CERTIFICATION TEST PROCEDURES

HKEX Orion Market Data Platform
Securities Market & Index Datafeed Products
Mainland Market Data Hub
(MMDH)

Version 1.4
20 Dec 2016

DOCUMENT HISTORY

Distribution Version

Version	Date of Issue	Comments
V1.0	27 May 2013	First Distribution Issue
V1.1	29 September 2013	● Add OMD-C MMDH Certification Test Rundown ● Updated Test Condition 4-Handling of Control Messages & Test Condition 6 – Data Recovery in Part 7
V1.2	29 October 2013	● Updated Test Condition 2.2 - Handling of Invalid Logon – Simulation of Account Locked
V1.3	28 November 2013	● Updated OMD-C MMDH Certification Test Rundown
V1.4	20 December 2016	● Updated Test Timetable ● Updated Test Condition 5 - Handling of Market Data Messages for Volatility Control Mechanism & Closing Auctuion Session

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1 Introduction

HKEX Mainland Market Data Hub ("MMDH") is developed to provide real-time market information in Mainland China. The Mainland clients, referred as "Clients", can subscribe to the services of MMDH to receive real-time digital market data from HKEX.

Clients intending to make direct connection to the MMDH Server to receive market data are required to complete a Certification Test ("the Cert Test") conducted in the HKEX Open Test Environment with positive results. The Cert Test aims to facilitate Clients' verification of the technical readiness of their feed handlers for receiving and processing MMDH messages.

This document specifies the testing procedures in the Cert Test for receiving data from the HKEX Orion Market Data Platform for Securities Market and Index Datafeed Products (OMD-C) via the MMDH.

HKEX reserves the rights to change and fine-tune the Cert Test requirements from time to time.

The intended readers of this document are the technical personnel of the MMDH Clients who will conduct the Cert Test. The authorized person of the MMDH Clients for the declaration of readiness should also read this document to understand the Cert Test requirements.

2 Pre-requisites

Clients are required to fulfill the pre-requisite requirements below before proceeding to the Cert Test:

- Development of feed handler in accordance with MMDH Interface Specification
- Successful testing of the feed handler with MMDH onboarding tools
- Connection to the End-to-End Testing Environment according to the Sample Client Configuration Sheet
- Submission of MMDH On-boarding Tools Workload Report (with Average of Mean Delay less than 1 second)

3 Testing Approach & Certification Policy

The MMDH Cert Test Rundown and Answer Sheets (in MS EXCEL format) will be provided before the commencement of the Cert Test. Clients have to follow the test flow in the rundown and fill in the Answer Sheets accordingly and return the completed Answer Sheets to HKEX. HKEX MMDH support personnel will check the Answer Sheets to verify if the client's feed handlers can interpret the MMDH messages correctly and handle the technical features of MMDH properly.

Clients must participate in all test sessions in the Cert Test unless specified otherwise and achieve results. If a client fails in any cases in the Cert Test, the client should re-test their feed handler in the End-to-End Testing Environment before requesting another test slot to re-conduct the failed cases in Cert Test.

4 Readiness of Indirect Connection Clients

Clients who are providing MMDH feeds in MMDH original format to the indirect connection MMDH Clients are required to ensure the readiness of such indirect connection Clients by providing the proper MMDH End-to-End Testing environment to them to complete all test scenarios as indicated in this document.

5 Test Arrangement and Procedure

In general, during the Cert Test a stream of MMDH unicast messages will be sent over the testing lines.

The Cert Test will be conducted according to a test time table which covers all trading sessions in a normal full trading day or a normal half trading day. There may be exceptions for some technical test conditions where a special half trading day timetable will be used. The actual test time tables with time set for each trading session status will be provided to the participants of the Cert Test in due course. Clients are required to conduct the Cert Test according to the test time table.

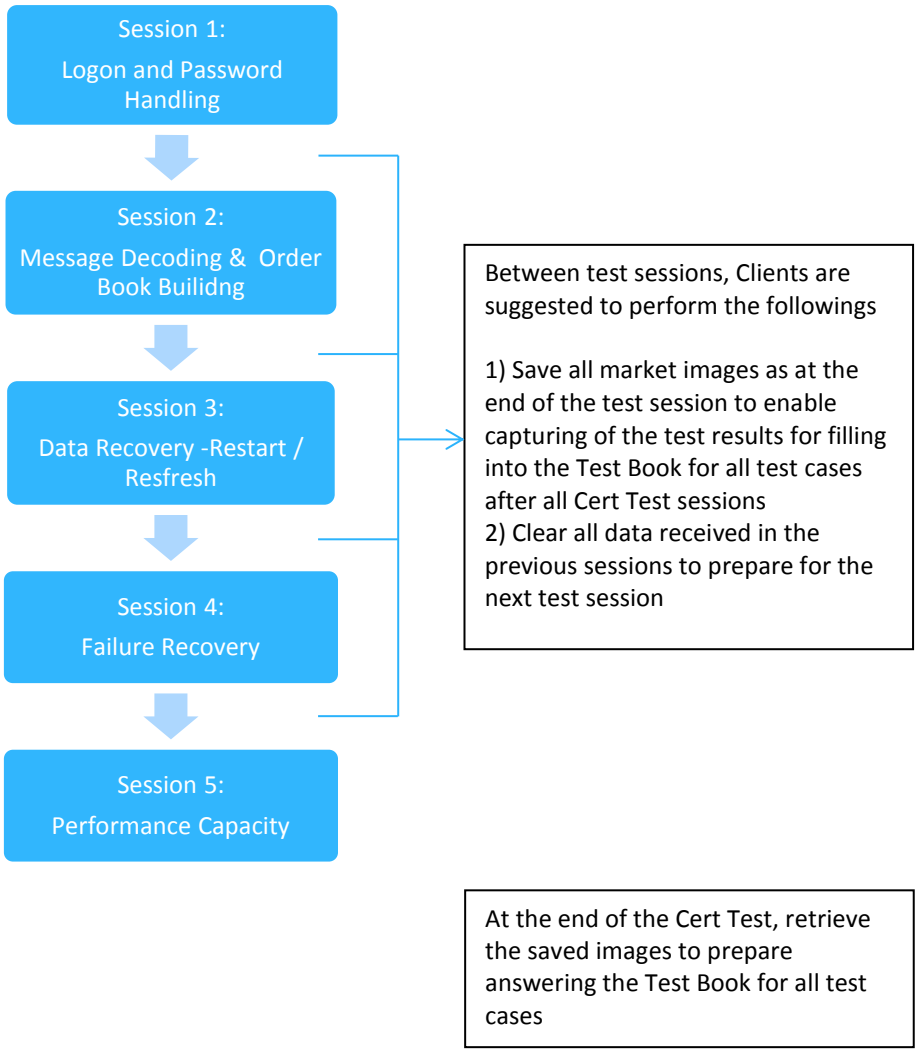
The Cert Test will normally be completed in a day. There will be 5 test sessions arranged in the Cert Test to cover the 5 test scopes as stated below. Clients will need to restart their applications, or clear the cached data between test sessions, as different data sets will be used for different sessions.

Before the commencement of the Cert Test, HKEX will distribute a Test Book to the Clients which covers details of messages and conditions to be tested in the 5 Cert Test sessions and the requested results for the Clients to capture and mark in the Test Book for returning to HKEX for verification. When the completed Test Book submitted by the Clients are verified passing the Cert Test by HKEX, Clients can declare to HKEX their successful completion of the Cert Test and proceed to the next on-boarding stage – MMDH Market Rehearsal.

Clients should configure and synchronize their system clock with GMT clock for the Cert Test.

The diagram below illustrates the flow in the Cert Test (test sessions 1 to 4 only)

Cert Test Flow Diagram



6 Scope of Test

The Cert Test covers test cases in the following 5 areas:

Test Area	Objectives	Test Conditions
1. Logon and Password Handling	Simulation of the various scenarios to enable Clients to verify the ability of their feed handler to logon MMDH and password handling	Section 7.1 1 – 3
2. Message Decoding & Order Book Building	All data messages specified in the MMDH Interface Specification will be transmitted to enable Clients to ensure their correct interpretation of each data field received from the MMDH datafeed.	Section 7.2 4 - 5
3. Data Recovery (Restart / Refresh)	Simulation of various data loss scenarios to enable Clients to verify the ability of their feed handler to recover lost data or latest market snapshot by Restart / Refresh.	Section 7.3 6.1 – 6.2
4. Failover to Secondary Server	Simulation of the primary Server failure and enable Clients to connect to secondary Server for continue processing	Section 7.2 8.1
5. Performance / Capacity	Transmission of high volume data to enable Clients to ensure the ability of their feed handler to meet the capacity requirements.	Section 7.2 7.1

7 Test Conditions

This section lists out the conditions to be covered in both functional and technical aspects. A Client should ensure that its system meets all of the test conditions before participating in the Cert Test.

7.1 Logon and Password Handling

Test Condition	Details	IS* Reference
1	***Handling of Normal Logon***	
1.1	*Simulation of Normal Logon:*	
	Client makes connection to MMDH Server	Control Messages (3.4.1)
	Expected result: *Client receives SendKey (1105) message upon connection*	
	Client calculates password and sends a Logon (1101) message	Control Messages (3.4.2 & 3.4.3)
	Expected result: *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 0 (Session Active). Client receives data from Server.*	
2	***Handling of Invalid Logon***	
2.1	*Simulation of Invalid Username or Password:*	
	Client makes connection to MMDH Server	Control Messages (3.4.1)
	Expected result: *Client receives SendKey (1105) message upon connection*	
	Client sends a Logon (1101) message with invalid username or password	Control Messages (3.4.2, 3.4.3 & 3.4.4)
	Expected result: *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 5 (Invalid username or password).*	
	Follow section 1.1 procedures to resume normal operation.	
2.2	*Simulation of Account Locked:*	
	Client makes connection to MMDH Server	Control Messages (3.4.1)
	Expected result: *Client receives SendKey (1105) message upon connection*	

Test Condition	Details	IS* Reference
	Client sends Logon (1101) message with invalid username or password repeatedly 5 more times and force Server to lock the Client account. *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 6 (Account locked). Inform HKEX MMDH support personnel to reactivate Client's account.* *Follow section 1.1 procedures to resume normal operation.*	Control Messages (3.4.2, 3.4.3 & 3.4.4)
2.3	*Simulation of Session password due to expire:* *HKEX MMDH support personnel will set the Client's password expired on next day before conducting the test case* *Client makes connection to MMDH Server* *<u>Expected result:</u>* *Client receives SendKey (1105) message upon connection* *Client sends a Logon (1101) message* *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 2 (Session password due to expire).* *Client receives data from Server.*	Control Messages (3.4.1) Control Messages (3.4.2 & 3.4.3)
2.4	*Simulation of Password expired :* *HKEX MMDH support personnel will set the Client's password expired on current day before conducting the test case* *Client makes connection to MMDH Server* *<u>Expected result:</u>* *Client receives SendKey (1105) message upon connection* *Client sends a Logon (1101) message* *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 8 (Password expired).* *Follows section 3.2 procedures to change password and resume operation*	Control Messages (3.4.1) Control Messages (3.4.2 & 3.4.3)
2.5	*Simulation of Duplicated Logon :* *Client makes connection to MMDH Server* *<u>Expected result:</u>* *Client receives SendKey (1105) message upon connection*	Control Messages (3.4.1)

Test Condition	Details	IS* Reference
	Client makes second connection and sends a Logon (1101) message *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 0 (Session Active). Client receives data from Server.* *Client sends a Logon (1101) message using the same Username* *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 104 (Already Connected) for the second connection and receives Logout (1103) message for the first connection from Server with SessionStatus Value of 102 (Logon from second connection). Both the first and second connections will be disconnected.* *Follow section 1.1 procedures to resume normal operation.*	Control Messages (3.4.2 & 3.4.3) Control Messages (3.4.2 & 3.4.3)
3	***<u>Password Handling</u>***	
3.1	*Simulation of Change Password does not comply with password policy:* *Client makes connection to MMDH Server* *<u>Expected result:</u>* *Client receives SendKey (1105) message upon connection* *Client sends a Logon (1101) message with EncryptedNewPasswordLen and EncryptedNewPassword set.* *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 3 (New session password does not comply with policy).*	Control Messages (3.4.1) Control Messages (3.4.2 & 3.4.3) Password Policy (2.2.1)
3.2	*Simulation of Change Password:* *Client makes connection to MMDH Server* *<u>Expected result:</u>* *Client receive SendKey (1105) message upon connection* *Client sends a Logon (1101) message with EncryptedNewPasswordLen and EncryptedNewPassword set.* *<u>Expected result:</u>* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 1 (Session password changed).*	Control Messages (3.4.1) Control Messages (3.4.2 & 3.4.3)

Test Condition	Details	IS* Reference
3.3	*Simulation of Change Password within 24 hours:* *Follow case 3.2, Client make connection to MMDH Server* *Expected result:* *Client receives SendKey (1105) message upon connection* *Client sends a Logon (1101) message with EncryptedNewPasswordLen and EncryptedNewPassword set.* *Expected result:* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 100 (Password not changed (within 24 hours)).* *Client receives data from Server.*	Control Messages (3.4.1) Control Messages (3.4.2 & 3.4.3)

7.2 Functional Tests

Test Condition	Details	IS* Reference
4	***Handling of Control Messages***	
4.1	Client keep sending *Heartbeat* message to MMDH Server in every few seconds as stated in the Logon Response (1102) HeartBtInterval *Without Data Message transmitting from MMDH to Client, Heartbeat* messages transmitted from MMDH in every few seconds as stated in the Logon Response (1102) HeartBtInterval Client receives *Heartbeat* message to MMDH Server *Expected result:* *Client keep connected to MMDH without disconnection*	Control Messages (3.3.1) Control Messages (3.3.1)
5	***Handling of Market Data Messages***	
5.1	*Market Definition* messages covering all markets	Reference Data (3.6.1)
5.2	*Security Definition* messages covering (i) all available InstrumentType (ii) 0, 1 & 20 NoUnderlyingSecurities (iii) securities in all markets (iv) securities with non-blank FreeText	Reference Data (3.6.2)
5.3	*Liquidity Provider* messages with at least one with NoLiquidityProviders set to each of the value 1 & 50	Reference Data (3.6.3)
5.4	*Currency Rate* messages covering all currencies currently available in HKEX Securities Market	Reference Data (3.6.4)

Test Condition	Details	IS* Reference
5.5	*Trading Session Status* messages covering the full range of values in TradingSessionSubID, TradingSesStatus & TradingSesControlFlag	Status Data (3.7.1)
5.6	*Security Status* messages will be sent with SecurityTradingStatus set to 2 (Trading Halt) & 3 (Resume) at Start of Day and Intraday	Status Data (3.7.2)
5.7	A series of book messages covering all possible book operations for Bid/Offer orders during various trading sessions in a normal trading day *Aggregate Order Book Update* messages covering all possible aggregate book management operations *Broker Queue* messages covering empty broker queue, broker queues with more than 1 spread broker information, broker queues with exactly 40 entries and broker queues with more than 40 entries in the book Add / Delete Odd Lot Order messages covering odd lot order book management operations.	Order Book Data (3.8.1-3.8.4)
5.8	Order Imbalance will be sent to provide order imbalance information at the Indicative Equilibrium Price (IEP) during the Closing Auction Session (CAS).	Order Book Data (3.8.5)
5.9	*Trade Ticker* messages covering different TrdType and at least one of the messages with TrdCancelFlag set on and non-zero AggregateQuantity to set example for partial ticker cancel	Trade & Price Data (3.9.1)
5.10	*Closing Price* messages covering majority non-zero closing price and a few zero closing price (for new securities without order/trade activities)	Trade & Price Data (3.9.2)
5.11	*Nominal Price* messages covering majority non-zero nominal price and a few zero nominal prices (for new securities).	Trade & Price Data (3.9.3)
5.12	*Indicative Equilibrium Price* messages covering that during Auction Session (majority non-zero and some zero IEP) and after Auction Matching (all zero IEP)	Trade & Price Data (3.9.4)
5.13	*Reference Price messages will be sent to provide the reference price, lower and upper price limits for order input during an applicable auction session. For CAS (Closing Auction Session), a Reference Price message is generated at the start of the session for all the securities tradable on the day, regardless of whether it is a CAS applicable security or not. No Reference Price messages are sent for (POS) Pre-Opening Session.*	Trade & Price Data (3.9.5)
5.14	*VCM Trigger messages will be sent intraday for VCM triggered if a stock is ± 10% away from the last traded price 5-min ago*	Trade & Price Data (3.9.6)
5.15	*Statistics* messages covering both shortsell and non-shortsell securities and securities with some of the statistics data unavailable, e.g. HighPrice, LowPrice, Turnover, SharesTraded, LastPrice if no order/trades activities for the securities	Value Added Data (3.10.1)

Test Condition	Details	IS* Reference
5.16	*Market Turnover* message covering all markets and all available currencies available in HKEX Securities Market	Value Added Data (3.10.2)
5.17	*Yield* messages covering non-zero Yield and zero Yield (i.e. yield is not available) .	Value Added Data (3.10.3)
5.18	*News* messages covering multiple segmented news and news with zero and maximum values for NoSecurityCodes, NoMarketCodes and NoNewsLines	News (3.11.1)
5.19	*Index Definition* messages covering all indexes offered in MMDH Index datafeed product	Index Data (3.12.1)
5.20	*Index Data* messages covering all indexes offered in MMDH Index with some of the messages with Null and/or populated values for some of the fields *Expected Result for Test Conditions 5.1 – 5.20:* *Clients are able to extract the market data messages encapsulated in the TCP packets and to decode the messages according to the MMDH Interface Specifications for display and/or further processing.* *Clients are able to build the correct aggregate order book, full odd lot order book and conflated broker queue comprising spread and broker information.*	Index Data (3.12.2)

7.3 Technical Tests

Test Condition	Details	IS* Reference
6	***Data Recovery*** Client is required to disconnect from and then reconnect to MMDH Server to trigger the data recovery for Test Condition 6.1 –Data Recovery by Refresh and then Test Condition 6.2 Data Recovery by Restart.	
6.1	*Simulation of data recovery exceeds Server cache (Refresh):*	
	Client makes connection to MMDH host	Control Messages (3.4.1)
	Expected result: *Client receives SendKey (1105) message upon connection*	
	Client calculates password and sends a Logon (1101) message	Control Messages (3.4.2 & 3.4.3)
	Expected result: *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 0 (Session Active). Client receives data from Server.*	
	Client start receiving market data from Server	
	Client disconnect from Server by closing the TCP connection	
	Client sends a Logon (1101) message after 5 minutes to reconnect to Server with the IntenalSeqNum filled by the "last InternalSeqNum" receive just right before disconnection.	Recovery (4.1 & 5.2)
	Expected result: *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 101 (Session Active – refresh required).*	
	Client sends Refresh Request (1201) messages to Server.	Recovery (4.2 & 5.3)
	Expected result: *Client receives RefreshResponse (1202) message from Server and follow by lastest market snapshot data messages. Client receives Refresh Complete (203) message upon the end of latest market snapshot and normal market data message continues.*	

Test Condition	Details	IS* Reference
6.2	*Simulation of data recovery within Server cache (Restart):* *Client disconnect from Server by closing the TCP connection* *Client sends a Logon (1101) message within 1 minute to reconnect to Server with the IntenalSeqNum filled by the "last InternalSeqNum" receive just right before disconnection.* *Expected result:* *Client receives LogonResponse (1102) message from Server with SessionStatus Value of 0 (Session Active). Client receives data message with "last InternalSeqNum"+1 from Server and keep connected to the server until the end of the session.*	Control Messages (3.4.2 & 3.4.3) Recovery (4.1 & 5.2)
7 7.1	***Capacity*** Market Data will be disseminated at high rate on all OMD-C MMDH datafeed products. Clients are expected to receive market data volume at a rate that will drive to the peak bandwidth requirements for each datafeed product. *Expected Result:* Client is able to handle full capacity for MMDH with no reconnection.	N/A Performance Testing

Test Condition	Details	IS* Reference
8	***Failure Recovery***	
8.1	Simulation of MMDH Primary Node Failure (for Non-Standard Configuration) *Expected Result:* *Clients follow steps in 6.1 (but within 1 minute) and able to connect to Primary Server and continue to receive market data* *Clients are able to extract the market data messages encapsulated in the TCP packets and to decode the messages according to the MMDH Interface Specifications for display and/or further processing.* *Clients are able to build the correct aggregate order book, full odd lot order book and conflated broker queue comprising spread and broker information.*	Error Recovery (2.2.5)
8.2	Simulation of MMDH Primary Node Failure (for Standard Configuration) *Expected Result:* *Clients follow steps in 6.1 (but within 1 minute) and able to connect to Secondary Server and continue to receive market data.* *Clients are able to extract the market data messages encapsulated in the TCP packets and to decode the messages according to the MMDH Interface Specifications for display and/or further processing.* *Clients are able to build the correct aggregate order book, full odd lot order book and conflated broker queue comprising spread and broker information.*	Error Recovery (2.2.5)

* IS refers to MMDH Interface Specifications for Securities Market & Index Datafeed Products – Binary Protocol

8 OMD-C MMDH Certification Test Rundown

The following test sessions will be available for clients to perform their testing in the OMD-C MMDH certification environment provided by HKEX during the test period as notified by HKEX from time to time:

Please note that the start/end times for each session are indicative only. Clients may observe slight deviation in the actual tests. Clients should check the MMDH Certification Test Answer Sheet based on the last image of the session (i.e. after Trading Session Status becomes DC, i.e. Day Close)

<table>
<tr><th>Test Session</th><th>Description</th><th>Timetable</th><th>Remark</th></tr>
<tr><td>Certification Test</td><td>Functional part
(Session 1 - 2</td><td>
Session 1 (logon & password handling)
<table>
<tr><th>Start Time</th><th>End Time</th><th>Status*</th><th>Market</th><th>Test Condition</th></tr>
<tr><td>N/A</td><td>08:59:59</td><td>NO</td><td>All</td><td></td></tr>
<tr><td>09:00:00</td><td>12:29:59</td><td>CT</td><td>All</td><td>1.1 to 3</td></tr>
<tr><td>12:30:00</td><td>13:29:59</td><td>CT</td><td>All</td><td>4.1</td></tr>
<tr><td>13:30:00</td><td>13:30:59</td><td>EI</td><td>All</td><td></td></tr>
<tr><td>13:31:00</td><td>N/A</td><td>DC</td><td>All</td><td></td></tr>
</table>
Session 2 (message decoding & order book building)
<table>
<tr><th>Start Time</th><th>End Time</th><th>Status*</th><th>Market</th><th>Test condition</th></tr>
<tr><td>09:00:00</td><td>09:14:59</td><td>POS OI</td><td>All</td><td rowspan="16">5.1 to 5.17</td></tr>
<tr><td>09:15:00</td><td>09:19:59</td><td>POS NC</td><td>All</td></tr>
<tr><td>09:20:00</td><td>09:27:59</td><td>POS MA</td><td>All</td></tr>
<tr><td>09:28:00</td><td>09:29:59</td><td>BL</td><td>All</td></tr>
<tr><td>09:30:30</td><td>11:59:59</td><td>CT</td><td>All</td></tr>
<tr><td>12:00:00</td><td>12:04:59</td><td>EI</td><td>All but ETS</td></tr>
<tr><td>12:05:00</td><td>12:29:59</td><td>CL</td><td>All but ETS</td></tr>
<tr><td>12:30:00</td><td>12:59:59</td><td>OC</td><td>All but ETS</td></tr>
<tr><td>13:00:00</td><td>15:59:59</td><td>CT</td><td>All</td></tr>
<tr><td>16:00:00</td><td>16:00:59</td><td>CAS RP</td><td>All</td></tr>
<tr><td>16:01:00</td><td>16:05:59</td><td>CAS OI</td><td>All</td></tr>
<tr><td>16:06:00</td><td>16:07:59</td><td>CAS NW</td><td>All</td></tr>
<tr><td>16:08:00</td><td>16:10:00</td><td>CAS RC</td><td>All</td></tr>
<tr><td>16:08:00</td><td>16:10:00</td><td>CAS MA</td><td>All</td></tr>
<tr><td>16:08:00</td><td>16:10:00</td><td>DC</td><td>All</td></tr>
</table>
</td><td>Monday & Thursday

Tuesday & Friday</td></tr>
<tr><td></td><td>Exception Handling part
(Session 3-4)</td><td>
Session 3 (data recovery – restart/refresh)
<table>
<tr><th>Start Time</th><th>End Time</th><th>Status*</th><th>Market</th><th>Test condition</th></tr>
<tr><td>N/A</td><td>14:29:59</td><td>NO</td><td>All</td><td></td></tr>
<tr><td>14:30:00</td><td>14:59:59</td><td>CT</td><td>All</td><td>6.1 & 6.2</td></tr>
<tr><td>15:00:00</td><td>15:00:59</td><td>EI</td><td>All</td><td></td></tr>
<tr><td>15:01:00</td><td>N/A</td><td>DC</td><td>All</td><td></td></tr>
</table>
Session 4 (failover to secondary server)
<table>
<tr><th>Start Time</th><th>End Time</th><th>Status*</th><th>Market</th><th>Test condition</th></tr>
<tr><td>N/A</td><td>15:59:59</td><td>NO</td><td>All</td><td></td></tr>
<tr><td>16:00:00</td><td>16:19:59</td><td>CT</td><td>All</td><td>8.1 or 8.2</td></tr>
<tr><td>16:20:00</td><td>16:20:59</td><td>EI</td><td>All</td><td></td></tr>
<tr><td>16:21:00</td><td>N/A</td><td>DC</td><td>All</td><td></td></tr>
</table>
</td><td>Monday & Thursday

Monday & Thursday</td></tr>
</table>

	Performance & Capacity (Session 5)	**Session 5 (performance and capacity)** **Start Time** | **End Time** | **Status *** | **Market** | **Test condition** 17:20:00 | 17:24:59 | CT | All | 7.1 17:25:00 | 17:30:00 | System Shutdown | All |	Monday & Thursday

* Trading Status in AMS, please see below for description and mapping with OMD

Status	AMS Description	OMD TradingSesStatus	OMD TradingSessionSubID
NO	NOT YET OPEN	0 (Unknown)	100
POS OI	ORDER INPUT	2 (Open)	1
POS NC	PRE-ORDER MATCHING	2 (Open)	101
POS MA	ORDER MATCHING	2 (Open)	2
BL	BLOCKING	1 (Halt)	7
CT	CONTINUOUS TRADING	2 (Open)	3
EI	EXCHANGE INTERVENTION	1 (Halt)	102
CL	CLOSE	3 (Closed)	103
OC	ORDER CANCEL	2 (Open)	104
CAS RP	REFERENCE PRICE FIXING	5 (Pre-Close)	105
CAS OI	ORDER INPUT	5 (Pre-Close)	5
CAS NW	NO CANCELLATION	5 (Pre-Close)	106
CAS RC	RANDOM CLOSE	5 (Pre-Close)	107
CAS MA	ORDER MATCHING	5 (Pre-Close)	4
DC	DAY CLOSE	100 (Day Closed)	0

Certification Test Schedule

MON	TUE	WED	THU	FRI
Certification Test Session 1, 3, 4 & 5	Certification Test Session 2	Production Data Replay	Certification Test Session 1, 3, 4 & 5	Certification Test Session 2