

AutoCert+ Market Data GCP Web-socket User Manual

March 18, 2024



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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.

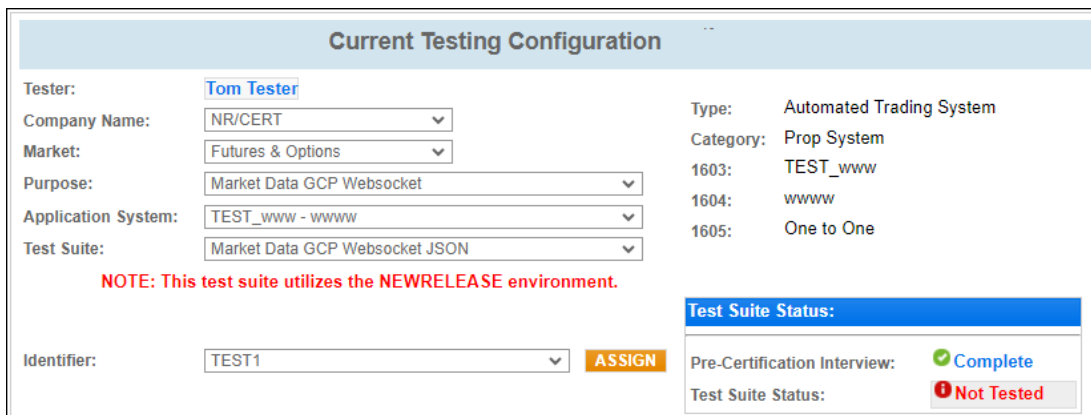
Certification session details will be assigned and forwarded to the customer, including certification target locations and firm / user Identifiers.

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

Certification is required for customers that will use the Market Data GCP Websocket functionality.

To run and navigate AutoCert+:

1. [Log into](#) the automated certification tool.
2. Review general AutoCert+ test suite [navigation](#) and [general interview](#) information.
3. Navigate to the AutoCert+ Market Data GCP Websocket test suite.



Current Testing Configuration

Tester:

Company Name:

Market:

Purpose:

Application System:

Test Suite:

NOTE: This test suite utilizes the NEWRELEASE environment.

Identifier:

Type: Automated Trading System

Category: Prop System

1603: TEST_www

1604: www

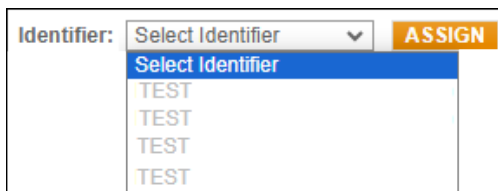
1605: One to One

Test Suite Status:

Pre-Certification Interview: ☒ Complete

Test Suite Status: ☒ Not Tested

- a. Select a **Company Name**.
 - b. For **Market**, select *Futures & Options*.
 - c. For **Purpose**, select *Market Data GCP Websocket*.
 - d. Select an **Application System**.
 - e. For **Test Suite**, select *Market Data GCP Websocket JSON*.
4. Select an **Identifier**, select **ASSIGN**, then enter the associated **API ID**.



Identifier:

Select Identifier

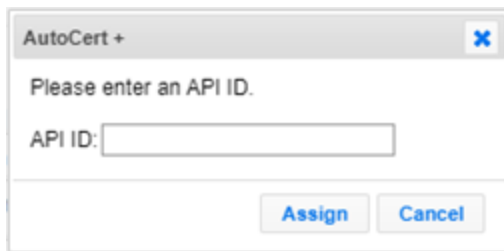
TEST

TEST

TEST

TEST

API IDs are used to authenticate system-to-system communication with CME Group applications, via API interface.



A screenshot of a small, light gray dialog box titled "AutoCert +" with a close button (X) in the top right corner. The dialog contains the text "Please enter an API ID." followed by a label "API ID:" and an empty text input field. At the bottom right of the dialog are two buttons: "Assign" and "Cancel".

To look up or manage API IDs, refer to the [CME Group Login User Help](#).

5. Complete the [Interview](#) for this test suite.

6. Complete applicable **test cases**.

Interview

Test Suite

Test Case

Post Certification

Help

Market Data GCP Websocket JSON Certification Tests	Retest	Flag	Status	Mandatory/Optional
Subscription for a Futures Instrument Test			Not Tested	Mandatory
Subscription for a Options Instrument Test			Not Tested	Mandatory
Subscription for Top of Book Test			Not Tested	Mandatory
Subscription for Trade Information Test			Not Tested	Mandatory
Settlement Statistic Message Test			Not Tested	Mandatory
Open Interest Statistic Message Test			Not Tested	Mandatory
Cleared Volume Statistic Message Test			Not Tested	Mandatory

REFRESH

Key:

not tested

complete

pending

failed

7. Complete the certification process from the [Post Certification](#) tab.

What's New

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

Date	Topic	Description
March 18, 2024	All	<u>New tests</u> <ul style="list-style-type: none"> Subscription for a Futures Instrument Test Subscription for an Options Instrument Test Subscription for Statistics Test <u>Update existing test</u> <ul style="list-style-type: none"> <i>Book Message Top of Book</i> updated to <i>Subscription for Top of Book Test</i> <i>Trade Message Test</i> updated to <i>Subscription for Trade Information Test</i> <u>Updated existing test with websocket validation</u> <ul style="list-style-type: none"> Settlement Statistic Message Test Open Interest Statistic Message Test Cleared Volume Statistic Message Test
October 4, 2023	All	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, then select **Complete** when finished.

Interview
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Help

What types of Instruments will your system support?
☒ Futures
☒ Options

What types of Product will your system support?
☒ Interest Rate
☐ Energy
☐ Equity
☐ FX
☐ Commodity

Will your system support unsubscribe to an existing subscription?
☒ Yes
☐ No

Will your application support Statistic Message?
☒ Yes
☐ No

Which of the following statistic does your application support?
☒ Settlement
☒ Open Interest
☒ Cleared Volume

Will your application support Market State Message?
☒ Yes
☐ No

Due to the setup of the certification test suite, you may experience connection difference during certification.
☒ Acknowledge
☐ Not Acknowledge

Complete

Subscription for a Futures Instrument Test

The purpose of this test is to verify the client system can properly subscribe to a futures instrument.

For more information on the WebSocket API connection and subscription process, see [CME Market Data Over WebSocket API](#).

▶ **To run the Futures Instrument subscription test:**

1. Prior to selecting the test, assign an **Identifier**, and assign the **API ID**

; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

2. From the **Instrument** drop-down, select the *instrument*, then **Select**.

3. Select **START TEST**, then confirm the selection.
4. Over an existing Websocket connection, send a [Subscription Message](#) (→ messageType=SUBSCRIBE) for the selected Futures *Instrument* (→ → productCode); step 1, above.
5. Receive and Process [Subscription Status](#) Message.
6. Send an [Unsubscribe Message](#) (→ messageType=UNSUBSCRIBE) to the Subscription for the selected Futures Instrument in step 1 of the test.
7. Receive and Process [Subscription Status](#) Message.

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Help

Steps of the test: Subscription for a Futures Instrument Test

This test might take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step 1.

Purpose
The purpose of this test is to verify the client system can properly subscribe to a futures instrument

Selected Instrument(s): ICEENA,ICEEQA,ICEENA-ICEEQA-1002

Unlock

Category	Value
OAuth Token	https://cmeapi.cme.com/oauth2/token
GCP Websocket URL	wss://cmeapi.cme.com/websocket
CME Reference Data API Product	https://cmeapi.cme.com/reference-data/v1/products
CME Reference Data API Instrument	https://cmeapi.cme.com/reference-data/v1/instruments

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test.

START TEST

Test Not Running

Description	Flag	Status
1 Over an existing Websocket connection, send a Subscription Message for the selected Futures Instrument		Not Tested
2 Receive and Process Subscription Status Message		Not Tested
3 Send an Unsubscribe Message to the Subscription for the selected Futures Instrument in step 1		Not Tested
4 Receive and Process Subscription Status Message		Not Tested

Key: not tested complete pending failed

(Test results will automatically refresh for up to 2 minutes).

Subscription for a Options Instrument Test

The purpose of this test is to verify the client system can properly subscribe to an options instrument.

For more information on the WebSocket API connection and subscription process, see [CME Market Data Over WebSocket API](#).

▶ To run the Options Instrument subscription test:

Identifier: Select Identifier ASSIGN

Select Identifier

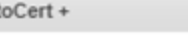
TEST

TEST

TEST

TEST

1. Prior to selecting the test, assign an **Identifier**, and assign the **API ID**



...; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

- From the **Instrument** drop-down, select the *instrument*, then **Select**.

Interview Test Suite **Test Case** Post Certification Help

Steps of the test: Subscription for a Options Instrument Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step1.

Purpose
The purpose of this test is to verify the client system can properly subscribe to an options instrument

Instrument(s): **Select**

AutoCert +

☒ Are you sure you want to start the test ?

Cancel Ok

- Select **START TEST**, then confirm the selection.
- Over an existing Websocket connection, send a [Subscription Message](#) (→ messageType=SUBSCRIBE) for the selected Options Instrument (→ → productCode); above.
- Receive and Process [Subscription Status](#) Message.
- Send an [Unsubscribe Message](#) (→ messageType=UNSUBSCRIBE) to the Subscription for the selected Options Instrument in step 1 of the test.
- Receive and Process [Subscription Status](#) Message.

Interview Test Suite **Test Case** Post Certification Help

Steps of the test: Subscription for a Options Instrument Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step1.

Purpose
The purpose of this test is to verify the client system can properly subscribe to an options instrument

Selected Instrument(s): **Unlock**

Category	Value
OAuth Token	https://api.gcp.com/oauth2/token
GCP Websocket URL	wss://api.gcp.com/websocket
CME Reference Data API Product	https://api.gcp.com/reference-data/product
CME Reference Data API Instrument	https://api.gcp.com/reference-data/instrument

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test.

START TEST

Test Not Running

Description	Flag	Status
1 Over an existing Websocket connection, send a Subscription Message for the selected Options Instrument	●	Not Tested
2 Receive and Process Subscription Status Message	●	Not Tested
3 Send an Unsubscribe Message to the Subscription for the selected Options Instrument in step 1	●	Not Tested
4 Receive and Process Subscription Status Message	●	Not Tested

Key: ● not tested ● complete ● pending ● failed

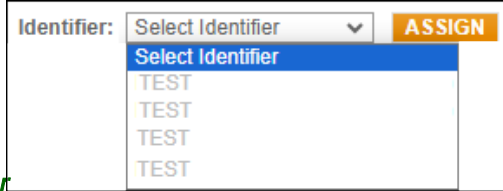

(Test results will automatically refresh for up to 2 minutes).

Subscription for a Top of Book Test

The purpose of this test is to verify the client system can properly subscribe to top of book.

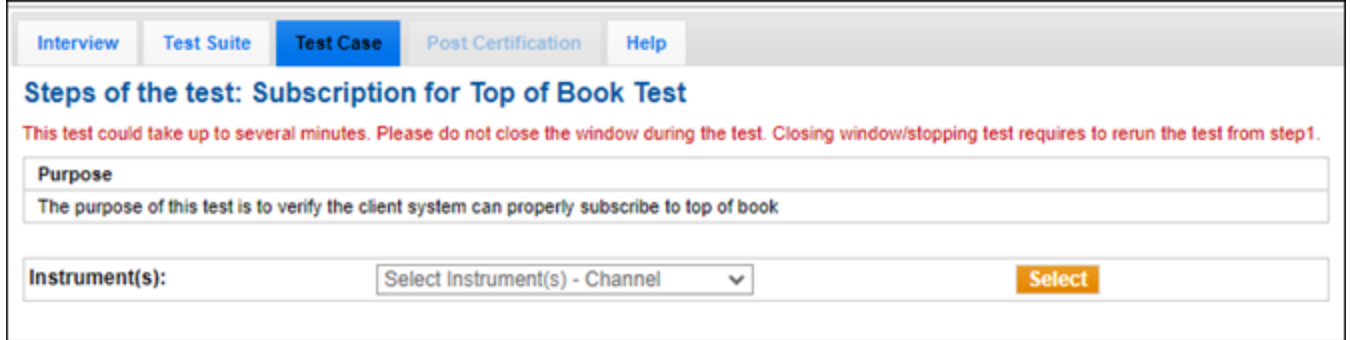
For more information on the WebSocket API connection and subscription process, see [CME Market Data Over WebSocket API](#).

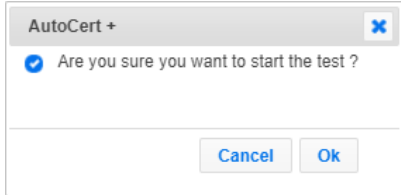
► To run the Options Instrument subscription test:

1. Prior to selecting the test, assign an **Identifier** , and assign the **API ID** ; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

2. From the **Instrument** drop-down, select the *instrument*, then **Select**.



3. Select **START TEST**, then confirm  the selection.
4. Do not subscribe to the Websocket. After clicking **START TEST**, confirm you are ready to proceed with the test by selecting **YES**.
5. After Step 1 turns **green**, over the Websocket connection, send a [Subscription Message](#) for *Top of Book* [TOB (→ subscriptionMessageTypes=TOB)] for the selected *Instrument* (→ → productCode).

6. Receive and Process [Subscription Status](#) Message.
7. Confirm quantities and prices on the [top of book](#), by entering the quantity (→ → qty) and prices (→ → price) from the top of the book.
8. Receive another set of top of book messages for selected instrument.
9. Confirm quantities and prices on the top of book.

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Steps of the test: Subscription for Top of Book Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step 1.

Purpose
The purpose of this test is to verify the client system can properly subscribe to top of book

Selected Instrument(s): 64263 CME 64263 FIBB - 001 Unlock

Category	Value
OAuth Token	https:// https://api.gcp.com/credentials/oauth2
GCP Websocket URL	wss:// https://api.gcp.com/credentials/websocket
CME Reference Data API Product	https:// https://api.gcp.com/credentials/products
CME Reference Data API Instrument	https:// https://api.gcp.com/credentials/instruments

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test.
START TEST

Test Not Running

Description	Flag	Status
1 Do not subscribe to the Websocket. After clicking START TEST, AutoCert+ generates a book for the selected instrument. Ready to proceed? <input type="button" value="YES"/> <input type="button" value="NO"/>		Pending
2 After Step 1 turns green, over the Websocket connection, send a Subscription Message for Top of Book (TOB) for the selected Instrument		Not Tested
3 Receive and Process Subscription Status Message		Not Tested
4 Confirm quantities and prices on the top of book		Not Tested
5 Receive another set of top of book messages for selected instrument		Not Tested
6 Confirm quantities and prices on the top of book		Not Tested

Key: not tested complete pending failed

(Test results will automatically refresh for up to 2 minutes).

Subscription for Trade Information Test

The purpose of this test is to verify the client system can properly subscribe to trade information.

For more information on the WebSocket API connection and subscription process, see [CME Market Data Over WebSocket API](#).

▶ To run the Futures Instrument subscription test:

1. Prior to selecting the test, assign an **Identifier**

, and assign the **API ID**

; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

2. From the **Instrument** drop-down, select the *instrument*, then **Select**.

3. Select **START TEST**, then confirm the selection.
4. Over an existing Websocket connection, send a [Subscription Message](#) for *Trade Information* (→ subscriptionMessageTypes=TRD) on the selected *Instrument* (→ → productCode).
5. Receive and Process [Subscription Status](#) Message.
6. A *trade* was sent. Validate the following values (from the [Trade Summary](#)):
- → → tradePrice
 - → → tradeQty
7. A *trade modification* is sent. Validate the following values:
- → → tradePrice
 - → → tradeQty
8. A *trade cancellation* is sent. Validate the following values:
- → → tradePrice
 - → → tradeQty

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Steps of the test: Subscription for Trade Information Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step1.

Purpose

The purpose of this test is to verify the client system can properly subscribe to trade information

Selected Instrument(s):

BAGHS C190,BAGHS F380 - 807

Unlock

Category	Value
OAuth Token	https://authn.cq.cme.com/oauth2
GCP Websocket URL	wss://markets.apis.gcp.cme.com/auto-cert-marketdatastream
CME Reference Data API Product	https://refdata.apis.gcp.cme.com/cme/referenceData/3/products
CME Reference Data API Instrument	https://refdata.apis.gcp.cme.com/cme/referenceData/3/instruments

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test.

START TEST

Test Not Running

Description	Flag	Status
1 Over an existing Websocket connection, send a Subscription Message for Trade Information (TRD) on the selected instrument		Not Tested
2 Receive and Process Subscription Status Message		Not Tested
3 A trade was sent. Please validate the following values:		Not Tested
4 A trade modification was sent. Please validate the following values:		Not Tested
5 A trade cancelation was sent. Please validate the following values:		Not Tested

Key:

not testedcompletependingfailed

(Test results will automatically refresh for up to 2 minutes).

Settlement Statistic Message Test

The purpose of this test is to verify the client system can receive and process statistics messages.

► To run the settlement statistic message test:

1. Prior to selecting the test, assign an Identifier
- Identifier:

Select Identifier

ASSIGN

Select Identifier

TEST

TEST

TEST

TEST
- , and assign the API ID

AutoCert +

Please enter an API ID.

API ID:

Assign

Cancel

; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

i

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

- From the **Instrument** drop-down, select the *instrument*, then **Select**.

- Select **START TEST**, then confirm the selection.
- Over an existing Websocket connection, send a [Subscription Message](#) for *Statistics* (→ subscriptionMessageTypes=STAT) on the selected *instrument* (→ productCode).
- Receive and Process [Subscription Status](#) Message.
- A [statistic](#) message containing settlement price was sent. Validate the following value:
 - [settlement Price](#)

Category	Value
OAuth Token	https://authn.cq.chicago.cme.com/oauth-token-authn/
GCP Websocket URL	wss://markets-api-gcp.cme.com/auto-cert-market-data-stream
CME Reference Data API Product	https://rdata-api-us1.cme-group.com/rdataapi/products/
CME Reference Data API Instrument	https://rdata-api-us1.cme-group.com/rdataapi/instruments/

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test.

START TEST

Test Not Running

Description	Flag	Status
1 Over an existing Websocket connection, send a Subscription Message for Statistics on the selected instrument	●	Not Tested
2 Receive and Process Subscription Status Message	●	Not Tested
3 A statistic message containing settlement price was sent. Please validate the following values:	●	Not Tested

Key: ● not tested ● complete ● pending ● failed

(Test results will automatically refresh for up to 2 minutes).

Open Interest Statistic Message Test

The purpose of this test is to verify the client system can receive and process statistics messages.

► To run the open interest statistic message test:

1. Prior to selecting the test, assign an **Identifier**

, and assign the **API ID**

; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

2. From the **Instrument** drop-down, select the *instrument*, then **Select**.

3. Select **START TEST**, then confirm the selection.
4. Over an existing Websocket connection, send a [Subscription Message](#) for *Statistics* (→ subscriptionMessageTypes=STAT) on the selected instrument (→ → productCode).
5. Receive and Process [Subscription Status](#) Message.
6. A [statistic](#) message containing open interest was sent. Validate the following value:
 - → → openInterest

Interview Test Suite **Test Case** Post Certification Help

Steps of the test: Open Interest Statistic Message Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step 1.

Purpose
The purpose of this test is to verify the client system can receive and process statistics messages.

Selected Instrument(s): **Unlock**

Category	Value
OAuth Token	https://api.cme.com/oauth2/token?grant_type=client_credentials
GCP Websocket URL	wss://markets-api-gcp.cme.com/autocert/marketdatastream
CME Reference Data API Product	https://refdata-api-us1.cme.com/contracts/3/products
CME Reference Data API Instrument	https://refdata-api-us1.cme.com/contracts/3/instruments

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test. **START TEST**

Test Not Running

Description	Flag	Status
1 Over an existing Websocket connection, send a Subscription Message for Statistics on the selected instrument		Not Tested
2 Receive and Process Subscription Status Message		Not Tested
3 A statistic message containing open interest was sent. Please validate the following values:		Not Tested

Key: not tested complete pending failed

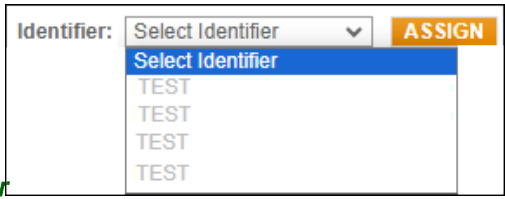
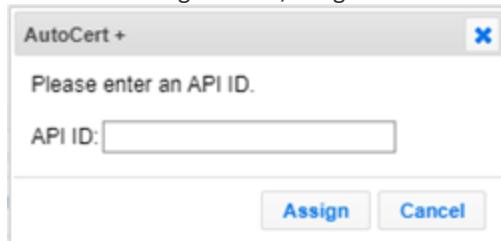
(Test results will automatically refresh for up to 2 minutes).

Cleared Volume Statistic Message Test

The purpose of this test is to verify the client system can receive and process statistics messages.

► To run the cleared volume statistic message test:

1. Prior to selecting the test, assign an **Identifier**, and assign the **API ID**

; a unique identifier to connect, send and receive data (e.g. subscription messages, responses).

Note: To look up or manage API IDs, refer to the [CME Group Login User Help](#).

2. From the **Instrument** drop-down, select the *instrument*, then **Select**.

Interview Test Suite **Test Case** Post Certification Help

Steps of the test: Cleared Volume Statistic Message Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step 1.

Purpose
The purpose of this test is to verify the client system can receive and process statistics messages.

Instrument(s): Select

AutoCert +

☒ Are you sure you want to start the test ?

Cancel Ok

3. Select **START TEST**, then confirm the selection.
4. Over an existing Websocket connection, send a [Subscription Message](#) for *Statistics* (→ subscriptionMessageTypes=STAT) on the selected instrument (→ → productCode).
5. Receive and Process [Subscription Status](#) Message.
6. A [statistic](#) message containing cleared volume was sent. Validate the following value:
 - → → clearedVolume

Interview Test Suite **Test Case** Post Certification Help

Steps of the test: Cleared Volume Statistic Message Test

This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step 1.

Purpose
The purpose of this test is to verify the client system can receive and process statistics messages.

Selected Instrument(s): 0A2H3 C190,0A2H3 P380 - 607 Unlock

Category	Value
OAuth Token	https://authqa.ciq.chicago.cme.com/as/token.oauth2
GCP Websocket URL	wss://markets.api.qa.gcp.cme.com/autocert/marketdatastream
CME Reference Data API Product	https://refdata.api.uat.cmegroup.com/refdata/v3/products
CME Reference Data API Instrument	https://refdata.api.uat.cmegroup.com/refdata/v3/instruments

Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button again if you are currently running this test. START TEST

Test Not Running

Description	Flag	Status
1 Over an existing Websocket connection, send a Subscription Message for Statistics on the selected instrument		Not Tested
2 Receive and Process Subscription Status Message		Not Tested
3 A statistic message containing cleared volume was sent. Please validate the following values:		Not Tested

Key: not tested complete pending failed

(Test results will automatically refresh for up to 2 minutes).