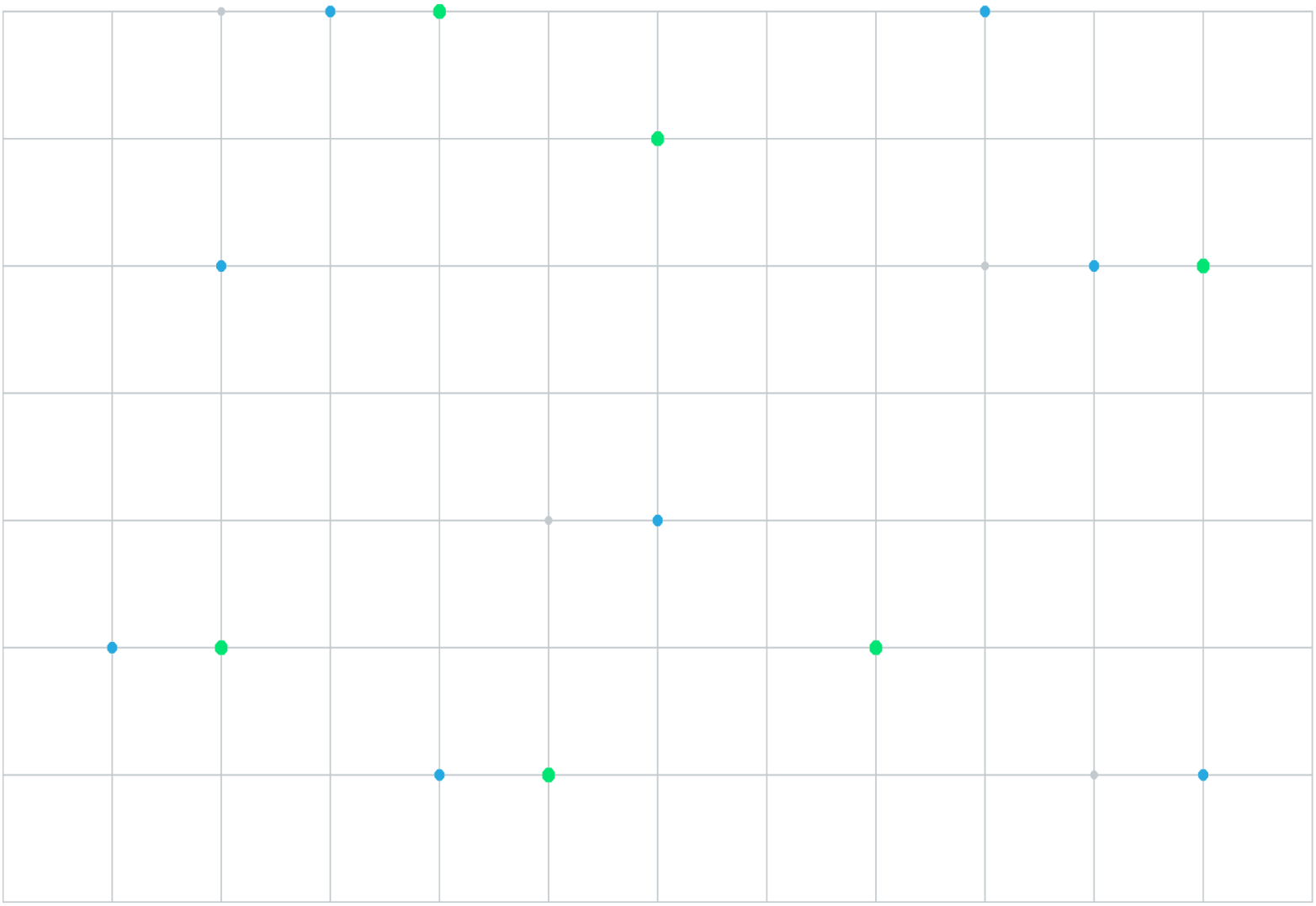
CME Group

AutoCert+ Drop Copy 4.0 for BrokerTec User Manual

October 7, 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 to CME Globex, CME Group provides a dedicated certification environment to allow customers to test their systems before they complete certification.

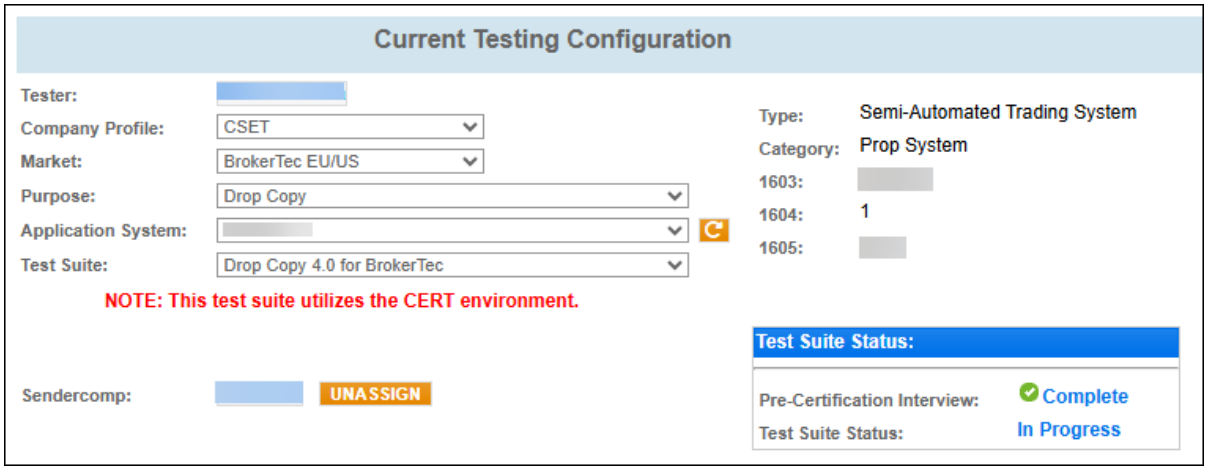
The Drop Copy 4.0 service allows customers to receive real-time copies of CME Globex Execution Report and Acknowledgment messages as they are sent over iLink order entry system sessions. Drop Copy aggregates iLink messages, enabling customers to aggregate positions and monitor orders for sessions guaranteed by one or more clearing firms upon approval of the clearing firms.

Customers must manage sequence streams from Market Segment Gateway (MSGW) iLink source sessions per unique market segment; with the possibility of having the same sequence numbers from multiple market segments.

Note: This test suite uses "Dummy Contracts" or "Certification Dedicated Instruments" during the certification process.

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. Navigate to the AutoCert+ Drop Copy 4.0 for BrokerTec test suite.



   a. Select a **Company Name**.
   b. For **Market**, select BrokerTec EU/US.
   c. For **Purpose**, select *Drop Copy*.
   d. Select an **Application System**.

      To update Application Systems to include recent additions, use the refresh ( ) button.
   e. For **Test Suite**, select *Drop Copy 4.0 for BrokerTec*.
4. Review general AutoCert+ test suite navigation and general interview information.
5. Complete the Interview for this test suite.
6. Complete applicable test cases.
7. Complete the certification process from the Post Certification tab.

Additional Information

See the following documentation for more information on Drop Copy functionality:

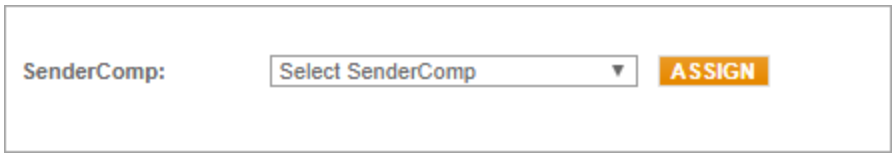
- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library

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:

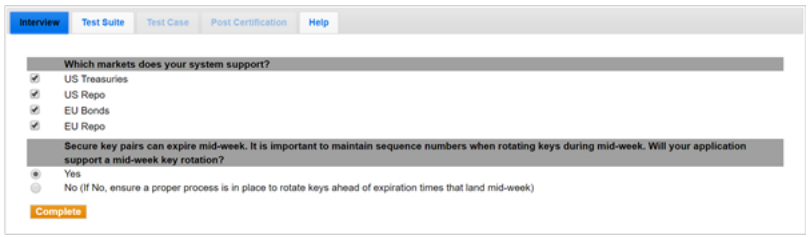
1. Select a **SenderComp** from the drop-down and select **ASSIGN**.



2. Answer each question and select "**Complete**" when finished.

> **Note:** The number of market segments and the instruments listed on each market segment is subject to change.

> **Note:** Each Drop Copy MSGW session has a unique IP address for each of the primary and backup MSGWs.



What's New

The list below illustrates the updates made to the AutoCert+ Drop Copy 4.0 for BrokerTec Help system.

Date	Topic	Description
7 Oct 2022	Format	Website and PDF format changes only.
11 Mar 2022	Logon Process with Failover	Updated screenshot and description.
11 Oct 2021	All	Updated message specification links.
29 Jun 2020	Receive Message Stream (No Resend)	Added tag names to procedure.
15 Jun 2020		Initial release

Session Management Tests

This section contains information about the Session Management tests.

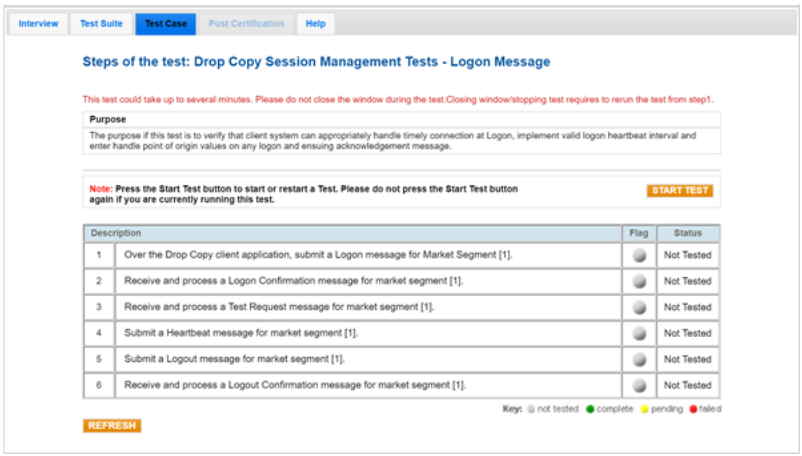
Logon Message

This test verifies that your system can appropriately handle timely connection at logon, implement a valid logon heartbeat interval and then handle point of origin values on any Logon and ensuing acknowledgment message.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run a Logon Message test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

3. Over a Drop Copy connection, submit a Logon (35=A) message for market segment (1).
4. Receive and process a Logon (35=A) confirmation message for market segment (1).
5. Receive and process a Test Request (35=1) message for market segment (1).
6. Submit a Heartbeat (35=0) message for market segment (1).
7. Submit a Logout (35=5) message for market segment (1).
8. Receive and process a Logout (35=5) message for market segment (1).

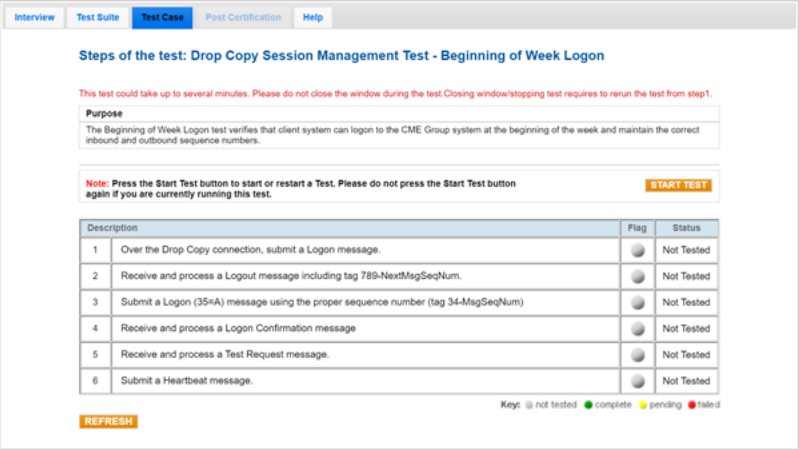
Beginning of Week Logon

The Beginning of Week Logon test verifies that the client system can log on to the CME Group system at the beginning of the week and maintain the correct inbound and outbound sequence numbers (tag 34-MsgSeqNum).

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run the Beginning of Week Logon test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

3. Over a Drop Copy connection, submit a Logon (35=A) message.
4. Receive and process a Logout (35=5) message, including tag 789-NextMsgSeqNum.
5. Submit a Logon (35=A) message, including the correct sequence number (tag 34-MsgSeqNum).
6. Receive and process a Logon (35=A) confirmation message.
7. Receive and process a Test Request (35=1) message.
8. Submit a Heartbeat (35=0) message.

Mid Week Logon

This test verifies that the client system can logon to the CME Group system during the week and maintain the correct inbound and outbound sequence numbers (tag 34-MsgSeqNum).

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library

To run the Mid Week Logon test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

3. Over a Drop Copy connection, submit a Logon (35=A) message.
4. Receive and process a Logout (35=5) message, including tag 789-NextMsgSeqNum.
5. Submit a Logon (35=A) message using the correct sequence number (tag 34-MsgSeqNum).
6. Receive and process a Logon (35=A) confirmation message.
7. Receive and process a Test Request (35=1) message.
8. Submit a Heartbeat (35=0) message.

Logon Process with Failover

The purpose of this test is to verify that client system can support primary gateway enforcement.

In the event of a Drop Copy 4.0 failover, upon logon to the new primary connection, client systems will experience a significant increase (currently set to 4000) in sequence numbers (tag 34-MsgSeqNum) sent from CME Globex to the client system. CME Group recommends that client systems request all missing messages.

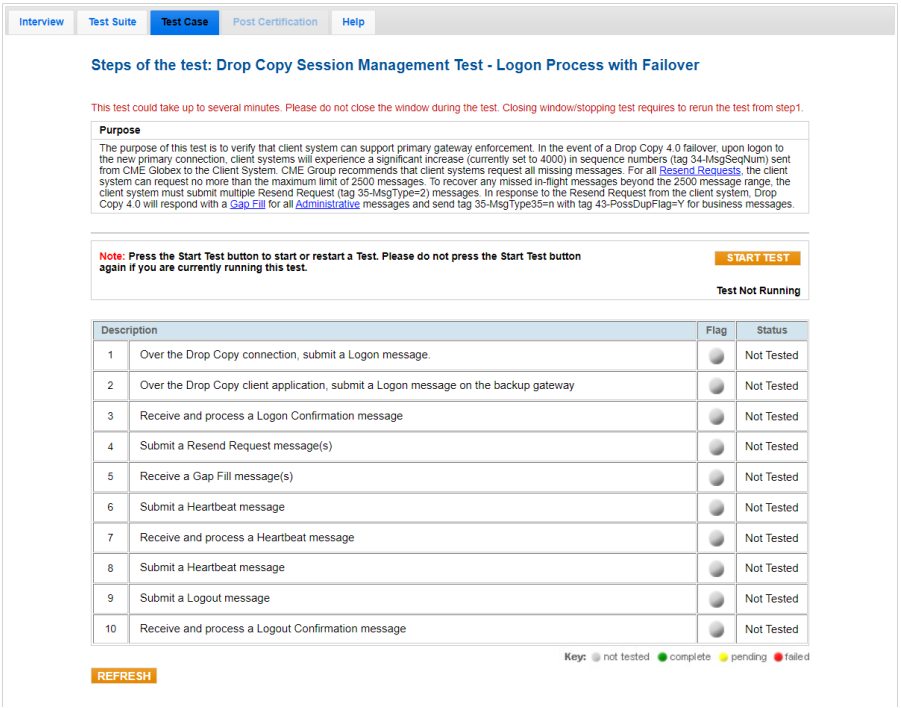
For all Resend Requests, the client system can request no more than the maximum limit of 2500 messages. To recover any missed in-flight messages beyond the 2500 message range, the client system must submit multiple Resend Request (tag 35-MsgType=2) messages.

In response to the Resend Request from the client system, Drop Copy 4.0 will respond with a Gap Fill for all Administrative messages and send tag 35-MsgType35=n with tag 43-PossDupFlag=Y for business messages.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run a Logon Process with Failover test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. Select the **START TEST** button.

> **Note**: **DO NOT** select the **START TEST** button once the test is in progress.

3. Over the Drop Copy connection, submit a Logon (35=A) message.
4. Over the Drop Copy client application, submit a Logon (35=A) message on the backup gateway.
5. Receive and process a Logon (35=A) confirmation message.
6. Submit a Resend Request (35=2) message(s).
7. Receive a Gap Fill (35=4,123-GapFillFlag=Y) message(s).
8. Submit a Heartbeat (35=0) message.
9. Receive and process a Heartbeat message.
10. Submit a Heartbeat message.
11. Submit a Logout (35=5) message.
12. Receive and process a Logout (35=5) confirmation message.

Sequencing Tests

This section contains information about the Sequencing tests.

Receive Encapsulated Message from Simulated Order Mass Action Messages

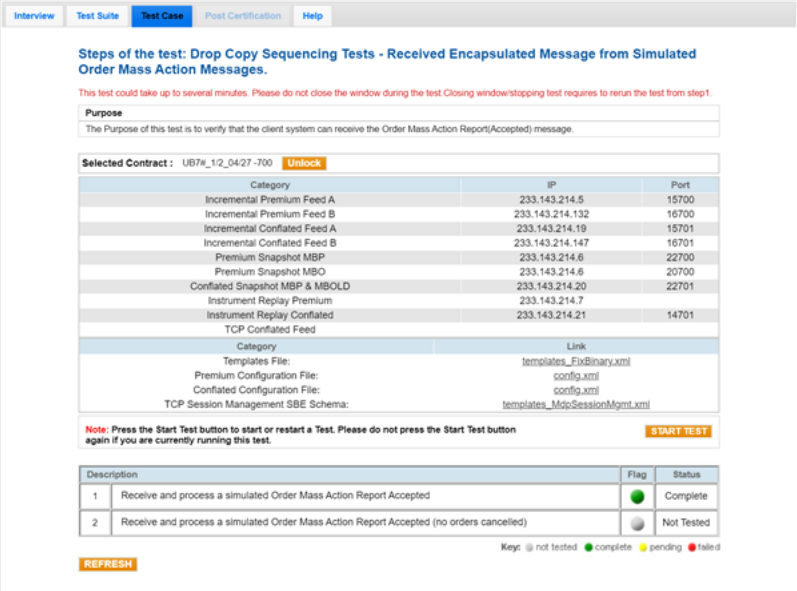
This test verifies the client system can successfully receive an Order

Mass Action Report [35=BZ (Accepted)] message.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run a Receive Encapsulated Message from Simulated Order Mass Action Messages test:

1. From the **Contract** drop-down, select the desired contract if the contract is not already locked.
2. Click the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test process is in progress.

3. Enter the following tag values to confirm that your system received and processed a simulated Order Mass Action Report Accepted
   - tag 1300-MarketSegmentID
   - tag 1374-MassActionScope
   - tag 1375-MassActionResponse
   - tag 533-TotalAffectedOrders

- tag 534-NoAffectedOrders
- tag 41-OrigClOrdID
- tag 84-CxlQty
- tag 535-AffectedOrderID
- tag 893-LastFragment

4. Enter the following tag values to confirm that your system received and processed a simulated Order Mass Action Report Accepted (no orders cancelled)
    - tag 1300-MarketSegmentID
    - tag 1374-MassActionScope
    - tag 1375-MassActionResponse
    - tag 533-TotalAffectedOrders
    - tag 893-LastFragment

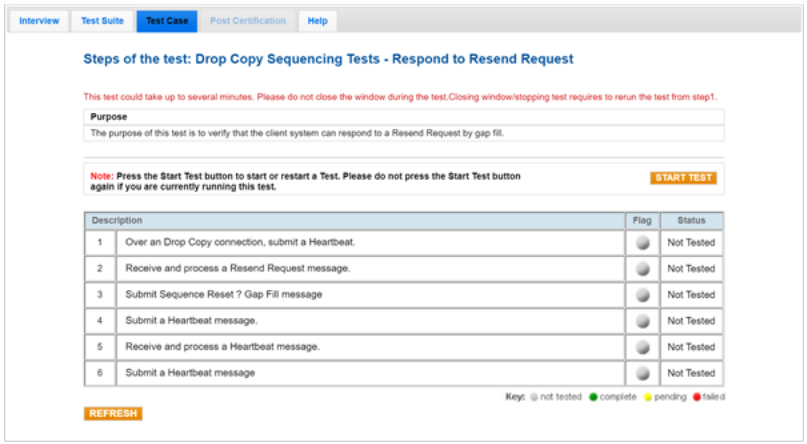
Respond to Resend Request

This test verifies that your system can respond to a Resend Request by gap fill.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run the Respond to Resend Request test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

3. Over a Drop Copy connection, submit a Heartbeat (35=0) message.
4. Receive and process a Resend Request (35=2) message.
5. Submit a Sequence Reset - Gap Fill (35=2, 123-GapFillFlag=Y) message.
6. Submit a Heartbeat (35=0) message.
7. Receive and process a Heartbeat (35=0) message.
8. Submit a Heartbeat (35=0) message.

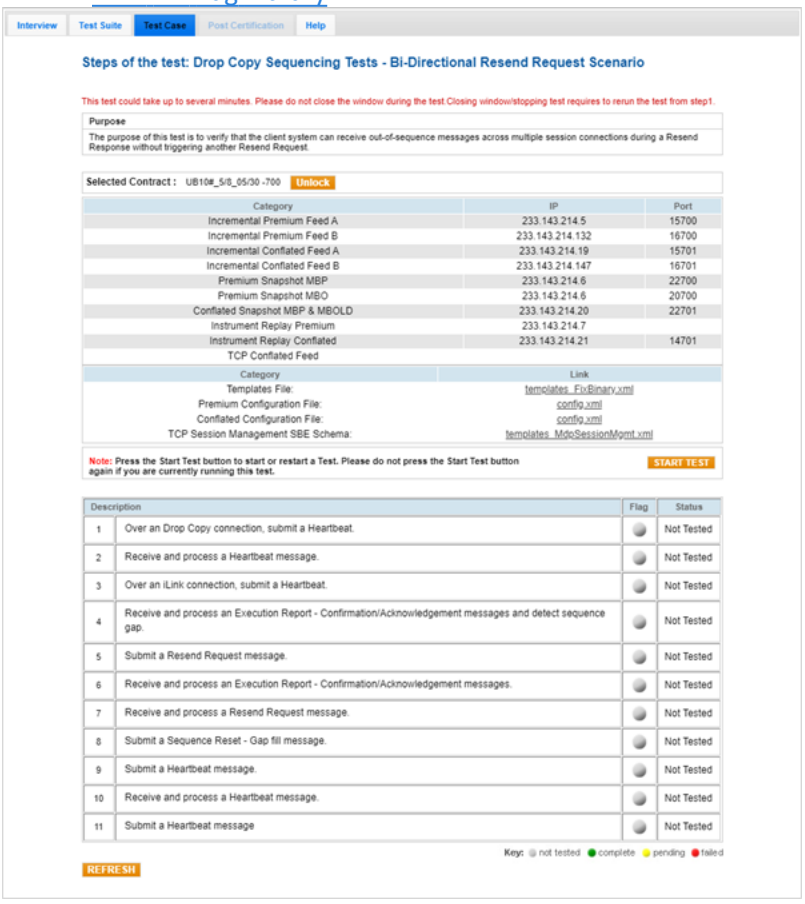
Bi-Directional Resend Request Scenario

This test verifies that your system can receive out-of-sequence messages across multiple session connections during a Resend Response without triggering another Resend Request.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run the Bi-Directional Resend Request Scenario test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
3. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

4. Over a Drop Copy connection, submit a Heartbeat (35=0) message.
5. Receive and process a Heartbeat (35=0) message.

6. Over an iLink connection, submit a Heartbeat (35=0) message.
7. Receive and process an Execution Report - Order Creation [35=8, 39-OrdStatus=0 (New Order Ack)] message and detect a sequence gap.
8. Submit a Resend Request (35=2) message.
9. Receive and process an Execution Report - Order Creation [35=8, 39-OrdStatus=0 (New Order Ack)] message.
10. Receive and process a Resend Request (35=2) message.
11. Submit a Sequence Reset - Gap Fill (35=4, 123-GapFillFlag=Y) message.
12. Submit a Heartbeat (35=0) message.
13. Receive and process a Heartbeat (35=0) message.
14. Submit a Heartbeat (35=0) message.

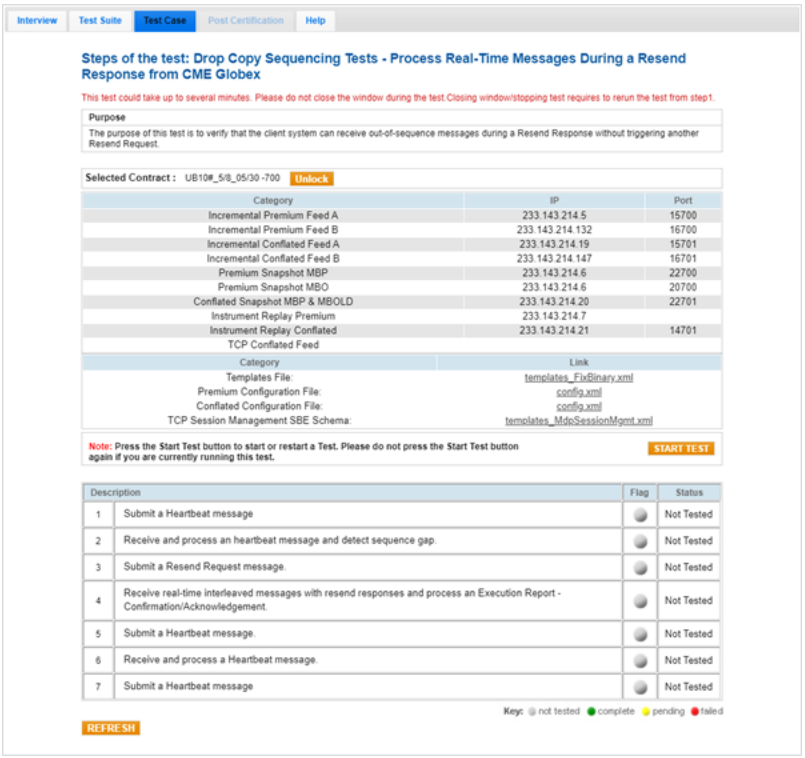
Process Real-Time Messages During a Resend Response

This test verifies that your system can receive out-of-sequence messages during a Resend Response without triggering another Resend Request.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run the Process Real-Time Messages During a Resend Response test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
3. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

4. Submit a Heartbeat (35=0) message.
5. Receive and process a Heartbeat (35=0) message and detect a sequence gap.
6. Submit a Resend Request (35=2) message.
7. Receive real-time interleaved messages with resend responses and process an Execution Report - Order Creation [35=8, 39-OrdStatus=0 (New Order Ack)] message.

8. Submit a Heartbeat (35=0) message.
9. Receive and process a Heartbeat (35=0) message.
10. Submit a Heartbeat (35=0) message.

Receive Message Stream (No Resend)

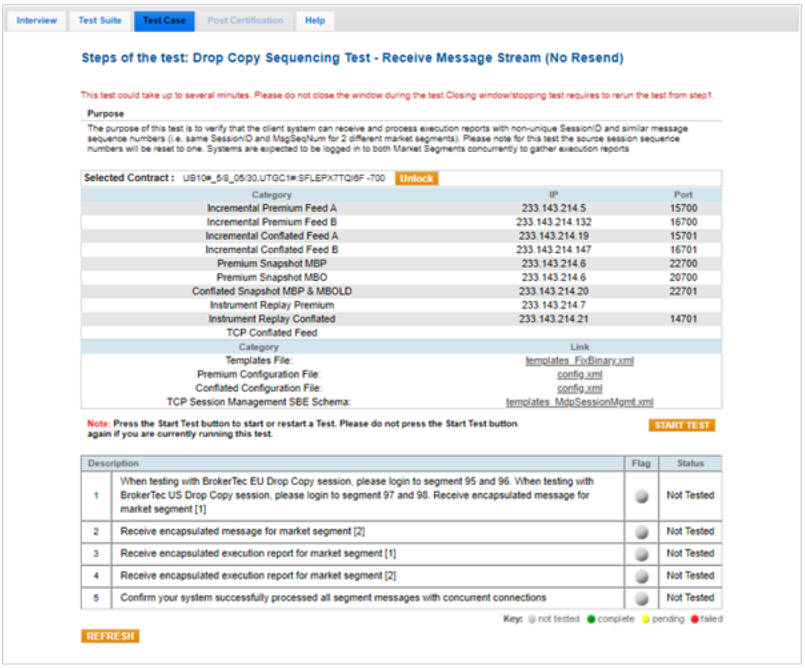
The purpose of this test is to verify that your system can receive and process Execution Reports with a non-unique SessionID and similar message sequence numbers (i.e., same SessionID and MsgSeqNum for 2 different market segments).

Note: For this test, the source session sequence numbers will be reset to **1**. Systems are expected to be logged in to both market segments concurrently to gather Execution Reports.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To run the Receive Message Stream (No Resend) test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
3. Select the **START TEST** button.

   Note: **DO NOT** select the START TESTbutton once the test is in progress.

4. When testing with BrokerTec EU Drop Copy session, please login to segment 95 and 96. When testing with BrokerTec US Drop Copy session, please login to segment 97 and 98. Receive encapsulated message for market segment [1].

- tag 44-Price
- tag 33-OrderQty

5. Receive an encapsulated message for market segment [2].
    - tag 44-Price
    - tag 33-OrderQty
6. Receive an encapsulated Execution Report for market segment [1].
    - tag 44-Price
    - tag 151-LeavesQty
    - tag 33-OrderQty
7. Receive an encapsulated Execution Report for market segment [2].
    - tag 44-Price
    - tag 151-LeavesQty
    - tag 33-OrderQty
8. Select "**Yes**" or "**No**" to indicate whether or not your system successfully processed all segment messages with concurrent connections.

Example of Encapsulated Message: (Multiple Messages)

The FIX payload is shown in **bold** below.

[8=FIX.4.2|9=509|35=n|34=185|369=57|52=20200610-
05:47:01.098|49=CME|50=98|56=717NEXN|57=CSET|143=SG|212=413|213=<RTRF>
8=FIX.4.2|9=377|35=8|34=208|369=106|52=20200610-
05:47:01.096|49=CME|50=98|56=EIVACPUSP|57=GUSUS|143=US,IL|1=ACP_
ORDER|6=0|11=ACP1591768021071|14=0|17=9848:28271|20=0
37=982167244|38=67|39=0|40=2|41=0|44=130|48=3273848|54=2|55=#USBD|59=0|60=20200610-
05:47:01.071|107=UB07#_1/2_
05/27|150=0|151=67|167=TNOTE|432=20200610|819=0|1028=Y|1031=H|1598=1|5149=Memo
ACPOS|5906=A|5979=1591768021071320596|10=249|</RTRF>|10=027|]

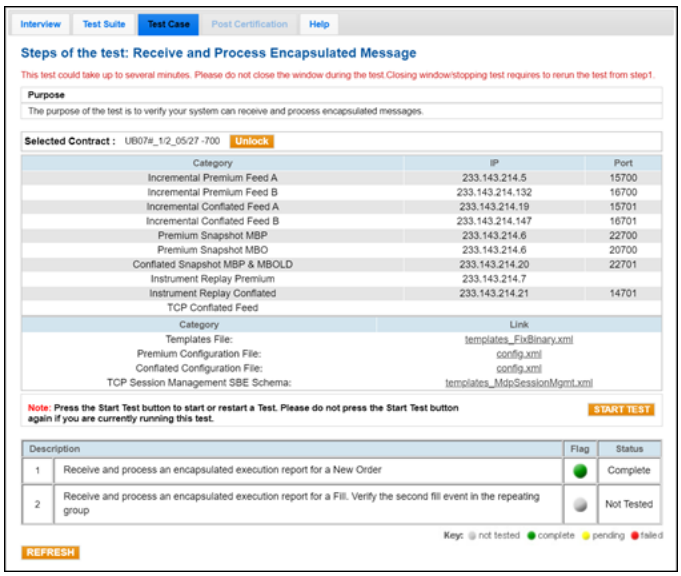
Receive and Process Encapsulated Message

This test verifies that the client system can receive and process encapsulated XML non-FIX (35=n) messages with new BrokerTec tags provided in the Drop Copy payload.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library

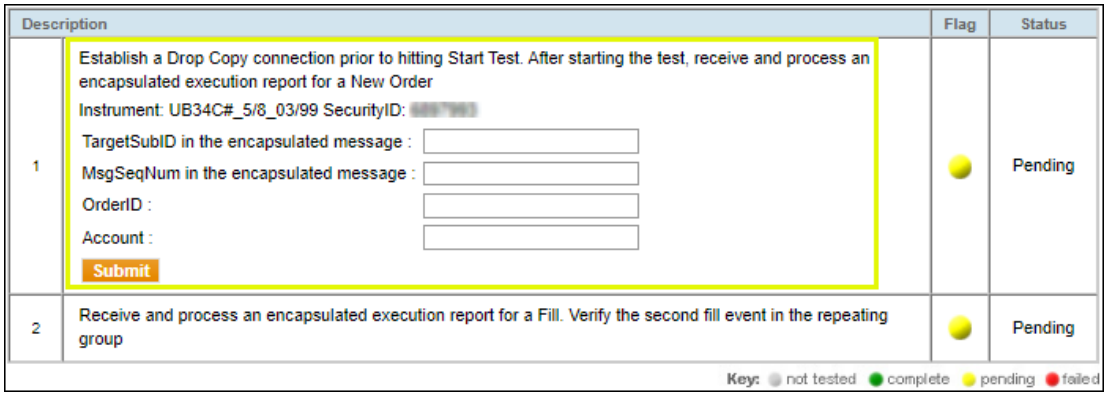


To run the Receive and Process Encapsulated Message test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
3. Select the **START TEST** button.

   > **Note**: **DO NOT** select the START TESTbutton once the test is in progress.

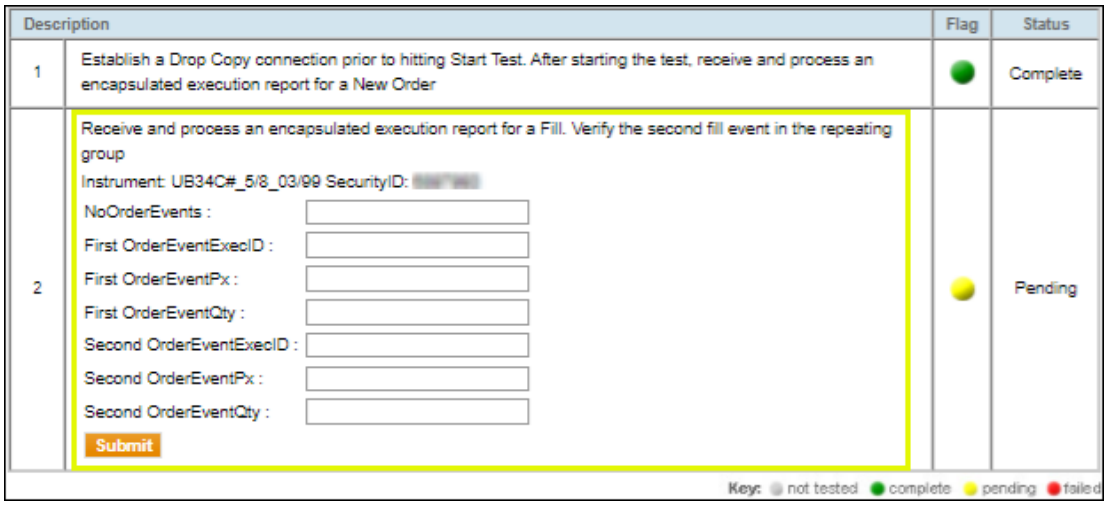
4. Enter the following tag values to confirm that your system received and processed an *encapsulated Execution Report* for a New Order
   - tag 57-TargetSubID
   - tag 34-MsgSeqNum
   - tag 37-OrderID
   - tag 1-Account



5. Enter the following tag values to confirm that your system received and processed an *encapsulated message for a Fill*.
   - tag 48-SecurityID: Provided in the test case
   - tag 1795-NoOrderEvents

   First Order
   - →1797-OrderEventExecID
   - →1799-OrderEvenPx
   - →1800-OrderEventQTY

   Second Order
   - →1797-OrderEventExecID
   - →1799-OrderEventPx
   - →1800-OrderEventQTY



Example of Encapsulated Message: (Multiple Messages)

The FIX payload is shown in **bold** below.

[8=FIX.4.2|9=509|35=n|34=185|369=57|52=20200610-
05:47:01.098|49=CME|50=98|56=717NEXN|57=CSET|143=SG|212=413|213=<RTRF>
8=FIX.4.2|9=377|35=8|34=208|369=106|52=20200610-
05:47:01.096|49=CME|50=98|56=EIVACPUSP|57=GUSUS|143=US,IL|1=ACP_
ORDER|6=0|11=ACP1591768021071|14=0|17=9848:28271|20=0
37=982167244|38=67|39=0|40=2|41=0|44=130|48=3273848|54=2|55=#USBD|59=0|60=20200610-

05:47:01.071|107=UB07#_1/2_
05/27|150=0|151=67|167=TNOTE|432=20200610|819=0|1028=Y|1031=H|1598=1|5149=Memo
ACPOS|5906=A|5979=15917680210713205 96|10=249|</RTRF>|10=027|]

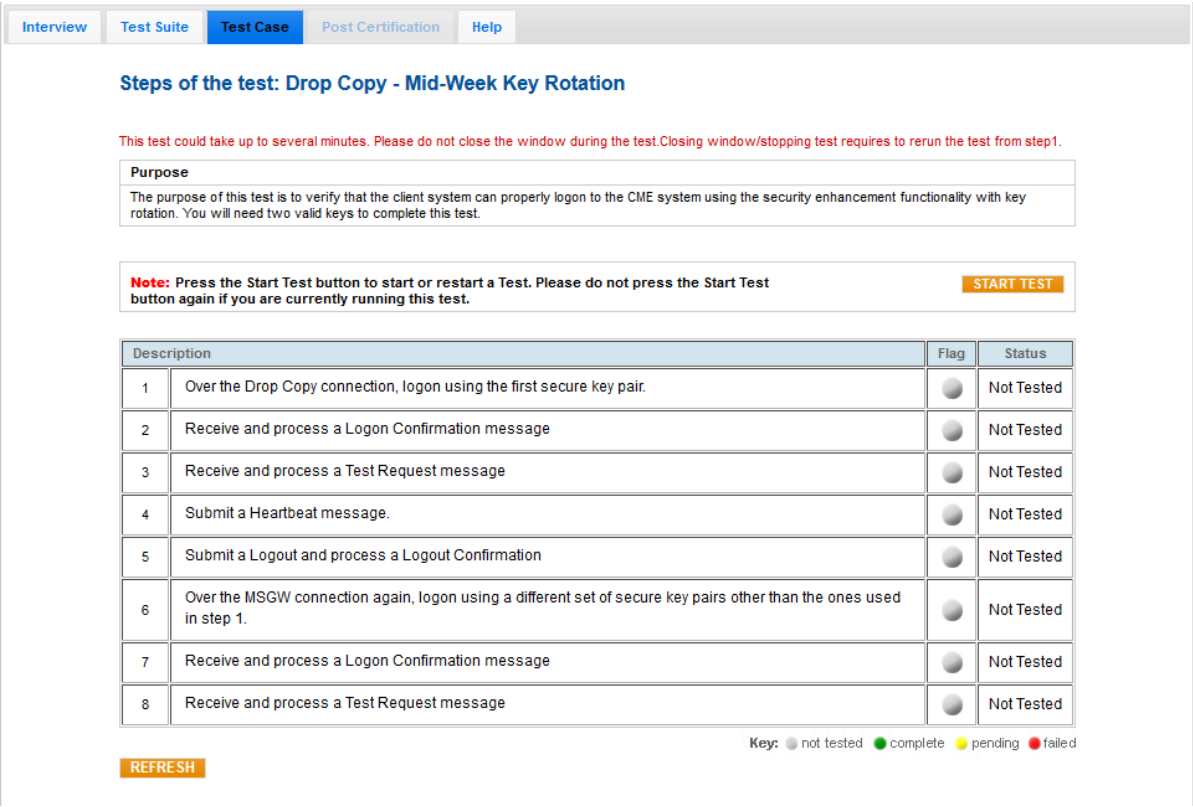
Mid-Week Key Rotation

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

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- iLink Binary Order Entry
- Drop Copy Service for iLink - BrokerTec Markets
- iLink Binary Order Entry - BrokerTec Markets
- iLink FIX Tag Library



To complete the Mid-Week Key Rotation test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
2. Select the **START TEST** button.

   Note: **DO NOT** select the START TESTbutton once the test is in progress.

3. Over the Drop Copy connection, submit a Logon (35=A) message using the first secure key pair.

4. Receive and process a Logon (35=A) confirmation message.
5. Receive and process a Test Request (35=1) message.
6. Submit a Heartbeat (35=0) message.
7. Submit a Logout (35=5) and process the Logout (35=5) confirmation.
8. Over the MSGW connection again, submit a Logon (35=A) message using a different set of secure key pairs other than the ones used in step 3.
9. Receive and process a Logon Confirmation (35=A) message.

   Note: Client systems with Cancel on Disconnect (COD) or Mass Quote functionality enabled may send 1 Resend Request (35=2) message to have any missed messages resent.

10. Receive and process a Test Request (35=1) message.