



Turquoise

London Stock Exchange Group

TQD601 · TECHNICAL SPECIFICATION

Turquoise Derivatives Guide to Certification (SAIL)

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1 Introduction

1.1 Purpose

The purpose of this publication is to provide customers with the test cases and details necessary for successfully completing certification for the SOLA trading system.

This SAL Certification Test Cases Guide provides test cases for participants and independent software vendors for the certification of their application in order to interface with SOLA using the native SOLA Access Information Language (SAIL) protocol.

Section 2 'Certification Instruments' may be filled before the certification date and forwarded to the participant.

Unless specified in the test case, the following market states apply:

- Group of instrument used is in 'Continuous Trading' mode;
- Instruments are in 'Authorized' mode;
- Instruments price limits are 00000.0001- 99999.5000.

1.2 Readership

The target audience for these publications is anyone working at either the business or Information Technology (IT) level of an organisation interested in certification for the SOLA trading platform.

2 Overview

2.1 Certification Instruments

Instruments involved in the various certification test cases are identified as INST1 to INST22. These symbols may refer to any instrument available in the Turquoise test environment. According to the client requirements, the list of instruments to be used may either be formally defined prior to the certification or “on the fly” as the certification goes.

Symbols GRP1 and GRP2 may refer to any instrument group available in the Turquoise test environment. Symbol GRP1 may refer to any strategy instrument group. As for instruments, the list of groups to be used may either be formally defined prior to the certification or “on the fly” as the certification goes, in accordance with the client’s requirements

3 Terminology

Term	Definition
Client	Refers to a computer system able to interact with the LSE electronic trading platform and to support the specific range of functionalities required by the firm's trading activities.
Instrument	A specific tradable option or future or strategy. For options, there are two instruments for each underlying, expiry month and strike price combination: one put and one call.
Instrument group	Refers to all instruments with the same underlying.

4 Certification Test Cases

4.1 Technical Test Cases

Type: Technical		ID #: TEC-01		Requirement: Mandatory	
Description: Establishing the first SAIL connection of a trading session.					
Comments: First Time User Connection (Message Type TC).					
Prerequisites					
None					
Step	Input Specifications	Expected Results			
		Trading Engine Responses (SAIL)		Market Information (HSVF)	
1	<u>Client:</u> Connects to SOLA. <i>Sends a TC message.</i> <i>[Exchange Message ID: 0]</i>	Connection established. <i>Sends a TK message</i> <i>[User sequence ID:0]</i>			
2	<u>SOLA:</u> Sends a Heartbeat message question. <i>Sends a TH message</i>				
3	<u>Client:</u> Sends a Heartbeat response within the specified timeframe [Inactivity Interval] value sent in the connection message (TC). <i>Sends a TI message</i>				

Type: Technical		ID #: TEC-02	Requirement: Mandatory	
Description: Terminating a SAIL session				
Comments: User's Disconnection Request (Message Type TD)				
Prerequisites				
Execution of test case TEC-01				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	Client: Disconnects from SOLA. <i>Sends a TD message</i>	Connection is terminated. <i>Sends a TL message</i>		

Type: Technical		ID #: TEC-03	Requirement: Mandatory	
Description: User Reconnection during the session - Retransmission from next message.				
Comments: User Reconnection (Message Type TC)				
Prerequisites				
Execution of test cases TEC-01 and TEC-02				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	Client: Reconnects to SOLA. <i>Sends a TC message with a blank Exchange Message ID:</i> <i>[Exchange message ID: “ ”]</i>	Sends an arbitrary number of messages and the connection is re-established. <i>Sends a TK message:</i> <i>[User sequence ID != next expected User sequence ID]</i>		

Type: Technical		ID #: TEC-04	Requirement: Optional	
Description: Disconnection Instruction Management - Disconnection by Exchange; outstanding quotes are cancelled.				
Comments:				
Prerequisites				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Connects to SOLA. <i>Sends a TC message: [Exchange Message ID: 0] [Inactivity Interval: 1]</i>	Connection established. <i>Sends a TK message</i>		
2	<u>Client:</u> Active Y(ON)			
3	<u>Client:</u> Specifies disconnection instructions. <i>Sends a TA message: [Disconnection Instruction: Q]</i>	Disconnection Instruction is accepted. <i>Sends a TM message</i>		
4	<u>Client:</u> Sends a few quotes. <i>Sends several Q<i> messages</i>	Quotes are accepted. <i>Sends several LA messages</i>	Quote or Market Depth sent. <i>Several /FFF or H/HF messages are sent. For strategy: Several FS or HS message are sent</i>	
5	<u>Client:</u> Stops flow of client messages for longer than the “Inactivity Interval” period defined in the TC message of this connection.	SOLA disconnects client and cancels all outstanding quotes.	Quote or Market Depth sent. <i>Several F/FF or H/HF messages are sent. For strategy: Several FS or HS message are sent</i>	
6	<u>Client:</u> Reconnects and receives missed messages. <i>Sends a TC message: [Exchange message ID: “] </i>	Connection accepted. <i>Sends a TK message</i> Quotes cancellation notice is sent. <i>Sends an KG message</i>		

Type: Technical		ID #: TEC-05		Requirement: Optional	
Description: Disconnection Instruction Management - Disconnection by Client; outstanding quotes are cancelled.					
Comments:					
Prerequisites					
Execution of test case TEC-01					
Step	Input Specifications	Expected Results			
		Trading Engine Responses (SAIL)		Market Information (HSVF)	
1	<u>Client:</u> Specifies disconnection instructions. <i>Sends a TA message:</i> <i>[Disconnection Instruction: Q]</i>	Disconnection Instruction is accepted. <i>Sends a TM message</i>			
2	<u>Client:</u> Active Y(ON)				
3	<u>Client:</u> Sends a few quotes. <i>Sends several Q<i> messages</i>	Quotes are accepted. <i>Sends several LA messages</i>		Quote or Market Depth sent. <i>Several F/FF or H/HF messages are sent.</i> <i>For strategy: Several FS or HS message are sent</i>	
4	<u>Client:</u> Disconnects. <i>Sends a TD message</i>	Disconnection is accepted. <i>Sends a TL message</i> All outstanding quotes are cancelled.		Quote or Market Depth sent. <i>Several /FFF or H/HF messages are sent.</i> <i>For strategy: Several FS or HS message are sent</i>	
5	<u>Client:</u> Reconnects and receives missed messages. <i>Sends a TC message:</i> <i>[Exchange message ID: “</i>	Connection accepted. <i>Sends a TK message</i> Quotes cancellation notice is sent. <i>Sends an KG message</i>			

Type: Technical		ID #: TEC-06	Requirement: Optional	
Description: Disconnection Instruction Management - Disconnection by Client; outstanding quotes are not cancelled				
Comments: Instruction to cancel quotes is removed				
Prerequisites				
Execution of test case TEC-05				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Specifies disconnection instructions. <i>Sends a TA message: [Disconnection Instruction: Q]</i>	Disconnection Instruction is accepted. <i>Sends a TM message</i>		
2	<u>Client:</u> Active N(OFF)			
3	<u>Client:</u> Sends a few quotes. <i>Sends several Q<i> messages</i>	Quotes are accepted. <i>Sends several LA messages</i>	Quote or Market Depth sent. <i>Several F/FF or H/HF messages are sent. For strategy: Several FS or HS message are sent</i>	
4	<u>Client:</u> Disconnects. <i>Sends a TD message</i>	Disconnection is accepted; outstanding quotes are not cancelled. <i>Sends a TL message</i>		
5	<u>Client:</u> Reconnects. <i>Sends a TC message</i>	Connection is accepted. <i>Sends a TM message</i>		

Type: Technical		ID #: TEC-07	Requirement: Mandatory	
Description: Re-synchronization from out of sequence situation.				
Comments:				
Prerequisites				
Client must be disconnected.				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Connects to SOLA Sends a TC message: [Exchange Message ID: 0]	Connection established. Sends a TK message		
2	<u>Client:</u> Sends an order or a quote. [User Sequence ID: z]	Message is out of sequence. Client is disconnected. Client must reconnect. Sends a TO message: [Received User Sequence ID: z] [Expected User Message ID: x]	N/A	
3	<u>Client:</u> Reconnects. Sends a TC message	Re-connection and Disconnection Instructions are accepted. Sends a TK		
4	<u>Client:</u> Sends an order or a quote. [User Sequence ID: x]	Message is in sequence. Order or quote is accepted.	N/A	

Type: Technical		ID #: TEC-08		Requirement: Mandatory	
Description: End of Transmission					
Comments:					
Prerequisites					
Execution of test case TEC-01					
Step	Input Specifications	Expected Results			
		Trading Engine Responses (SAIL)		Market Information (HSVF)	
1	<u>Client:</u> Sends an End of Transmission message at the end of the trading day. Restart SAIL Front End gateway.	<i>Sends a TT message</i>			

4.2 Unsolicited Services Test Cases

Type: Unsolicited Services		ID #: UNS-01	Requirement: Optional	
Description: Group State Change Notification				
Comments:				
Prerequisites				
Choose a Group and change the status of the group.				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Is connected and has requested to receive NG message type.			
2	<u>BIT:</u> Change Group state from Continuous Trading to Pre-Opening and then from Opening to Continuous Trading.	Sends an NG message	Group Status Updated. <i>A GR message is sent</i>	

Type: Unsolicited Services		ID #: UNS-02	Requirement: Optional	
Description: Instrument State Change Notification				
Comments:				
Prerequisites				
Choose an instrument and change the status of the instrument.				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Is connected and has requested to receive NI message type.			
2	: Change the status of an instrument.	Sends an NI message	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	

Type: Unsolicited Services		ID #: UNS-03	Requirement: Optional	
Description: Bulletin message (Market Supervision message) sent from				
Comments:				
Prerequisites				
MOC enters a bulletin to be disseminated to market participants				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Is connected on HSVF			
2	: sends a bulletin messages to the clients		Bulletin message. <i>An L message is sent</i>	

4.3 Order Creation Test Cases

Type: Order Creation	ID #: ORD-01	Requirement: Optional	
Description: Entering a Market Top order that gets partially filled; the remaining quantity is booked at a limit price.			
Comments:			
Prerequisites			
1. The book for instrument INST1 must be set to [Buy 12@2.00 - Sell 10@2.50]; no other orders must be in the book. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Enters a Sell Market order for 20 contracts for instrument INST1. Sends an OE message: <i>[Price type: M]</i>	Order is booked. <i>Sends a KE message</i> <i>[Status:]</i> Order is partially filled and the remaining quantity is booked 8@2.00. <i>Sends 1 NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i> Trade sent. <i>A C/CF message is sent</i> Strategy: <i>A CS message is sent</i> <i>A C/CF message per leg is sent</i>

Type: Order Creation	ID #: ORD-02	Requirement: Mandatory	
Description: Entering a limit order that gets partially filled; the remaining quantity is booked. The order opens the position.			
Comments:			
Prerequisites			
1. The book for instrument INST1 must be set to [Buy 12@0.10 - Sell 10@0.20]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Buy order 15@0.20, Open Position, for instrument INST1. Sends an OE message: [Open/Close: O] [Price type: L]	Order is booked. Sends a KE message [Status:] The order is traded. Sends 1 NT message For Strategy Sends 1 NT message and 1 NL message per leg	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent Trade sent. A C/CF message is sent Strategy: A CS message is sent A C/CF message per leg is sent

Type: Order Creation	ID #: ORD-03	Requirement: Mandatory	
Description: Entering a limit order that gets totally filled. The order closes the position. The order is good until cancelled by the trader.			
Comments:			
Prerequisites			
1. The book for instrument INST1 must be set to [Buy 12@200.00 - Sell 10@201.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Sell order 12@200.00, Close Position, for instrument INST1. Sends an OE message: [Price type: L] [Duration Type: F] [Open/Close: C]	Order is booked. Sends a KE message [Status: X] The order is traded. Sends 1 NT message For Strategy Sends 1 NT message and 1 NL message per leg	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent Trade sent. A C/CF message is sent Strategy: A CS message is sent A C/CF message per leg is sent

Type: Order Creation	ID #: ORD-04	Requirement: Mandatory	
Description: Entering an opening order (price Type: "O") during the pre-opening phase. The order will participate to the auction and totally filled in.			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> The book for instrument INST1 must be set to [Buy 12@200.00 - Sell 10@201.50]. Group for instrument INST1 must be pre-opening phase 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p><u>Client:</u> Enters a Sell order 12@ opening price, Close Position, for instrument INST1.</p> <p><i>Sends an OE message:</i> [Price type: O] [Duration Type: F] [Open/Close: C]</p> <p><i>: change the status of the instrument from Pre-opening to Opening</i></p>	<p>Order is booked.</p> <p><i>Sends a KE message</i> [Status:]</p> <p>The order is traded at opening price., during the auction phase.</p> <p><i>Sends 1 NT message</i></p>	<p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p> <p>Trade sent.</p> <p><i>A C/CF message is sent</i></p>

Type: Order Creation	ID #: ORD-05	Requirement: Mandatory	
Description: Entering a limit order (price Type: "L") during the pre-opening phase. The order will partially participate to the auction.			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> The book for instrument INST1 must be set to [Buy 12@200.00 - Sell 10@201.50]. Group for instrument INST1 must be pre-opening phase 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p><u>Client:</u> Enters a Sell order 15@ opening price, <i>Sends an OE message:</i> [Price type: L]</p> <p><i>: change the status of the instrument from Pre-opening to Opening</i></p>	<p>Order is booked.</p> <p><i>Sends a KE message</i> [Status:]</p> <p>The order is traded at opening price. Remaining quantity will pass into continuous trading</p> <p><i>Sends 1 NT message</i></p>	<p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p> <p>Trade sent.</p> <p><i>A C/CF message is sent</i></p>

Type: Order Creation	ID #: ORD-06	Requirement: Optional	
Description: Entering a limit order that gets booked. The order is good until a specific date.			
Comments: This test is to validate that the client application is using the right date format, namely 'YYYYMMDD'. Represents the order's last active date.			
Prerequisites			
<ol style="list-style-type: none"> 1. The book for instrument INST1 must be set to [Buy 12@200.00 -Sell 10@201.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode. 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p><u>Client:</u> Enters a Sell order 12@201.40, Good until Date with a date before the instrument expiry date and with a day number less than 12 (ex: Dec 10th, June 5th, March 2nd), for instrument INST1</p> <p><i>Sends an OE message:</i> <i>[Price type: L]</i> <i>[Duration Type: D]</i> <i>[GTD Data: YYYYMMDD (Represents the order's last active day)]</i></p>	<p>Order is booked.</p> <p><i>Sends a KE message</i> <i>[Status:]</i></p>	<p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p>

Type: Order Creation	ID #: ORD-07	Requirement: Optional	
Description: Entering a 'Fill and Kill' order that gets killed.			
Comments: Fill-and-kill orders cannot be booked			
Prerequisites			
<ol style="list-style-type: none"> 1. The market for instrument INST1 must be set to [12@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode. 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p><u>Client:</u> Enters a Sell 'Fill and Kill' order 10@2.50 for instrument INST1.</p> <p><i>Sends an OE message:</i> <i>[Duration Type: E]</i></p>	<p>Order cannot be filled and is killed.</p> <p><i>Sends a KE message</i> <i>[Status: E]</i></p>	

Type: Order Creation	ID #: ORD-08	Requirement: Optional	
Description: Entering a 'Fill and Kill' order that gets partially filled.			
Comments:			
Prerequisites			
1. The market for instrument INST1 must be set to [12@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Enters a Sell 'Fill and Kill' order 15@2.00 for instrument INST1. <i>Sends an OE message: [Duration Type: E]</i>	Order is partially filled, the remaining is killed. <i>Sends a KE message [Status: X] Sends 1 NT message and NZ message</i> <i>For Strategy Sends 1 NT message and 1 NL message per leg</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent For strategy: FS or HS message is sent</i> Trade sent. <i>A C/CF message is sent</i> Strategy: <i>A CS message is sent A C/CF message per leg is sent</i>

Type: Order Creation	ID #: ORD-09	Requirement: Mandatory	
Description: Entering a limit order with a Clearing Instruction.			
Comments:			
Prerequisites			
1. The market for instrument INST1 must be set to [10@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Enters a Sell Limit Order 40@2.25 with a Clearing Instruction, for instrument INST1. <i>Sends an OE message: [Clearing Instruction: anything]</i>	Order is booked. <i>Sends a KE message [Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>Strategy: An HS message is sent</i>

Type: Order Creation	ID #: ORD-10	Requirement: Optional	
Description: Entering a limit order with Owner Data			
Comments:			
Prerequisites			
1. The market for instrument INST1 must be set to [10@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Buy Limit Order 40@2.25 with Owner Data, for instrument INST1. <i>Sends an OE message:</i> <i>[Owner Data: anything]</i>	Order is booked. <i>Sends a KE message</i> <i>[Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>Strategy: An HS message is sent</i>

Type: Order Creation	ID #: ORD-11	Requirement: Optional	
Description: Entering a Book any price order that gets filled at 2 different prices.			
Comments:			
Prerequisites			
1. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	: Enters 2 orders: Buy 10@2.50, 15@2.60.		Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>Strategy: An HS message is sent</i>
2	<u>Client:</u> Enters a Sell Market any price Order for 20 contracts for instrument INST1. <i>Sends an OE message:</i> <i>[Price type: W]</i>	Order is filled at 2 different prices 15@2.60 and 5@2.50 <i>Sends 2 NT messages</i> <i>Strategy:</i> <i>2 NT messages each followed by 1 NL message per leg</i>	Trade sent. <i>2 C/CF message are sent</i> <i>Strategy: 2 CS are sent</i> <i>Per Leg: C or CF message is sent</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>Strategy: An HS is sent</i>

Type: Order Creation	ID #: ORD-12	Requirement: Optional	
Description: Entering a Minimum Fill volume order that cannot be filled.			
Comments:			
Prerequisites			
1. The market for instrument INST1 must be set to [10@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Buy Limit Order 10@2.40 for instrument INST1 with a minimum fill volume of 5. <i>Sends an OE message:</i> <i>[Quantity Term: M]</i> <i>[Additional Quantity: 5]</i>	Order is eliminated because it cannot be filled for the specified volume. <i>Sends a KE message:</i> <i>[Status: E]</i>	

Type: Order Creation	ID #: ORD-13	Requirement: Optional	
Description: Entering a Minimum Fill volume order that is partially filled.			
Comments:			
Prerequisites			
1. The market for instrument INST1 must be set to [10@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Sell Limit Order 20@2.00 for instrument INST1 with a minimum fill volume of 10. <i>Sends an OE message:</i> <i>[QuantityTerm: M]</i> <i>[Additional Quantity: 10]</i>	Order is partially traded and the remaining quantity is booked 10@2.00. <i>Sends a KE message:</i> <i>[Status:]</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i>	Trade sent. <i>A C/CF message is sent</i> <i>Strategy:</i> <i>A CS message is sent</i> <i>A C/CF message per leg is sent</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-14	Requirement: Optional	
Description: Entering a Stop Order and being able to handle it when it gets triggered.			
Comments:			
Prerequisites			
1. The INST21 needs to allow Stop Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. The market for instrument INST21 must be set to [30@2.00 - 10@2.50]. 4. The last Price or the previous day's close for INST21 must be greater than 2.00.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Sell Stop Order 9@2.00 for instrument INST21, trigger price 2.10. Sends an OE message: [Additional Price: 2.10] [Special Price Term: S]	Order is accepted and not booked. Sends a KE message [Status:S]	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent
2	<u>BIT:</u> Enters an order on INST21 to sell 25@2.00.	Order is accepted and 25 traded at 2.00 against the booked order. The client order is triggered and traded 5@2.00. Sends an NT message For Strategy Sends 1 NT message and 1 NL message per leg The remaining 4 contracts are booked at 2.00. Sends a KE message [Status:]	Trade sent. A C/CF message is sent Strategy: 1 CS are sent and 1 C/CF message per leg Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent

Type: Order Creation	ID #: ORD-14A	Requirement: Optional	
Description: Entering a Stop on Ask Order and being able to handle it when it gets triggered. (Not booked immediately)			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The INST21 needs to allow Stop Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. Instrument Book must be clear 4. The market for instrument INST21 must be set to [12@10.00 - 10@10.50]. 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p>Client: Enters a Sell StopOnAsk Order 8@10.00 for instrument INST21, trigger price 10.25</p> <p><i>Sends an OE message:</i> [Additional Price: 10.25] [Special Price Term: I]</p>	<p>Order is accepted and is not on the book.</p> <p><i>Sends a KE message</i> [Status:"S "]</p>	<p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p>
2	<p>BIT: Enters a sell order on INST21 15@10.25.</p>	<p>Limit order triggers StopOrder.</p> <p>StopOrder match bid side.</p> <p>Trade 8@10.00 is done.</p> <p><i>Sends an NT message</i></p> <p><i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i></p> <p>The remaining 4 Qty are booked at 10.00 on Bid side</p> <p><i>Sends a KE message</i> [Status: " "]</p>	<p>Trade sent.</p> <p><i>A C/CF message is sent</i></p> <p><i>Strategy: 1 CS are sent and 1 C/CF message per leg</i></p> <p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p>

Type: Order Creation	ID #: ORD-14B	Requirement: Optional	
Description: Entering a Stop on Bid Order and being able to handle it when it gets triggered. (booked immediately)			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The INST21 needs to allow Stop Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. Instrument Book must be clear 4. The market for instrument INST21 must be set to [10@10.00 - 10@10.35]. 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Bid StopOnBid Order 8@10.25 for instrument INST21, trigger price 9.90 <i>Sends an OE message: [Additional Price: 9.90] [Special Price Term: "E"]</i>	Order is accepted, is immediately triggered and booked <i>Sends a KE message [Status:" "]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-14C	Requirement: Optional	
Description: Entering a Stop on Last Order and being able to handle it when it gets triggered. (booked and traded immediately)			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The INST21 needs to allow Stop Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. Instrument Book must be clear 4. Two opposite orders with Price 10,20 must be traded 			
		Expected Results	
Step	Input Specifications	Trading Engine Responses (SAIL)	Market Information (HSVF)
1	BIT: Enters a bid order on INST21 12@10.30.	Order is accepted and is on the book. <i>Sends a KE message</i> <i>[Status:!" "]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
2	Client: Enters a ask StopOnLast Order 15@10.30 for instrument INST21, trigger price 10.30 <i>Sends an OE message:</i> <i>[Additional Price: 10.30]</i> <i>[Special Price Term: S]</i>	Stop is enter Order is immediately triggered. StopOrder match bid side. Trade 12@10.30 is done. <i>Sends an NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i> The remaining 3 Qty are booked at 10.30 on Ask side <i>Sends a KE message</i> <i>[Status: " "]</i>	Trade sent. A C/CF message is sent Strategy: 1 CS are sent and 1 C/CF message per leg Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-14D	Requirement: Optional	
Description: Entering an If Ask Touched Order and being able to handle it when it gets triggered. (Not booked immediately)			
Comments:			
Prerequisites			
1. The INST21 needs to allow If Touched Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. The market for instrument INST21 must be set to 12@10.00.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Buy IfAskTouched Order 8@10.00 for instrument INST21, trigger price 10.75 Sends an OE message: [Additional Price: 10.75] [Special Price Term: H]	Stop Order is accepted and is not on the book. Sends a KE message [Status: "S "]	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent
2	<u>BIT:</u> Enters a sell order on INST21 15@10.60	Limit order triggers Trade 8@10.00 is done. Sends an NT message For Strategy Sends 1 NT message and 1 NL message per leg Sends a KE message [Status: " "]	Trade sent. A C/CF message is sent Strategy: 1 CS are sent and 1 C/CF message per leg Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent

Type: Order Creation	ID #: ORD-14E	Requirement: Optional	
Description: Entering an If Touched on Bid Order and being able to handle it when it gets triggered. (booked immediately)			
Comments:			
Prerequisites			
1. The INST21 needs to allow If Touched Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. The market for instrument INST21 must be set to [10@10.00 - 10@10.35].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Enters a Bid IfTouchBid Order 8@10.25 for instrument INST21, trigger price 10.10 Sends an OE message: [Additional Price:10.10] [Special Price Term: "F"]	Order is accepted, is immediately triggered and booked but no contract made Sends a KE message [Status:" "]	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent

Type: Order Creation		ID #: ORD-14F	Requirement: Optional
Description: Entering a If Touched on Last Order and being able to handle it when it gets triggered. (booked and traded immediately)			
Comments:			
Prerequisites			
1. The INST21 needs to allow If Touched Orders. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. Two opposite orders with Price 10,20 must be traded			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT</u> : Enters a bid order on INST21 15@10.30.	Order is accepted and is on the book. <i>Sends a KE message</i> <i>[Status:" "]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
2	<u>Client</u> : Enters a buy StopOnLast Order 17@10.30 for instrument INST21, trigger price 10.1 <i>Sends an OE message:</i> <i>[Additional Price: 10.10]</i> <i>[Special Price Term: T]</i>	Order is immediately triggered. StopOrder match bid side. Trade 15@10.30 is done. <i>Sends an NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i> The remaining 2 Qty are booked at 10.30 on Ask side <i>Sends a KE message</i> <i>[Status: " "]</i>	Trade sent. <i>A C/CF message is sent</i> <i>Strategy: 1 CS are sent and 1 C/CF message per leg</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation		ID #: ORD-14G	Requirement: Mandatory	
Description: Circuit Breaker Triggered to Y price limit violation				
Comments:				
Prerequisites				
1. The INST21 needs to allow Circuit Breaker. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. Instrument Book must be clear				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>BIT:</u> Enters a Sell Order Q@P for instrument INST21. P>Y P<X (Yhigh<P<XHigh) <i>Sends an OE message</i>	Order is accepted and is on the book. <i>Sends a KE message</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i>	
2	<u>Client:</u> Enters a Buy order AT Market price for quantity Q	<i>Orders is deleted due to circuit breaker (KE sent with Order Status : C)</i> <i>NI Message with Instrument state changes in Suspended Status 'S'.</i> <i>After 1minute NI message with Status 'N'</i>	<i>H send with Instrument Status F</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>after one minute H send with Instrument Status T</i>	

Type: Order Creation		ID #: ORD-14H	Requirement: Mandatory
Description: Circuit Breaker Triggered to Z price limit violation			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The INST21 needs to allow Circuit Breaker. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. Instrument Book must be clear 4. Two opposite orders with Price 10 must be traded 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT</u> : Enters a regular Buy order 100@20 for instrument INST1. XLow<YLow<ZLow<Yhigh<20<ZHigh<XHigh	Order is accepted and is on the book. <i>Sends a KE message</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i>
2	<u>Client</u> : Enters an order on Sell 100@20	<i>Orders is deleted due to circuit breaker (KE sent with Order Status : C)</i> <i>NI Message with Instrument state changes in Suspended as Status 'S'.</i> <i>After 1min NI message with instrument Status 'N'</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>H send with Instrument Status F</i> <i>after one minute H send with Instrument Status T</i>

Type: Order Creation		ID #: ORD-15	Requirement: Mandatory
Description: Entering a House order.			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The market for instrument INST1 must be set to [12@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client</u> : Enters a Buy Limit Order 100@2.40, House for the instrument INST1. <i>Sends an OE message:</i> <i>[Price type: L]</i> <i>[Account type: 2]</i>	Order is booked. <i>Sends a KE message</i> <i>[Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-16	Requirement: Mandatory for MM	
Description: Entering a Market Maker Limit Order.			
Comments:			
Prerequisites			
1. The book for instrument INST1 must be set to [10@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Buy Limit Order 100@2.40, for instrument INST1. <i>Sends an OE message:</i> [Price type: L] [Account Type: 4]	Order is booked. <i>Sends a KE message</i> [Status:]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-17	Requirement: Mandatory	
Description: Entering a Client Limit Order			
Comments:			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a Buy Limit Order 100@2.40, Pro, for instrument INST1. <i>Sends an OE message:</i> [Account Type: 5]	Order is booked <i>Sends a KE message</i> [Status:]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-18	Requirement: Optional	
Description: Entering a Limit Order with a Disclosed quantity.			
Comments:			
Prerequisites			
1. The market for instrument INST1 must be set to [10@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Enters a Buy Limit Order 30@2.05 with a Disclosed quantity of 25 for instrument INST1. <i>Sends an OE message:</i> [Quantity Term: D] [Additional Quantity: 25]	Order is accepted and booked and only 25 contracts are shown. <i>Sends a KE message</i> [Status:]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-19	Requirement: Optional	
Description: Entering a Limit Order for a Strategy (spread) that gets traded (Trade in Strategy Book)			
Comments:			
Prerequisites			
1. The instrument INST24 is a strategy and contains 2 legs (spread INST22 - INST23) 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. The market for instrument INST24 must be set to [10@2.00 - 10@2.50]. 4. The market for instrument INST22 (1 st leg of spread) must be set to [5@3.20 - 10@3.30]. 5. The market for instrument INST23 (2 nd leg of spread) must be set to [10@1.00 - 10@1.10].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
2	Clients: Enters a Sell Limit Order 10@2.00 for instrument INST24.	Order is accepted and traded against the client order. <i>Sends an NT message for the strategy and 1 NL message per leg</i> Trade sent. <i>1 NT message for the spread, followed by 1 NL for each leg</i>	Trade sent. <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i> <i>For the legs: C/CF [PricIndicatorMarket = P] message is sent per leg</i> Strategy Quote or Market Depth sent. <i>An FS or HS message is sent</i>

Type: Order Creation	ID #: ORD-20	Requirement: Optional	
Description: Entering a Limit Order for a Strategy (spread) that gets traded (Implied Trade)			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The instrument INST24 is a strategy and contains 2 legs (spread INST22 - INST23) 2. Group for instrument INST1 must be in 'Continuous Trading' mode 3. The market for instrument INST24 must be set to [1@1.00 - 1@2.00]. 4. The market for instrument INST22 (1st leg of spread) must be set to [// - 10@3.50]. 5. The market for instrument INST23 (2nd leg of spread) must be set to [// - //]. 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Clients:</u> Enters a buy Market Order for quantity 10 for instrument INST23.	<p>Order is accepted and traded against the client order.</p> <p><i>Sends an NT message for the strategy and 1 NL message per leg</i></p> <p>Trade sent.</p> <p><i>1 NT message for the spread, followed by 1 NL for each leg</i></p>	<p>Trade sent.</p> <p><i>For strategy: CS message is sent followed by 1 C/CF message per leg</i></p> <p><i>For the legs: C/CF [PriceIndicatorMarket = P] message is sent per leg</i></p> <p>Strategy Quote or Market Depth sent.</p> <p><i>An FS or HS message is sent</i></p>

Type: Order Creation	ID #: ORD-022	Class: Optional	
Description: Entering a Market Order at instrument limit (Min/Max) price.			
Comments:			
Prerequisites			
<ol style="list-style-type: none"> 1. The market for instrument INST1 must be set to [12@0.0001 - 10@99999.5000]; no other orders must be in the Book. 2. Group for instrument INST1 must be in 'Continuous Trading' mode. 3. Adjust Min/Max for Product/instrument in Configuration manager 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information - HSVF
1	<p><u>Client:</u> Enters a Buy @0.0001 for 20 contracts for instrument INST1.</p> <p><u>Client:</u> Enters a Sell market for 12 contracts for instrument INST1.</p> <p><i>Sends an OE message: [Price type: M]</i></p>	<p>Order is accepted and trades completely</p> <p><i>Sends a KE message [Status:X]</i></p> <p>Trade Sent</p> <p><i>Sends 1 NT message</i></p> <p><i>For Strategy Sends 1 NT message and 1 NL message per leg</i></p>	<p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p> <p>Trade sent.</p> <p><i>A C/CF message is sent</i></p> <p><i>For strategy: CS message is sent followed by 1 C/CF message per leg</i></p>
2	<p><u>Client:</u> Enters a Sell @99999.5000 for 15 contracts for instrument INST1.</p> <p><u>Client:</u> Enters a Buy market for 15 contracts for instrument INST1.</p> <p><i>Sends an OE message: [Price type: M]</i></p>	<p>Order is accepted and trades completely</p> <p><i>Sends a KE message [Status: X]</i></p> <p>Trade Sent</p> <p><i>Sends 1 NT message</i></p> <p><i>For Strategy Sends 1 NT message and 1 NL message per leg</i></p>	<p>Quote or Market Depth sent.</p> <p><i>An F/FF or H/HF message is sent</i></p> <p><i>For strategy: FS or HS message is sent</i></p> <p>Trade sent.</p> <p><i>A C/CF message is sent</i></p> <p><i>For strategy: CS message is sent followed by 1 C/CF message per leg</i></p>

Type: Order Creation		ID #: ORD-23	Requirement: Optional
Description: Cross Order validation normal type			
Comments:			
Prerequisites			
1. Group for instrument INST1 must be in 'Continuous Trading' mode 2. Instrument Book must be clear			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT:</u> Enters two regular Buy/Sell orders in order to create a spread for instrument INST1.	Orders are accepted and booked and spread is created. <i>Sends a KE message</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i>
2	<u>Client:</u> Enters a cross order within the spread Send an Cross Order through OX message	Order is accepted and traded. <i>Sends a KO message and two NT messages with Special Trade Indicator="D"</i>	Trade message is sent. <i>C<> message is sent with Price Indicator Marker ="C"</i>

Type: Order Creation		ID #: ORD-23A	Requirement: Optional
Description: Cross Order Block			
Comments:			
Prerequisites			
1. Group for instrument INST1 must be in 'Continuous Trading' mode 2. Instrument Book must be clear			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT:</u> Enters two regular Buy/Sell orders in order to create a spread for instrument INST1.	Orders are accepted and booked and spread is created. <i>Sends a KE message</i>	Quote or Market Depth sent. An F/FF or H/HF message is sent
2	<u>Client:</u> Enters a cross order within the spread Send an Cross Block Order through OX message Qty>Block(500)	Order is accepted and traded. <i>Sends a KO message and two NT messages with Special Trade Indicator="B"</i>	Trade message is sent. <i>C<> message is sent with Price Indicator Marker ="B"</i>

Type: Order Creation	ID #: ORD-24	Requirement: Optional	
Description: Committed order (interbank)			
Comments:			
Prerequisites			
1. Group for instrument INST1 must be in 'Continuous Trading' mode 2. Instrument Book must be clear			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT</u> : Enters two regular Buy/Sell orders in order to create a spread for instrument INST1.	Orders are accepted and booked and spread is created. <i>Sends a KE message</i>	Quote or Market Depth sent. An F/FF or H/HF message is sent
2	<u>Client</u> : Enters a committed order within the spread specifying as counter party BIT Send an OE message with Price Type='C'	Order is accepted and traded. <i>Sends a KE message</i>	
3	<u>BIT</u> : Enters a committed order within the spread specifying as Client counter party	Order is accepted and traded. <i>Sends a KE message and two NT messages with Special Trade Indicator = "T"</i>	Trade message is sent. <i>C<> message is sent with Price Indicator Marker = "T"</i>

Type: Order Creation		ID #: ORD-24A	Requirement: Optional	
Description: Committed Block order (interbank)				
Comments:				
Prerequisites				
1. Group for instrument INST1 must be in 'Continuous Trading' mode 2. Instrument Book must be clear				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>BIT:</u> Enters two regular Buy/Sell orders in order to create a spread for instrument INST1.	Orders are accepted and booked and spread is created. <i>Sends a KE message</i>	Quote or Market Depth sent. An F/FF or H/HF message is sent	
2	<u>Client:</u> Enters a committed order within the spread specifying as counter party BIT Send OE message With Price Type ='C' Qty>500	Order is accepted and traded. <i>Sends a KE message</i>		
3	<u>BIT:</u> Enters a committed order within the spread specifying as Client counter party	Order is accepted and traded. <i>Sends a KE message and two NT messages with Special Trade Indicator = "K"</i>	Trade message is sent. <i>C<> message is sent with Price Indicator Marker = "K"</i>	

Type: Order Creation		ID #: ORD-25	Requirement: Optional	
Description: While connected orders				
Comments:				
Prerequisites				
1. Group for instrument INST1 must be in 'Continuous Trading' mode				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Enters a regular order specifying in duration type = W	Order is accepted. <i>Sends a KE message with Order Status = " "</i>	<i>F/FF or H/HF messages Sent</i>	
2	<u>Client:</u> Disconnection and re connection on the systems	Order status changed to I (EliminatedOnDisconnect) as soon as the Client perform re connection	<i>F/FF or H/HF messages Sent</i>	

4.4 Order Cancellation Test Cases

Type: Order Cancellation		ID #: CXL-01	Requirement: Mandatory	
Description: Cancelling an order.				
Comments:				
Prerequisites				
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Enters a regular Sell order 10@2.20 for instrument INST1. <i>Sends an OE message</i>	Order is booked. <i>Sends a KE message:</i> <i>[Order ID: x]</i> <i>[Order Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	
2	<u>Client:</u> Cancels the previous order. <i>Sends an XE message:</i> <i>[Cancelled Order ID: x]</i>	Order is cancelled. <i>Sends a KZ message</i> <i>[Order Status: "A"]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	

Type: Order Cancellation		ID #: CXL-01A	Requirement: Mandatory	
Description: Cancelling an order by Market Control.				
Comments:				
Prerequisites				
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Enters a regular Sell order 10@2.20 for instrument INST1. <i>Sends an OE message</i>	Order is booked. <i>Sends a KE message:</i> <i>[Order ID: x]</i> <i>[Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	
2	<u>BIT:</u> Cancels the previous order. <i>Sends an XE message:</i> <i>[Cancelled Order ID: x]</i>	Order is cancelled. <i>Sends a NZ message</i> <i>[Order Status: "M"]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	

Type: Order Cancellation	ID #: CXL-02	Requirement: Mandatory	
Description: Cancelling a partially filled order.			
Comments:			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p><u>Client:</u> Enters a regular Buy order 30@2.50 for instrument INST1. Sends an OE message</p>	<p>Order is booked. Sends a KE message: [Order ID: x] [Status: “ ”] Trade 10@2.50 Sends an NT message</p> <p>For Strategy Sends 1 NT message and 1 NL message per leg</p>	<p>Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent</p> <p>Trade sent. A C/CF message is sent</p> <p>For strategy: CS message is sent followed by 1 C/CF message per leg</p>
2	<p><u>Client:</u> Cancels the previous order. Sends an XE message: [Cancelled Order ID: x]</p>	<p>The remaining quantity of the order is cancelled. Sends a KZ message [Status: “A”]</p>	<p>Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent</p>

4.5 Order Modification Test Cases

Type: Order Modification	ID #: MOD-01	Requirement: Mandatory	
Description: Modifying the price of an order; quantity remains unchanged.			
Comments: The order is cancelled to “clear” the testing environment.			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Enters a regular Sell order 20@2.25. <i>Sends an OE message</i>	Order is booked. <i>Sends a KE message:</i> <i>[Order ID: x</i> <i>[Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
2	Client: Modifies the previous order 2000@2.20. <i>Sends an OM message:</i> <i>[Quantity Sign: =]</i> <i>[Quantity: 10]</i> <i>[Modified Order ID: x]</i>	Order is booked. <i>Sends a KM message:</i> <i>[Order ID: y]</i> <i>[Status:]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
3	Client: Cancels the order. <i>Sends an XE message:</i> <i>[Cancelled Order ID: y]</i>	Order is cancelled. <i>Sends a KZ message:</i> <i>[Status: A]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Modification	ID #: MOD-02	Requirement: Mandatory	
Description: Modifying the quantity (absolute) of an order.			
Comments: The order is cancelled to “clear” the testing environment.			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a regular Sell order 1@2.25. <i>Sends an OE message</i>	Order is accepted and booked at 1@2.25. <i>Sends a KE message:</i> [Order ID: x] [Status: “ “]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
2	<u>Client:</u> Modifies the previous order 20@2.25. <i>Sends an OM message:</i> [Quantity Sign: =] [Quantity: 20] [Modified Order ID: x]	Order is booked. Modification is accepted and the Quantity is now 20. <i>Sends a KM message:</i> [Order ID: y] [Status: “ “]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
3	<u>Client:</u> Cancels the order. <i>Sends an XE message:</i> [Cancelled Order ID: y]	Order is cancelled. <i>Sends a KZ message:</i> [Status: A]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Modification	ID #: MOD-04	Requirement: Mandatory	
Description: Modifying the quantity (absolute) and the price of a partially filled order.			
Comments: The order is cancelled to “clear” the testing environment.			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p><u>Client:</u> Enters a regular Buy order 21@2.50. Sends an OE message</p>	<p>Order is accepted and booked at 21@2.50. Sends a KE message: [Order ID: x] [Status: “ “]</p> <p>Trade 10@2.50 Sends an NT message (partial fill)</p> <p>For Strategy Sends 1 NT message and 1 NL message per leg</p>	<p>Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent</p> <p>Trade sent. A C/CF message is sent</p> <p>For strategy: CS message is sent followed by 1 C/CF message per leg</p>
2	<p><u>Client:</u> Modifies the previous order 25@2.60. Sends an OM message: [Quantity Sign: =] [Quantity: 25] [Modified Order ID: x]</p>	<p>Order is booked. Modification is accepted and the Quantity is now 25 and price is 2.60. Sends a KM message: [Order ID: y] [Status: “ “]</p>	<p>Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent</p>
3	<p><u>Client:</u> Cancels the order. Sends an XE message: [Cancelled Order ID: y]</p>	<p>Order is cancelled. Sends a KZ message [Status: “A”]</p>	<p>Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent</p>

Type: Order Modification	ID #: MOD-05	Requirement: Mandatory	
Description: Modifying an order that has been previously modified and partially filled.			
Comments: The order is cancelled to “clear” the testing environment.			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a regular Buy Order 21@2.50. <i>Sends an OE message</i>	Order is accepted and booked at 21@2.50. <i>Sends a KE message:</i> [Order ID: x] [Status: “ “] Trade 10@2.50 <i>Sends an NT message (partial fill)</i> <i>For Strategies, sends NL message per leg</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i> Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i>
2	<u>Client:</u> Modifies the previous order 21@2.50. <i>Sends an OM message:</i> [Quantity Sign: =] [Quantity: 21] [Modified Order ID: x]	Order is booked. Modification is accepted and the Quantity is now 21 and price is 2.50. <i>Sends a KM message:</i> [Order ID: y] [Status: “ “]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
3	<u>Client:</u> Modifies the previous order 21@2.40. <i>Sends an OM message:</i> [Quantity Sign: =] [Quantity: 21] [Modified Order ID: y]	Order is booked. Modification is accepted and the Quantity is now 21 and price is 2.40. <i>Sends a KM message:</i> [New Order ID: z] [Status: “ “]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
4	<u>Client:</u> Cancels the order. <i>Sends an XE message:</i> [Cancelled Order ID: z]	Order is cancelled. <i>Sends a KZ message</i> [Status: A “]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Order Modification	ID #: MOD-06	Requirement: Optional	
Description: Modifying a Market Top order and assigning it a limit price.			
Comments: The order is cancelled to “clear” the testing environment. (Conditional to ORD01)			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 12@2.50]; no other orders must be in the book.			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p>Client: Enters a Buy Market order for 20 Contracts.</p> <p><i>Sends an OE message:</i> [Price type: M]</p>	<p>Sends a KE message: [Order ID: x] [Status: “ “]</p> <p>Trade 12@2.50 and the remaining 8@2.50 is booked.</p> <p><i>Sends an NT message (partial fill)</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i></p>	<p>Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i></p> <p>Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i></p>
2	<p>Client: Modifies the previous order 9@2.40.</p> <p><i>Sends an OM message:</i> [Quantity Sign: +] [Quantity: 1] [Price type: L] [Modified Order ID: x]</p>	<p>Order is booked. Modification is accepted and the Quantity is now 9 and price is 2.40.</p> <p><i>Sends a KM message:</i> [Order ID: y] [Status: “ “]</p>	<p>Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i></p>
3	<p>Client: Cancels the previous order.</p> <p><i>Sends an XE message:</i> [Cancelled Order ID: y]</p>	<p>Order is cancelled.</p> <p><i>Sends a KZ message</i> [Status: “A“]</p>	<p>Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i></p>

Type: Order Modification	ID #: MOD-07	Requirement: Mandatory	
Description: Modifying the quantity (delta) of an order.			
Comments: The order is cancelled to “clear” the testing environment.			
Prerequisites			
The market for instrument INST1 must be set to [10@2.00 - 10@2.50].			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters a regular Sell order 21@2.25. <i>Sends an OE message</i>	Order is accepted and booked at 21@2.25. <i>Sends a KE message:</i> <i>[Order ID: x]</i> <i>[Status: “ “]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
2	<u>Client:</u> Modifies the previous order 20@2.25. <i>Sends an OM message:</i> <i>[Quantity Sign: -]</i> <i>[Quantity: 1]</i> <i>[Modified Order ID: x]</i>	Order is booked. Modification is accepted and the Quantity is now 20. <i>Sends a KM message:</i> <i>[Order ID: y]</i> <i>[Status: “ “]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
3	<u>Client:</u> Cancels the order. <i>Sends an XE message:</i> <i>[Cancelled Order ID: y]</i>	Order is cancelled. <i>Sends a KZ message</i> <i>[Status: “A“]</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

4.6 Request for Quote Test Cases

Type: Request for Quote		ID #: RFQ-01	Requirement: Mandatory	
Description: Sending a Request for Quote message.				
Comments:				
Prerequisites				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client</u> : Enters a Request for Quote for the instrument INST1 for any quantity. <i>Sends an RQ message</i>	Request for Quote is accepted. <i>Sends a KO message</i>	Request for Quote sent. <i>A D/DF message is broadcasted.</i>	

Type: Request for Quote		ID #: RFQ-02	Requirement: Mandatory for all Market Makers	
Description: Responding to a Request for Quote message.				
Comments:				
Prerequisites				
1. No market for instrument INST1. 2. Client is connected.				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>BIT</u> : Enters a Request for Quote for the instrument INST1 for any quantity.	Request for Quote is accepted.	Request for Quote message received and dispatched to external participants on the HSVF Market feed. Request for Quote sent. <i>A D/DF message is sent.</i>	
2	<u>Client</u> : Responds by posting a market for instrument INST1. <i>Sends an OE or a Q<i> message</i>	Market is accepted. <i>Sends a KE or an LA message</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	

4.7 Bulk Quote Test Cases

Type: Bulk Quote		ID #: BUQ-01	Requirement: Mandatory for Market Makers	
Description: Entering quotes.				
Comments:				
Prerequisites				
1. No market for instrument INST1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID)				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Enters 2 quotes (1 bid and 1 ask) on INST1, Bid = 10@1.00, Ask=10@1.20. <i>Sends a BD message (if not already done)</i> <i>Sends a Q<i> message</i>	Quotes are accepted and booked. <i>Sends a KD message</i> <i>Sends an LA message</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	
2	<u>BIT:</u> Enters a regular Sell order 5@0.90 for instrument INST1.	Order is accepted Trade 5@1.00. <i>Sends an NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i> The market is now [5@1.00 - 10@1.20].	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i> Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i>	

Type: Bulk Quote	ID #: BUQ-02	Requirement: Mandatory for Market Makers	
Description: Modifying the price on quotes when some have been rejected.			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Instrument INST10 has to be forbidden. 3. Participant must be configured as Market Maker on group GRP1. 4 Participant must send Clearing Data message BD (for traderID/GroupID)			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters quotes for all instruments of GRP1. At least 101 instruments must be quoted on both sides with bids of 1000@100.00 and asks of 900@100.50. Only one bulk quote message must be sent. <i>Sends a Q<i> message</i>	All quotes are accepted and booked except the 2 on the forbidden instrument. The markets for selected instruments in group GRP1 are now [1000@100.00 - 900@100.50]. <i>Sends an LA message: [Number of quotes in error: 002] [Error code: 1004]</i>	Quote or Market Depth sent. <i>Several F/FF or H/HF messages are broadcasted</i> <i>For strategy: Several FS or HS message are broadcasted</i>
2	<u>Client:</u> Modifies the price of all quotes previously accepted. <i>Sends a Q<i> message</i>	Quotes are modified. No error message is returned. Market is now: [1000@100.10 - 900@100.30] <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Several F/FF or H/HF messages are broadcasted</i> <i>For strategy: Several FS or HS message are broadcasted</i>

Type: Bulk Quote	ID #: BUQ-03	Requirement: Mandatory for Market Makers	
Description: Modifying the quantity for quotes.			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID)			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters 4 quotes (2 bid and 2 ask) on instruments of group GRP1, Bid = 10@1.00, Ask = 10@1.20. <i>Sends a Q<i> message</i>	Quotes are accepted and booked. The markets are now: INST1: [10@1.00 - 10@1.20] INST2: [10@1.00 - 10@1.20] <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Two F/FF or H/HF messages are sent</i> <i>For strategy: Two FS or HS message are sent</i>
2	<u>BIT:</u> Enters a regular Buy order 10@1.20 for instrument INST1.	Order is accepted. Trade 10@1.20. <i>Sends an NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i> INST1: [10@1.00 -] INST2: [10@1.00 - 10@1.20]	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i> Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i>
3	<u>Client:</u> Sets quantities to 20 on both sides of INST1 and INST2. <i>Sends a Q<i> message with [Quote Qty: +20] for the Ask side of INST1 and [Quote Qty: +10] for the other three quotes.</i>	Quotes are modified. Market are now INST1: [20@1.00 - 20@1.20] INST2: [20@1.00 - 20@1.20] <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Two F/FF or H/HF messages are sent</i> <i>For strategy: Two FS or HS message are sent</i>

Type: Bulk Quote	ID #: BUQ-04	Requirement: Mandatory for Market Makers	
Description: Cancelling all quotes (Global Cancellation, formerly known as "Panic Quote").			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID)			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters 40 quotes (20 bid and 20 ask) on instruments of group GRP1, Bid = 10@1.00, Ask = 10@1.20. <i>Sends a Q<i> message</i>	Quotes are accepted and booked. The markets are now [10@1.00 - 10@1.20] for all instruments. <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20)FS or HS message are sent</i>
2	<u>BIT:</u> Enters a regular Sell order 10@1.00 for instrument INST1.	Order is accepted. Trade 10@1.00. <i>Sends an NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i> Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i>
3	<u>Client:</u> Cancels all quotes with a GC message. <i>Sends a GC message</i>	Quotes are cancelled. Market for instrument INST1 is now [0@0.00 - 10@1.00]. <i>Sends a KG message</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20)FS or HS message are sent</i>

Type: Bulk Quote	ID #: BUQ-05	Requirement: Mandatory for Market Makers	
Description: Handling unsolicited cancellation of all quotes (done by the Market Operation Center.).			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID)			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters 40 quotes (20 bid and 20 ask) on instruments of group GRP1, Bid = 10@1.00, Ask = 10@1.20. <i>Sends a Q<i> message</i>	Quotes are accepted and booked. <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20) FS or HS message are sent</i>
2	<u>BIT:</u> Enters a regular Buy order 10@1.30 for instrument INST1.	Order is accepted and is traded against the booked quotes. Trade 10@1.20. <i>Sends an NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and</i> <i>1 NL message per leg</i>	Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
3	<u>BIT:</u> Cancels all quotes for the participant.	Quotes are cancelled. <i>Sends an NP message (cancellation reason: M)</i> <i>*cancellation reason could be filled "S" in case of cancellation by the system.</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20) FS or HS message are sent</i>

Type: Bulk Quote	ID #: BUQ-06	Requirement: Mandatory for Market Makers	
Description: Handling unsolicited cancellation of all quotes (done by Trader).			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must be enable for Global Cancellation			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters 40 quotes (20 bid and 20 ask) on instruments of group GRP1, Bid = 10@1.00, Ask = 10@1.20. <i>Sends a Q<i> message</i>	Quotes are accepted and booked. <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20) FS or HS message are sent</i>
2	<u>BIT:</u> (cancelation made by MS) Cancels all quotes for the participant.	Quotes are cancelled. <i>Sends an NP message (Quote cancellation reason: M -Cancelled By Market Control)</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20) FS or HS message are sent</i>

Type: Bulk Quote	ID #: BUQ-07	Requirement: Mandatory for Market Makers	
Description: Handling unsolicited cancellation of all quotes (CancelledByCircuitBreaker).			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID) 4. Two opposite orders with Price 10 must be traded			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT</u> : Price 20 XLow<YLow<ZLow<YHigh<20<ZHigh<XHigh		
2	<u>BIT</u> : Enters a regular Buy order 100@20 for instrument INST1.	Order is accepted and booked. <i>Sends 1 an KE message</i>	Quote or Market Depth sent. Twenty (20) F/FF or H/HF messages are sent For strategy: Twenty (20) FS or HS message are sent
3	<u>Client</u> : Enters 100 quotes (50 bid and 50 ask) on instruments of group GRP1, Bid = 50@19.5, Ask = 50@20. <i>Sends a Q<i> message</i>	Quotes are deleted due to circuit breaker (<i>NP sent with cancellation reason: C</i>) <i>NI Message with Instrument state changes in Suspended as 'S'</i> After 1minute <i>NI Message with Instrument Status 'N'</i> .	Trade sent. A C/CF message is sent For strategy: CS message is sent followed by 1 C/CF message per leg Quote or Market Depth sent. An F/FF or H/HF message is sent with Status "F" For strategy: FS or HS message is sent with Status "F" After 1minute for H/HF or F/FF message is sent with Status "T".

Type: Bulk Quote	ID #: BUQ-08	Requirement: Mandatory for Market Makers	
Description: Handling unsolicited cancellation of all quotes (EliminatedOnDisconnect)			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID)			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters quotes Buy and Sell quotes.	Quotes are accepted and booked. <i>Sends a KD message</i> <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20) FS or HS message are sent</i>
2	Request for Disconnection by the Client Send TD Message	<i>Receives TL Message and Client gets disconnected and quotes are removed.</i>	Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>
3	<u>Client:</u> Re-connection on the system	<i>Quotes are deleted (NP sent with Quote cancellation reason: 1 (EliminatedOnDisconnect)</i>	Trade sent. A C/CF message is sent For strategy: CS message is sent followed by 1 C/CF message per leg Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

Type: Bulk Quote	ID #: BUQ-09	Requirement: Mandatory for Market Makers	
Description: Handling unsolicited cancellation of all quotes (B : EliminatedOutofLimits).			
Comments:			
Prerequisites			
1. No market for instruments in group GRP1. 2. Participant must be configured as Market Maker on group GRP1. 3. Participant must send Clearing Data message BD (for traderID/GroupID)			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Enters 100 quotes (50 bid and 50 ask) on instruments of group GRP1, Bid = 50@20, Ask = 50@20. <i>Sends a Q<i> message</i>	Quotes are accepted and booked. <i>Sends a KD message</i> <i>Sends an LA message</i>	Quote or Market Depth sent. <i>Twenty (20) F/FF or H/HF messages are sent</i> <i>For strategy: Twenty (20) FS or HS message are sent</i>
2	<u>BIT:</u> Change parameters x (ex: reference price) for instrument INST1.	<i>Quotes are deleted due to of limit (NP sent with Quote cancellation reason: B)</i>	Trade sent. <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i> Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>

4.8 Trade Management Test Cases

Type: Trade Management		ID #: TRD-01	Requirement: Mandatory	
Description: Handling many fills for the same order.				
Comments:				
Prerequisites				
1. The market for instrument INST1 must be set to [12@2.00 - 10@2.50]. 2. Group for instrument INST1 must be in 'Continuous Trading' mode.				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Enters a Sell order or a quote for instruments INST1 75@2.40. <i>Sends an OE message</i>	Order is accepted. <i>Sends a KE or an LA message</i>	Quote or Market Depth sent. <i>An F/FF or H/HF message is sent</i> <i>For strategy: FS or HS message is sent</i>	
2	<u>BIT:</u> Enters 10 Buy orders for instrument: INST1 2@MKT, 3@MKT, 4@MKT, 5@MKT, 6@MKT, 7@MKT, 8@MKT, 9@MKT, 10@MKT, 11@MKT.	10 Trades: 2@2.40, 3@2.40, 4@2.40, 5@2.40, 6@2.40, 7@2.40, 8@2.40, 9@2.40, 10@2.40, 11@2.40. <i>Sends 10 NT messages</i> <i>For each of the 10 strategies</i> <i>Sends 1 NT message and 1 NL message per leg</i> Market for instrument INST1 is now [12@2.00 - 10@2.40].	Trade sent. <i>A C/CF message is sent for each trade</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg for each strategy trade</i>	

Type: Trade Management	ID #: TRD-02	Requirement: Mandatory	
Description: Handling manual cancellation of a regular trade by the Market Operation Center.			
Comments:			
Prerequisites			
Execution of test case TRD-01			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT</u> : Manually cancels the first and the last Trades from Test Case TRD-01 (2@2.40 and 11@2.40).	<p>The 2 trades are cancelled.</p> <p><i>Sends 2 NX messages</i></p> <p><i>For each of the 2 Strategies</i></p> <p><i>Sends 1 NX message and 1 NY message per leg</i></p>	<p>Trade Cancellation and Summary.</p> <p><i>Two (2) I/IF and N/NF messages are sent</i></p> <p><i>For Strategy: Two (2) IS and NS messages are sent</i></p>

Type: Trade Management	ID #: TRD-03	Requirement: Optional	
Description: Handling manual trade creation and cancellation.			
Comments:			
Prerequisites			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>BIT</u> : Creates a manual trade for instrument INST1 by using the TraderID of the client on both sides of the trade.	A first trade is created. <i>Sends one NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i>	Trade sent. <i>A C/CF message is sent.</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i>
2	<u>BIT</u> : Creates a manual trade for instrument INST1 by using the TraderID of the client on one side and a different TraderID for the client on the opposite side of the trade.	A second trade is created <i>Sends one NT message</i> <i>For Strategy</i> <i>Sends 1 NT message and 1 NL message per leg</i>	Trade sent <i>A C/CF message is sent</i> <i>For strategy: CS message is sent followed by 1 C/CF message per leg</i>
3	<u>BIT</u> : Cancel trades created in Steps 1 and 2.	Trades are cancelled. <i>2 NX messages are sent.</i> <i>For each of the 2 Strategies</i> <i>Sends 1 NX message and 1 NY message per leg</i>	Trades Cancellation. <i>I/IF and N/NF messages sent</i> <i>For Strategy: IS and NS messages are sent</i>

4.9 Market Maker Protection Test Cases

Type: Trade Management		ID #: MMT-01	Requirement: Mandatory for MM	
Description: Max Volume: is designed to protect market making participants from "excessive" trades				
Comments: Enabled by default for all Market Makers				
Prerequisites				
<ol style="list-style-type: none"> 1. For this test one MM (Participant) and one TRADER (Exchange Controlled) are needed. 2. Set MM protection Max Volume to 100 ON instrument A of Group Z (in BD message) 3. Set MM protection to Advanced (in RP message) 				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	Client: Buy 150 of A @ Price P Sell 150 of A @ Price P + 1 Tick <i>Sends an Qj message:</i>	Quote is accepted . <i>Sends a LA message</i>		
2	Client: Sell 100 of A @ Market Price <i>Sends an OE message</i>	Trade is done <i>Sends 1 NT message is sent</i> <i>An NP message is sent</i> .		

Type: Trade Management	ID #: MMT-02	Requirement: Mandatory for MM	
Description: Delta Volume: is designed to protect market making participants from "excessive" trades			
Comments: Enabled by default for all Market Makers			
Prerequisites			
<ol style="list-style-type: none"> 1. Set MM protection Max Volume to 2000 2. Set MM protection Max Delta to 1000 3. Set MM protection to Advanced 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<u>Client:</u> Quote on Instrument A of Group Z: <ul style="list-style-type: none"> - Buy 100 of A @ Price P - Sell 100 of A @ Price P + 1 Tick <i>Sends an Qj message:</i>	Quote is accepted . <i>Sends a LA message</i>	
2	<u>BIT:</u> enters Sell 100 of A @ Market Price <i>Sends an OE message</i>	Trade is done <i>Sends 1 NT message is sent</i> <i>An NP message is sent</i>	

4.9.1 Market Maker Alarms

Type: Trade Management		ID #: ALR-01	Requirement: Mandatory for Market Maker	
Description:				
Comments: For this test one MM (Participant) and one TRADER (Exchange Controlled) are needed.				
Prerequisites				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<p><u>Client:</u> The MM will Quote on Instruments belonging to Group AA fulfilling its spread and volume obligation</p> <p><i>Sends an Oi message:</i></p>	<p>Order is accepted</p> <p><i>Sends an LA message</i></p> <p>No market makers alarms are generated</p>	H/HF or F/FF messages sent.	
2	<p><u>Client:</u> The MM will Quote on Instruments belonging to Group AA not fulfilling its spread obligations</p>	<p>Order is accepted</p> <p><i>Sends an LA message</i></p> <p><i>Sail Messages MM is received after 2 minutes advising that spread obligations are not fulfilled</i></p>	H/HF or F/FF messages sent.	
3	<p><u>Client:</u> The MM will Quote on Instruments belonging to Group AA not fulfilling its volume obligations</p>	<p>Order is accepted</p> <p><i>Sends an LA message</i></p> <p><i>Sail Messages MM is received after 2 minutes advising that spread obligations are not fulfilled</i></p>	H/HF or F/FF messages sent.	
4	<p><u>Client:</u> The MM will not Quote on any Instruments belonging to Group AA</p>	<p><i>Sail Messages MM is received after 2 minutes advising that prices are missing Q</i></p>	H/HF or F/FF messages sent.	

4.10 Drop Copy Test Case

Type: Drop Copy extended messages	ID #: DC-01	Requirement: Optional	
Description: It allows customers to manage orders entered by other traders in the firm			
Comments: Drop copy user type needs to be used			
Prerequisites			
<p>Customer must connect two users:</p> <ul style="list-style-type: none"> - One normal order routing user; - One Drop Copy user; 			
Step	Input Specifications	Expected Results	
		Trading Engine Responses (SAIL)	Market Information (HSVF)
1	<p>Client: Enter orders with normal OR user; - modify some of these orders - cancels some of those orders leaving some other orders active on the market</p> <p><i>Sends Internal messages cancellation for</i></p>	<p>Order is accepted and is not on the book. <i>Sends a KE message [Status:”I “]</i></p> <p><i>In the drop copy connection these messages will be received in the extended format, please verify that in the messages KM , KE, KZ and NZ you can see additional field:</i></p> <p><i>Price Type Previous Displayed Quantity Previous Booked Price Displayed Quantity Filler String System Best Bid Price System Best Ask Price Filler String Filler String End of Message Block Special Price Term Additional Price Quantity Term Additional Quantity Guaranteed Quantity Duration Type GTD Date Opposite Firm Filler String Order Type Previous Order ID Linked Quantity</i></p>	

		<p>Filler String Filler String Remaining Quantity Filler String</p>	
2	<p>BIT: Perform the following operation:</p> <ol style="list-style-type: none"> 1. Match partially an existing order 2. Cancel an existing trade 3. Cancel an existing trade on a leg of a Strategy trade <p><i>Sends an OE message</i></p> <p><i>Sends Internal messages cancellation for trades</i></p>	<p>Trade is done Sends 1 NT message is sent In the drop copy connection these messages will be received in the extended format, please verify that in the messages NT: Execution Notice NL: Leg Execution Notice NX: Execution Cancellation Notice NY: Leg Execution Cancellation Notice</p> <p>The following field are displayed: Previous Booked Quantity Previous Booked Price Displayed Quantity Order Type Liquidity Status End of Message Block Remaining Quantity Filler String Timestamp Date Price Variation Net Change Open Price High Price Low Price Last Price Opening trade Filler String Filler String Filler String Internal Market Bid Internal Market Ask OppositeMsgType Original Price Special Price Term Additional Price Additional Quantity Type Additional Quantity Duration Type GTD Date Filler String</p>	

		<i>Clearing Firm</i> <i>Connection ID</i> <i>Exchange ID</i> <i>OrderTradingMode</i> <i>OrderTimeStamp</i> <i>Strategy Group</i> <i>Strategy Instrument</i> <i>Strategy Verb</i> <i>Strategy Trade Number</i> <i>Leg Number</i> <i>MatchNumber</i> <i>NumberInMatch</i>	
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4.11 User Defined Strategies (FLEXCO)

Type: New Strategy Instrument Creation		ID #: FLX01	Requirement: Optional	
Description: New Strategy Creation.				
Comments:				
Prerequisites				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Send ON message specifying the Number of legs and the Instruments	Sends NI and KN Messages <i>Creation Status = 'C'</i>	<i>Sends JS/NS/HS messages</i>	

Type: New Strategy Instrument Creation		ID #: FLX02	Requirement: Optional	
Description: Existed Strategy Modification				
Comments: Strategy Already Exists and the System will modify				
Prerequisites				
Execution of test case FLX01				
Step	Input Specifications	Expected Results		
		Trading Engine Responses (SAIL)	Market Information (HSVF)	
1	<u>Client:</u> Send ON message specifying the Number of legs and the Instruments	Sends NI and KN Messages <i>Creation Status = 'M'</i>	<i>Sends JS/NS/HS messages</i>	

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