SecurityGroups [i.e. tag 37022-NoSecurityGroup =0 (all entitled), tag 146-NoRelatedSym)=0]. Snapshot+Updates is the recommended subscription type for this message to ensure that you are receiving Snapshots and any updates to the Security Definition.
2. Select **Yes** or **No** to confirm that your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack].
3. Enter the following tag values to confirm that your application successfully received and processed the Security Definition messages. Verify values form the first Security Definition message that was received:
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID
    - tag 562-MinTradeVol

SecurityListRequest by All Request Verification (With Unsubscribe)



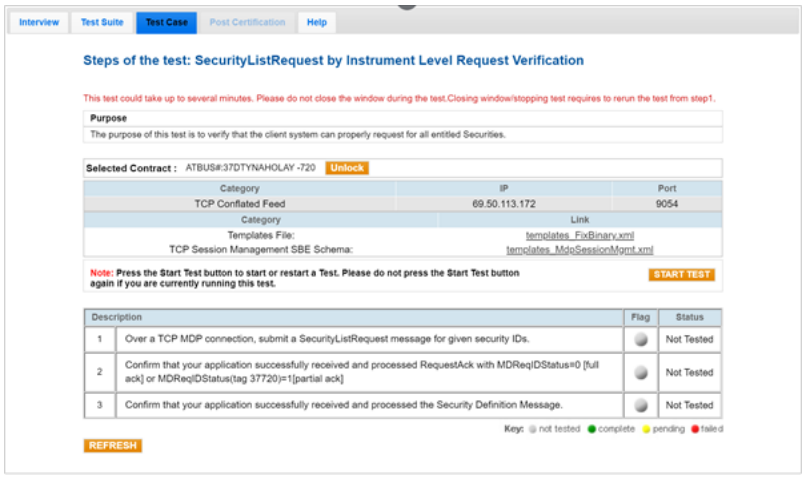
To run the SecurityListRequest by All Request Verification (With Unsubscribe) test:

1. Over a TCP MDP connection, submit a SecurityListRequest message for all SecurityGroups [i.e. tag 37022-NoSecurityGroup =0 (all entitled), tag 146-NoRelatedSym)=0]. Snapshot+Updates is the recommended subscription type for this message to ensure that you are receiving Snapshots and any updates to the Security Definition.
2. Select **Yes** or **No** to confirm that your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack].
3. Enter the following tag values to confirm that your application successfully received and processed the Security Definition messages. Verify values form the first Security Definition message that was received:
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID
    - tag 562-MinTradeVol
4. Submit a SecurityListRequest message to unsubscribe from all subscriptions.

SecurityListRequest by Instrument Level Request Verification

This test verifies that your application can send requests for all entitled securities.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



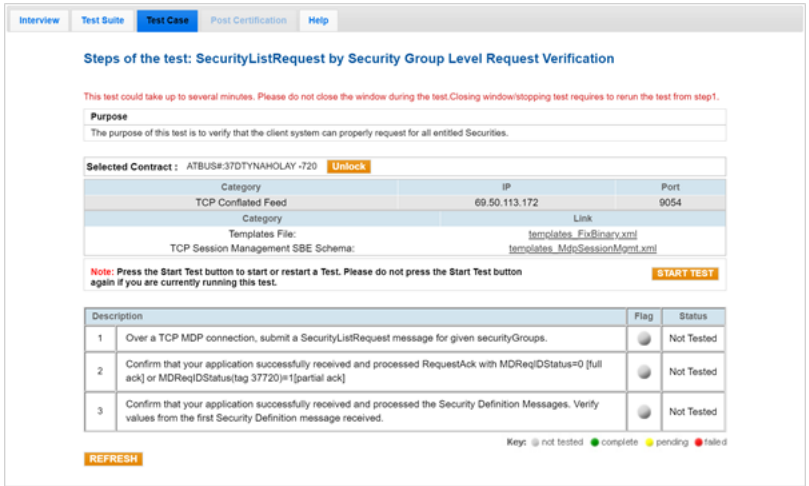
To run the SecurityListRequest by Instrument Level Request Verification test:

1. Over a TCP MDP connection, submit a SecurityListRequest message for the given security IDs.
2. Select **Yes** or **No** to indicate whether your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack]
3. Enter the following tag values to confirm that your application successfully received and processed the Security Definition message:
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID
    - tag 562-MinTradeVol

SecurityListRequest by Security Group Level Request Verification

This test verifies that your application can send requests for all entitled securities.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the SecurityListRequest by Security Group Level Request Verification test:

1. Over a TCP MDP connection, submit a SecurityListRequest message for the given securityGroups.
2. Select **Yes** or **No** to confirm that your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack].
3. Enter the following tag values to confirm that your application successfully received and processed the Security Definition messages. Verify values form the first Security Definition message that was received:
    - tag 2714-FinancialInstrumentFullName
    - tag 1151-SecurityGroup
    - tag 1300-MarketSegmentID
    - tag 562-MinTradeVol

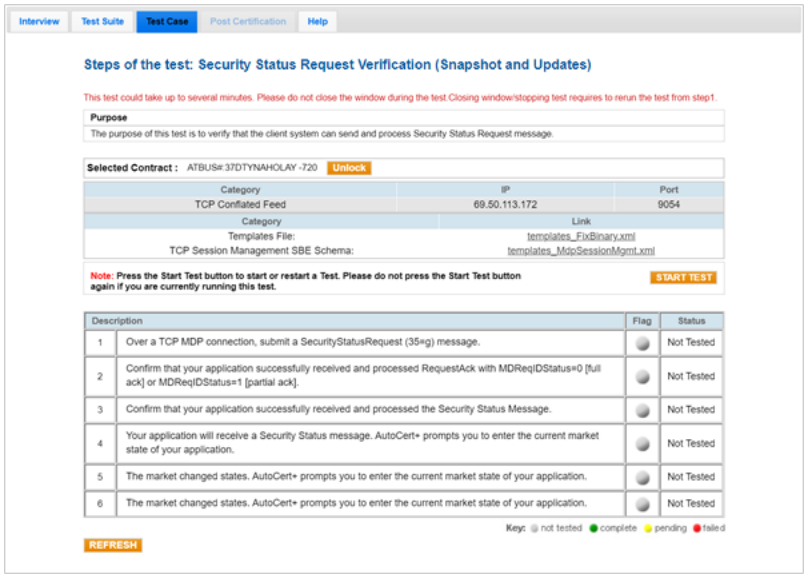
Security Status Request Verification Tests

This section contains information about the BrokerTec SecurityStatusRequest Verification tests.

Security Status Request Verification (Snapshot and Updates)

This test verifies that your application can send and process Security Status Request messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Security Status Request Verification (Snapshot and Updates) test:

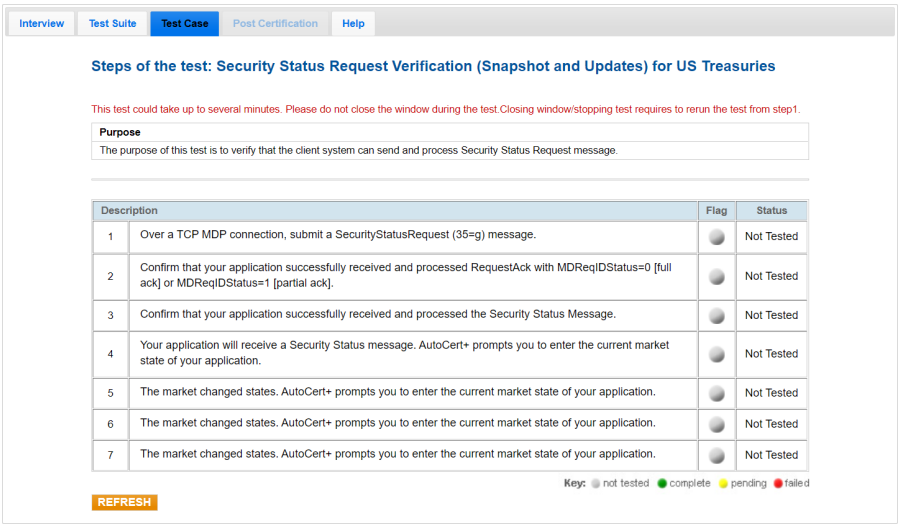
1. Over a TCP MDP connection, submit a SecurityStatusRequest (35=g) message.
2. Select **Yes** or **No** to confirm that your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack].
3. Confirm that your application successfully received and processed the Security Status Message. Enter the tag 326-SecurityTradingStatus value.
4. Your application will receive a Security Status message. Select the current market state of your application in the Security Status drop-down list.
    - Trading halt
    - Close
    - Ready To Trade
5. The market changed states. Enter the current market state of your application. Select the current market state of your application in the Security Status drop-down list.
    - Trading halt
    - Close
    - Ready To Trade
6. The market changed states. Enter the current market state of your application. Select the current market state of your application in the Security Status drop-down list.

- Trading halt
- Close
- Ready To Trade

Security Status Request Verification (Snapshot and Updates) for US Treasuries

This test verifies that your application can send and process Security Status Request messages.

1. Select **START TEST**.



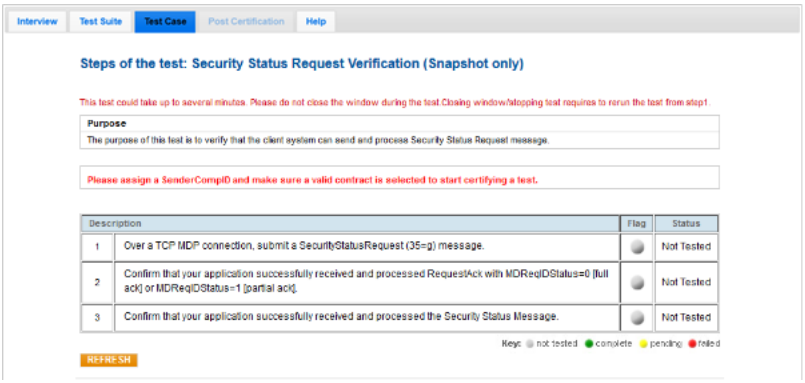
To run the Security Status Request Verification (Snapshot and Updates) for US Treasuries test:

1. Over a TCP MDP connection, submit a SecurityStatusRequest (35=g) message.
2. Select **Yes** or **No** to confirm that your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack].
3. Confirm that your application successfully received and processed the Security Status message. Enter the tag 326-SecurityTradingStatus value.
4. Your application will receive a Security Status message. Select the current market state of your application in the Security Status drop-down list.
    - Trading halt
    - Close
    - Ready To Trade
    - Pre-Open
5. The market changed states. Enter the current market state of your application. Select the current market state of your application in the Security Status drop-down list.
    - Trading halt
    - Close
    - Ready To Trade
    - Pre-Open

6. The market changed states. Enter the current market state of your application. Select the current market state of your application in the Security Status drop-down list.
    - Trading halt
    - Close - Final
    - Ready To Trade
    - Pre-Open
7. The market changed states. Enter the current market state of your application. Select the current market state of your application in the Security Status drop-down list.
    - Trading halt
    - Close
    - Ready To Trade
    - Pre-Open

Security Status Request Verification (Snapshot Only)

This test verifies that your application can send and process Security Status Request messages.



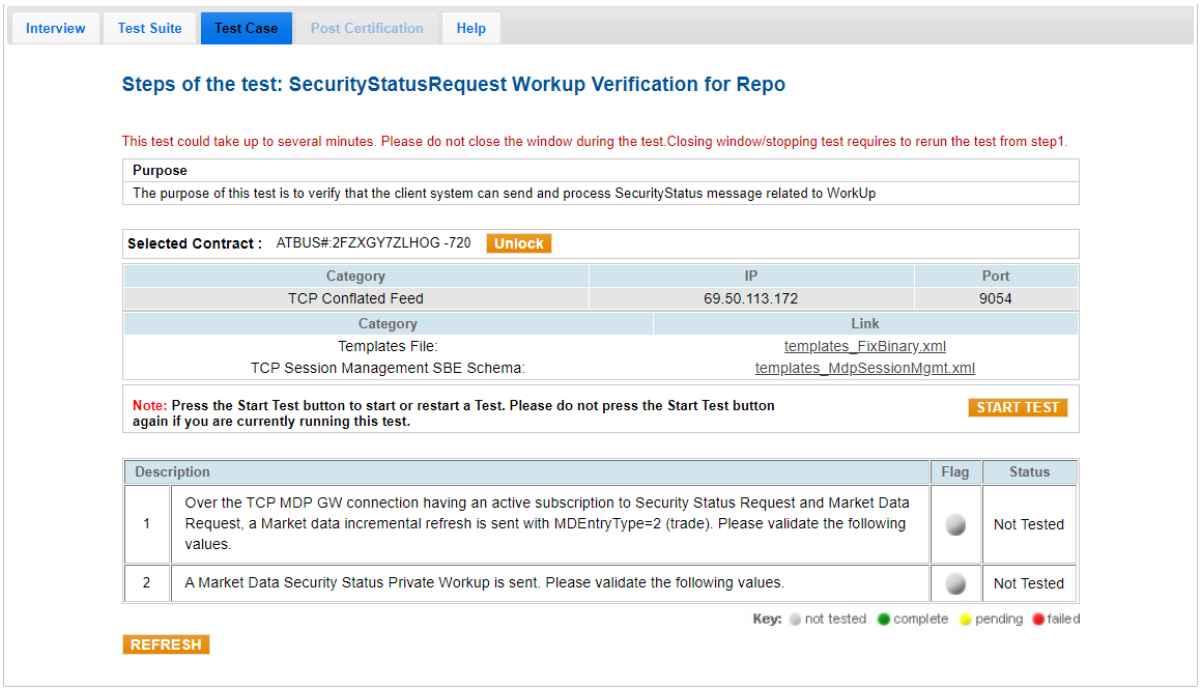
To run the Security Status Request Verification (Snapshot Only) test:

1. Over a TCP MDP connection, submit a SecurityStatusRequest (35=g) message.
2. Confirm that your application successfully received and processed RequestAck with MDReqIDStatus=0 [full ack] or MDReqIDStatus=1 [partial ack].
3. Confirm that your application successfully received and processed the Security Status Message.

Security Status Request Workup Verification for Repo

This test verifies that your application can send and process Security Status Request messages related to workup.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Security Status Request Workup Verification for Repo test:

1. Over the TCP MDP GW connection having an active subscription to Security Status Request and Market Data Request, a Market Data incremental refresh is sent with MDEntryType=2 (trade). Enter the following tag values:
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
    - tag 48-SecurityID
    - tag 346-NumberOfOrders
2. Enter the following tag values to confirm that your application received and processed the Security Status Workup message.
    - tag 48-SecurityID
    - tag 362-SecurityTradingStatus
    - tag 270-MDEntryPx
    - tag 820-TradeLinkID

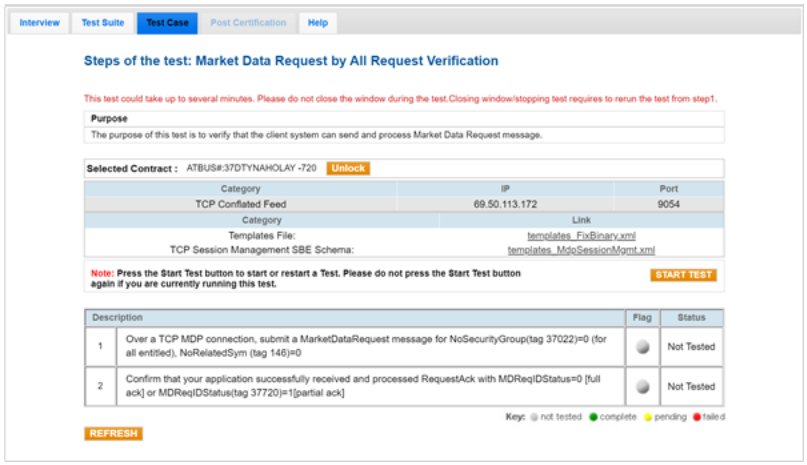
Market Data Request Tests

This section contains information about the BrokerTec MarketDataRequest tests.

Market Data Request by All Request Verification

This test verifies that your application can send and process Market Data Request messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



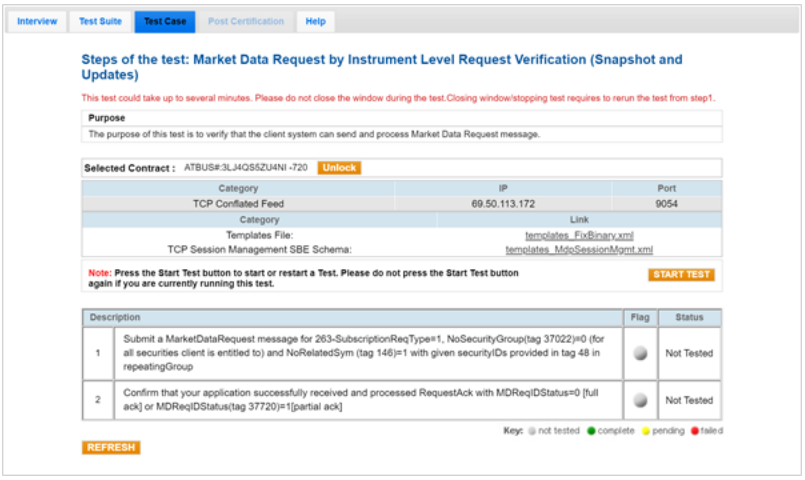
To run the Market Data Request by All Request Verification test:

1. Over a TCP MDP connection, submit a MarketDataRequest message for NoSecurityGroup (tag 37022)=0 (for all entitled) and NoRelatedSym (tag 146)=0.
2. Confirm that your application successfully received and processed RequestAck with MDReqIDStatus=0 [full ack] or MDReqIDStatus(tag 37720)=1[partial ack].

Market Data Request by Instrument Level Request Verification (Snapshot and Updates)

This test verifies that your application can send and process Market Data Request messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



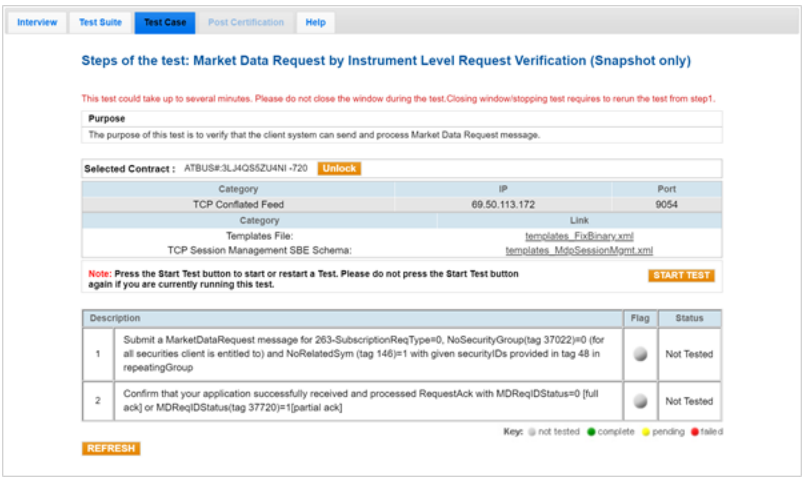
To run the Market Data Request by Instrument Level Request Verification (Snapshot and Updates) test:

1. Submit a MarketDataRequest message for 263-SubscriptionReqType=1, NoSecurityGroup(tag 37022)=0 (for all securities client is entitled to) and NoRelatedSym (tag 146)=1 with given securityIDs provided in tag 48 in repeatingGroup.
2. Select **Yes** or **No** to indicate whether your application successfully received and processed RequestAck with MDReqIDStatus=0 [full ack] or MDReqIDStatus(tag 37720)=1[partial ack].

Market Data Request by Instrument Level Request Verification (Snapshot Only)

This test verifies that your application can send and process a Market Data Request messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.

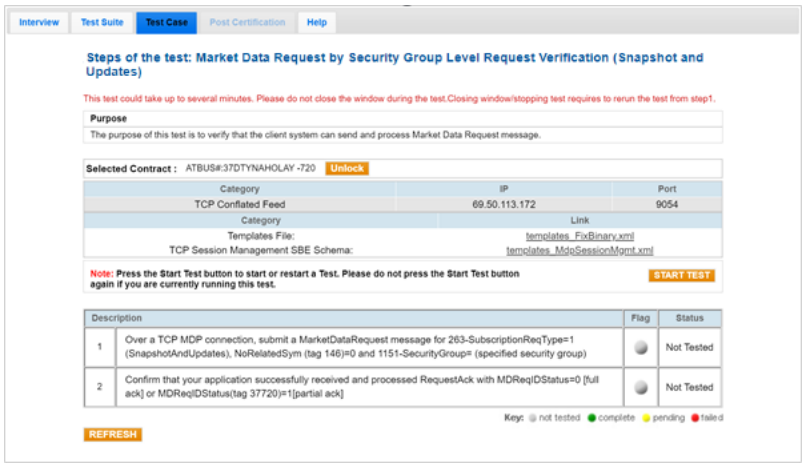


To run the Market Data Request by Instrument Level Request Verification (Snapshot Only) test:

1. Submit a MarketDataRequest message for 263-SubscriptionReqType=0, NoSecurityGroup(tag 37022)=0 (for all securities client is entitled to) and NoRelatedSym (tag 146)=1 with given securityIDs provided in tag 48 in repeatingGroup
2. Select **Yes** or **No** to indicate whether your application successfully received and processed RequestAck with MDReqIDStatus=0 [full ack] or MDReqIDStatus(tag 37720)=1[partial ack]

Market Data Request by Security Group Level Request Verification (Snapshot and Updates)

This test verifies that your application can send and process Market Data Request messages.

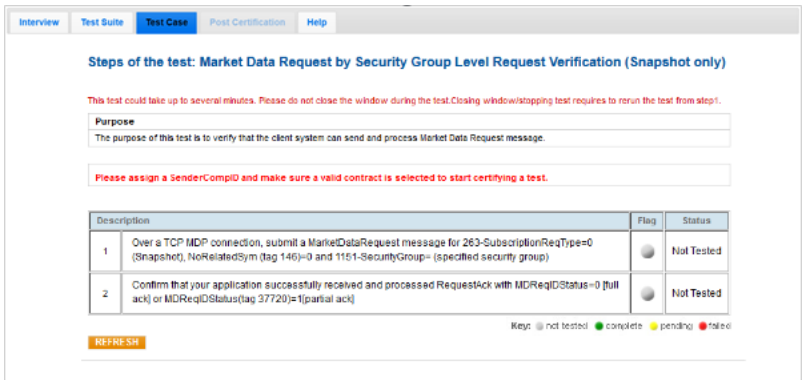


To run the Market Data Request by Security Group Level Request Verification (Snapshot and Updates) test:

1. Over a TCP MDP connection, submit a MarketDataRequest message for tag 263-SubscriptionReqType=1 (SnapshotAndUpdates), tag 146-NoRelatedSym=0 and tag 1151-SecurityGroup= (specified security group)
2. Select **Yes** or **No** to indicate whether your application successfully received and processed the RequestAck with tag 37720-MDReqIDStatus=0 [full ack] or 1[partial ack].

Market Data Request by Security Group Level Request Verification (Snapshot Only)

This test verifies that your application can send and process Market Data Request messages.



To run the Market Data Request by Security Group Level Request Verification (Snapshot Only) test:

1. Over a TCP MDP connection, submit a MarketDataRequest message for 263-SubscriptionReqType=0 (Snapshot), NoRelatedSym (tag 146)=0 and 1151-SecurityGroup= (specified security group).

2. Confirm that your application successfully received and processed RequestAck with MDReqIDStatus=0 [full ack] or MDReqIDStatus(tag 37720)=1[partial ack].

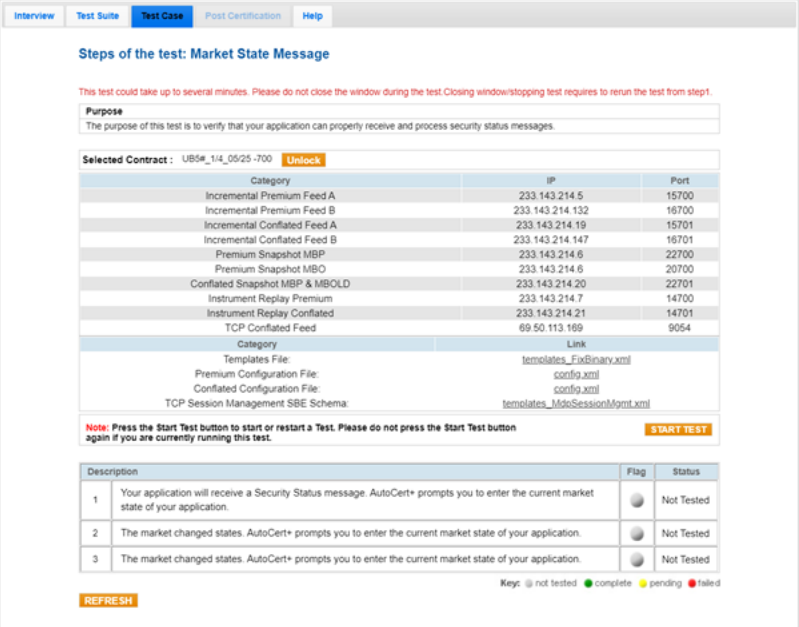
Market State Message Tests

This section contains information about the BrokerTec Market State message tests.

Market State Message

This test verifies that your application can properly receive and process Security Status messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



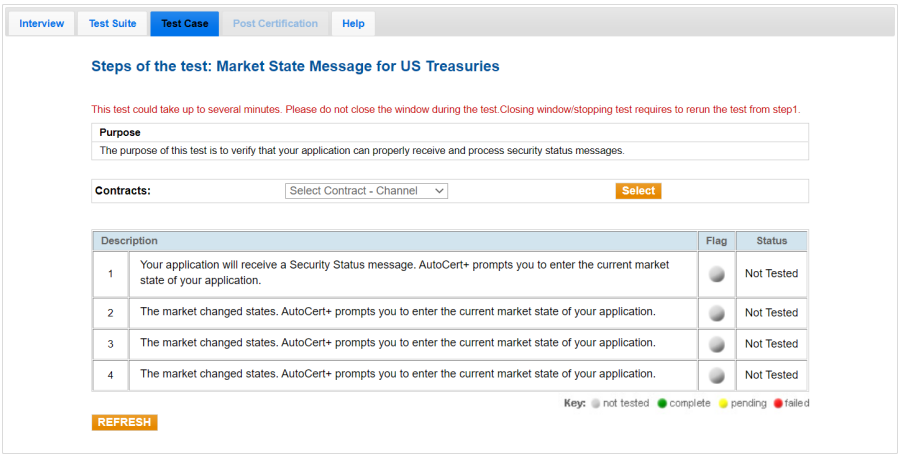
To run the Market State Message test:

1. Your application will receive a Security Status message. Select the current market state of your application in the Security Status drop-down list:
   - Trading halt
   - Close
   - Ready to Trade
2. The market changed states. Select the current market state of your application in the Security Status drop-down list:
   - Trading halt
   - Close
   - Ready to Trade
3. The market changed states. Select the current market state of your application in the Security Status drop-down list:
   - Trading halt
   - Close
   - Ready to Trade

Market State Message for US Treasuries

This test verifies that your application can properly receive and process Security Status messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Market State Message for US Treasuries test:

1. Your application will receive a Security Status message. Select the current market state of your application in the Security Status drop-down list:
   - Auction
   - Trading halt
   - Implied OFF
   - Close Final
   - Opening (New Price Indication)
   - No Cancel
   - Ready To Trade
   - End of Session (Not Final Close)
   - Implied ON
   - Pre-Open (No Cancel)
   - Pre-Open
2. The market changed states. Select the current market state of your application in the Security Status drop-down list:
   - Trading halt
   - Close
   - Ready to Trade
   - Pre-Open
3. The market changed states. Select the current market state of your application in the Security Status drop-down list:
   - Trading halt
   - Close

- Ready to Trade
- Pre-Open

4. The market changed states. Select the current market state of your application in the Security Status drop-down list:
    - Trading halt
    - Close
    - Ready to Trade
    - Pre-Open

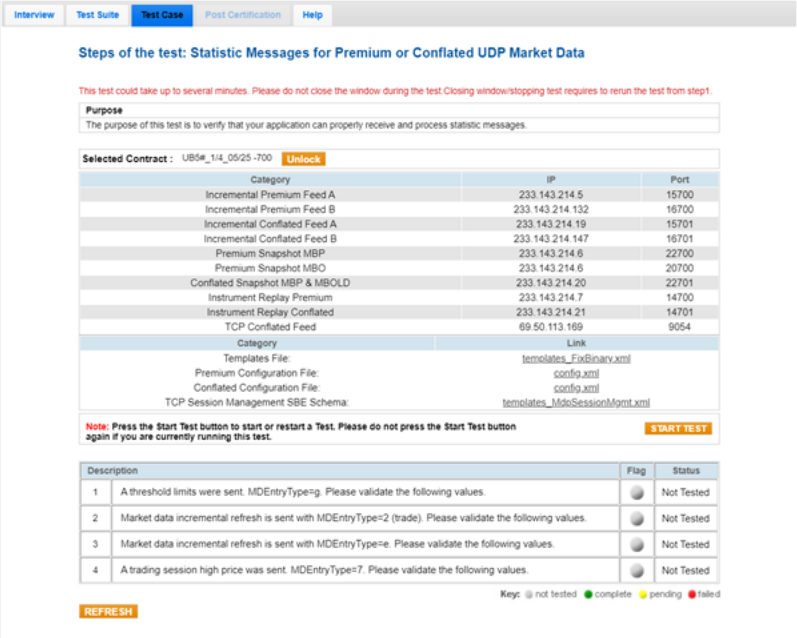
Statistic Messages Tests

This section contains information about the BrokerTec Statistic Messages tests.

Statistic Messages for Premium or Conflated UDP Market Data

This test verifies that your application can properly receive and process statistic messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



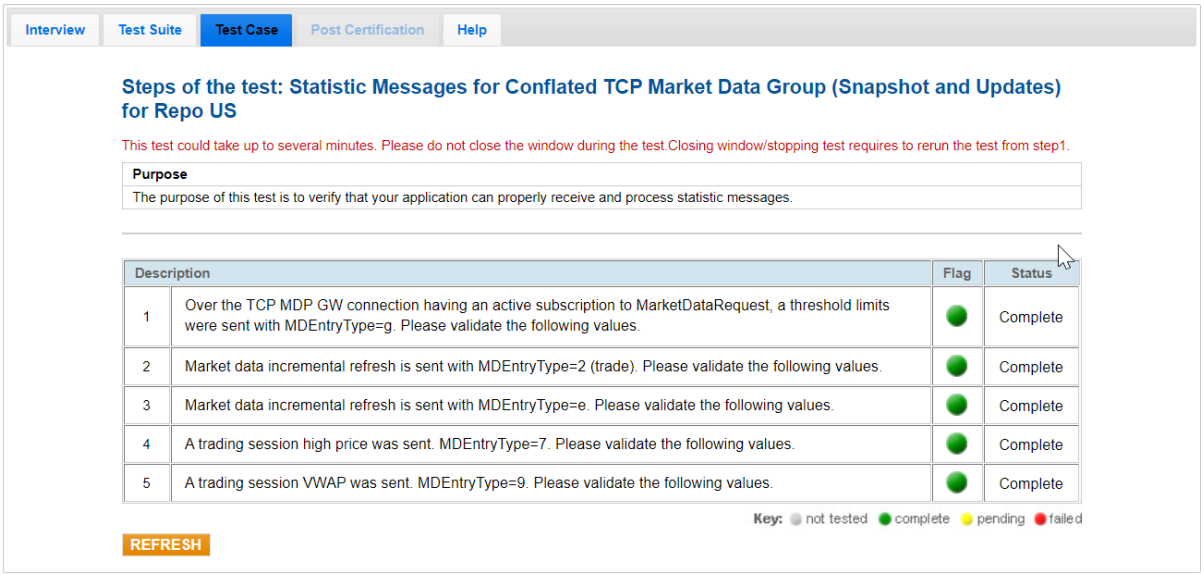
To run the Statistic Messages for Premium or Conflated UDP Market Data test:

1. Threshold limits (tag 269-MDEntryType=g) were sent (tag 269-MDEntryType=g). Enter the following tag values.
    - tag 1149-HighLimitPrice
    - tag 1148-LowLimitPrice
2. A Market Data Incremental Refresh message is sent with tag 269=MDEntryType=2 (trade). Enter the following tag values.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
3. A Market Data Incremental Refresh message is sent with tag 269=MDEntryType=e (Electronic Volume). Enter the following values.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
4. A trading session high price was sent. MDEntryType=7. Enter the tag 270-MDEntryPx value.

Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo US

This test verifies that your application can properly receive and process statistic messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



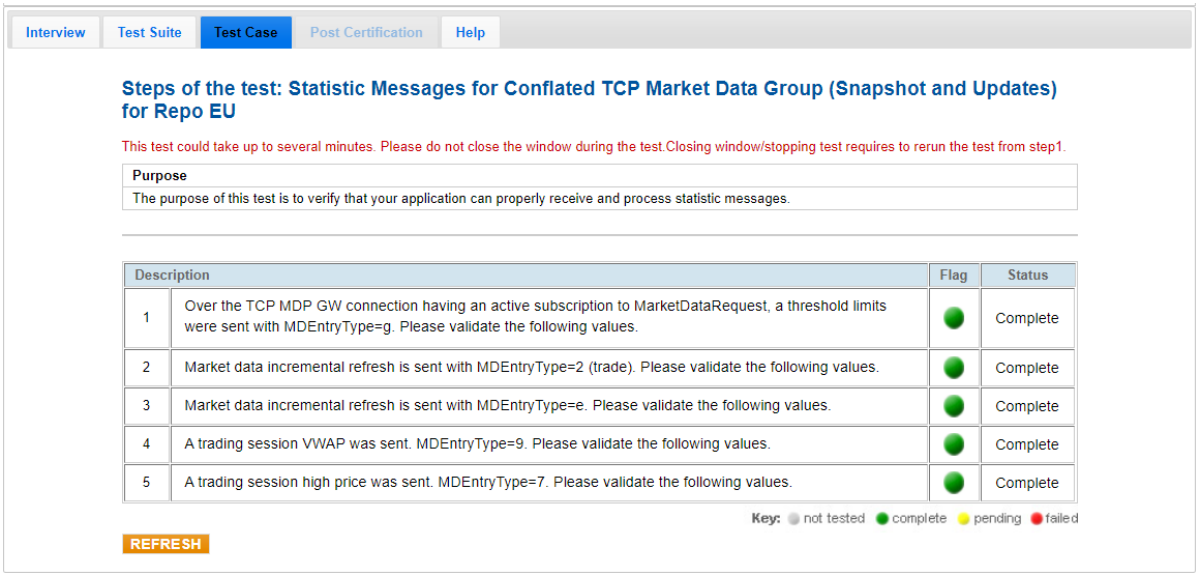
To run the Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo US test:

1. Over the TCP MDP GW connection having an active subscription to MarketDataRequest, threshold limits were sent with tag 269-MDEntryType=g (Threshold Limits and Price Band Variation). Enter the following tag values:
   - tag 1149-HighLimitPrice
   - tag 1148-LowLimitPrice
2. A Market Data Incremental Refresh message is sent with tag 269=MDEntryType=2 (Trade). Enter the following values.
   - tag 270-MDEntryPx
   - tag 271-MDEntrySize
3. A Market Data Incremental Refresh message is sent with tag 269=MDEntryType=e (Electronic Volume). Enter the following values.
   - tag 270-MDEntryPx
   - tag 271-MDEntrySize
4. A trading session high price was sent with MDEntryType=7. Enter the tag 270-MDEntryPx value.
5. A trading session VWAP was sent with MDEntryType=9. Enter the tag 270-MDEntryPx value.

Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo EU

This test verifies that your application can properly receive and process statistic messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



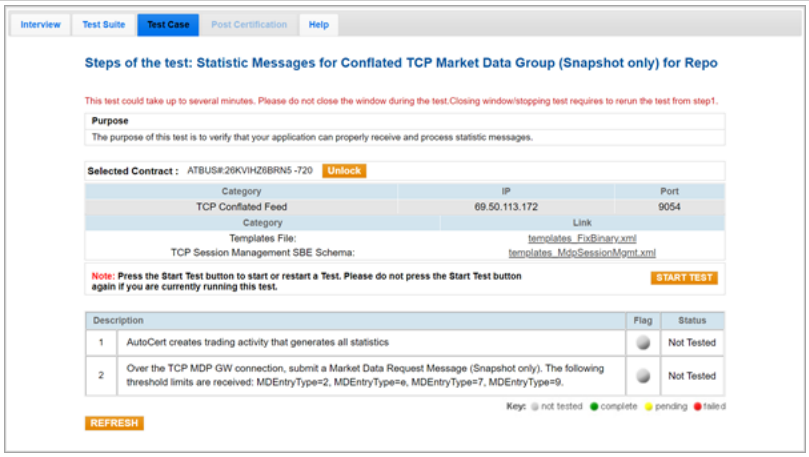
To run the Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Repo EU test:

1. Over the TCP MDP GW connection having an active subscription to MarketDataRequest, threshold limits were sent with tag 269-MDEntryType=g (Threshold Limits and Price Band Variation). Enter the following tag values:
    - tag 1149-HighLimitPrice
    - tag 1148-LowLimitPrice
2. A Market Data Incremental Refresh message is sent with tag 269=MDEntryType=2 (Trade). Enter the following values.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
3. A Market Data Incremental Refresh message is sent with tag 269=MDEntryType=e (Electronic Volume). Enter the following values.
    - tag 270-MDEntryPx
    - tag 271-MDEntrySize
4. A trading session high price was sent with MDEntryType=7. Enter the tag 270-MDEntryPx value.
5. A trading session VWAP was sent with MDEntryType=9. Enter the tag 270-MDEntryPx value.

Statistic Messages for Conflated TCP Market Data Group (Snapshot Only) for Repo

This test verifies that your application can properly receive and process statistic messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



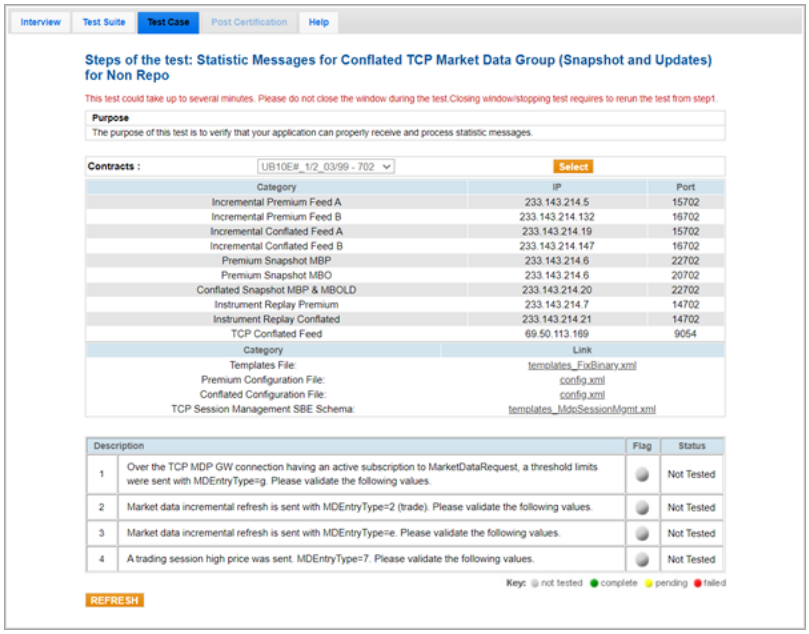
To run the Statistic Messages for Conflated TCP Market Data Group (Snapshot Only) for Repo test:

1. AutoCert creates trading activity that generates all statistics.
2. Over the TCP MDP GW connection, submit a Market Data Request Message (Snapshot only). The following threshold limits are received: MDEntryType=2 (Trade), MDEntryType=e (Electronic Volume), MDEntryType=7 (Trading Session High Price), MDEntryType=9 (VWAP).

Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Non-Repo

This test verifies that your application can properly receive and process statistic messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Statistic Messages for Conflated TCP Market Data Group (Snapshot and Updates) for Non-Repo test:

1. Over the TCP MDP GW connection having an active subscription to MarketDataRequest, threshold limits were sent with tag 269-MDEntryType=g (Threshold Limits and Price Band Variation). Enter the following tag values:

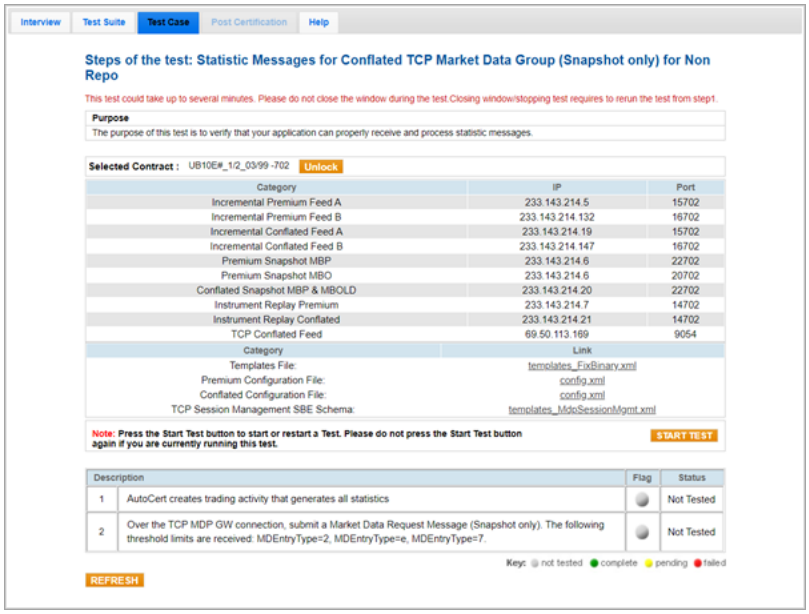
- tag 1149-HighLimitPrice
- tag 1148-LowLimitPrice

2. A Market Data Incremental Refresh message is sent with tag 269-MDEntryType=2 (Trade). Enter the following values.
   - tag 270-MDEntryPx
   - tag 271-MDEntrySize
3. A Market Data Incremental Refresh message is sent with tag 269-MDEntryType=e (Electronic Volume). Enter the following values.
   - tag 270-MDEntryPx
   - tag 271-MDEntrySize
4. A trading session high price was sent with tag 269-MDEntryType=7 (Trading Session High Price). Enter the tag 270-MDEntryPx value.

Statistic Messages for Conflated TCP Market Data Group (Snapshot Only) for Non-Repo

This test verifies that your application can properly receive and process statistic messages.

1. From the **Contract** drop-down, select the desired contracts if the contracts are not already locked.
2. Select **START TEST**.



To run the Statistic Messages for Conflated TCP Market Data Group (Snapshot Only) for Non-Repo test:

1. AutoCert creates trading activity that generates all statistics.
2. Over the TCP MDP GW connection, submit a Market Data Request Message (Snapshot only). The following threshold limits are received: MDEntryType=2 (Trade), MDEntryType=e (Electronic Volume), MDEntryType=7 (Trading Session High Price).