

SOLA Derivatives

Guide to Certification (SAIL)

Certification Guide

Issue 1.6

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Certification Guide

Disclaimer

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1.0 Introduction

1.1 Purpose

The purpose of this document is to provide customers with a detailed overview of the Certification service across the eligible London Stock Exchange Group venues London Stock Exchange and Borsa Italiana.

The SAIL 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

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.

1.3 Document History

This document has been through the following iterations:

Issue	Date	Description
1.0	30/09/2013	Initial Issue
1.1	08/07/2015	
1.2	16/03/2016	Annual Certification procedure and contacts
1.3	23/01/2017	Certification Test Scenarios: 4.7.34; 4.9.36; 4.17.3; 4.19; 4.20.
1.4	15/03/2017	Review Certification Test Scenarios
1.5	16/08/2017	Review Certification Test Scenarios New Test cases: ORD-29, ALR-02, TRD04, TRD-05 Certification policy updated New Passport policy
1.6	05/08/2017	Certification policy updated Review Certification Test Scenarios New Test cases: ORD-30, ORD-31, BUQ-04a, BUQ-04b, BUQ-04c

In subsequent issues, where amendments have been made to the previous version, these changes will be identified using a series of side bars as illustrated opposite.

1.4 Contacts

Please contact Market Access Italy if you have any functional questions about SOLA platform functionalities detailed in this document.

Phone: 0039 02 72426668

• Email: <u>market-access@borsaitaliana.it</u>

2.0 Certification Programme

The Certification Programme is based on regulatory compliance supporting interoperability against the three eligible London Stock Exchange Group (LSEG) venues. The current eligible venues are London Stock Exchange and Borsa Italiana.

The following Certification Programme applies to anyone connecting a software application to an LSEG *Live Service*. A Live service is any production Trading or Information Services environment across LSEG.

Under EU and national regulatory requirements (including the ESMA Guidelines on Systems and Controls in a Highly Automated Trading Environment) the eligible LSEG venues are required to have procedures and arrangements to ensure fair and orderly trading. This includes requirements for physical and electronic security to protect systems from misuse or unauthorised access and to ensure the integrity of the data that is part of or passes through the systems. The eligible venues are required to undertake standardised certification testing to ensure that members and participants systems used to access the venues have a minimum level of functionality that is compatible with fair and orderly trading on those venues.

Customer non-compliance with this certification programme may constitute a breach of the eligible venue terms and conditions or rules.

2.1 Access to the Live Service

Access to the LSEG Live Services is permitted only when a customer's software application has been certified as being fit for purpose.

2.2 Software Identification

All customer software must be identifiable by a software name and version number. Software applications that do not have both a name and version number will not be certified. Certification is limited to a single version of the named software.

2.3 Mandatory Certification Requirements

Customer confirms that the certified trading application is fully conformant to all aspects of the Technical Specifications. Customer also confirms that its application has in place the following controls:

- ✓ limits on transaction per second sent by Trading sessions
- √ limits on order quantity and order countervalue
- ✓ order and trade price limits against static and dynamic controls prices

2.4 Certification Policy

Customers are required to certify or re-certify their applications under the following conditions:

- Prior to use the application in the live environment (for new applications);
- ✓ The customer modifies the software in any way that directly impacts LSEG interfaces. This includes but is not limited to updates to Gateways, Order Management, Execution Management and Quote Management Software;
- ✓ The Exchange upgrades its production environment to a later version of software;
- ✓ The customer is requested to re-certify their application by the relevant venue.

If no certifications have been performed during a solar year (because any of the previous conditions occurred), the customer will be asked to self-certify (by sending an email to the relevant Trading Venue team that look after certifications) that no changes have been applied to the application since the last certification.

2.5 Test Scenario Exception Policy

Customers only need to complete the test cases relating to the functionalities that they will use on the Live Services. If a customer's application does not support the functionality described in a particular test scenario and they do not intend to complete the scenario during the test, this must be agreed before the start of the certification test and reported in the certification report.

2.6 Passport across LSEG Venues

The Group is pleased to confirm that upon successful certification against one of the venues IDEM, LSEDM Equity Derivatives or LSEDM Interest Rate Derivatives (CurveGlobal products), the certified application will be permitted to access all SOLA Production systems – London and Milan, according with the membership agreement currently in place.

However, please be aware that in order for the passport to be applicable, the certified functionalities must be the same across all the venues where the customer wishes to connect to with the same application software.

2.7 Non-Conformant Behaviour on the Live Service

Any non-conformant behaviour by a customer's software application on the Live Services may lead to the software application being disconnected and not re-connected until it has been re-certified and the non-conformant behaviour corrected.

2.8 Self Certification Email

If no certifications have been performed during a solar year (because any of the conditions reported in §2.4 occurred), the customer will be asked to self-certify (by sending an email) that no changes have been applied to the application since the last certification.

Email confirmation should be sent to Market-access@borsaitaliana.it

2.9 Test Charges

The published venue specific Certification charges apply to all certification testing regardless of the test being assisted or not.

3.0 Certification Process

The Certification Process is an integral part of the Certification Programme.

Mandatory testing will be required for all applications that wish to connect to the production environment and mandatory functions will need to be tested in order to confirm conformant behaviour.

Customers should consider their software application's 'production ready' before attempting the test. Customers should also read and familiarise themselves with this document and the Market and Product Specific Testing documents. These documents contain important guidance that must be read before completing the certification process. When ready to take the test, customers should complete the following steps:

- Customers should contact Market Access Italy to book a certification test slot providing the Sotware name, version and gateway interfaces
- The Market Access team will forward the relevant Certification Test Report to the customer.

Before Taking the Test

The Market Access Italy team will be available to assist participants in completing part of their certification test by performing both mandatory and optional functions.

Customers must identify the venue and the test scenarios supported by their application, by ticking the relevant boxes on the Certification Test Report. The report form must then be sent to: Market-access@borsaitaliana.it

This is a formal record of the software application that is being certified.

Customers should save a copy of the test report as they will be required to use it during the test to record their test results.

During the Test

Customers should complete the full set of uncoordinated test cycles described in Section 4 and inform Market Access Italy when this has been completed. If required some limited support can be provided during this phase.

Customers should record the test results on the Full Certification Test Report using the test procedure shown at the start of section 4. Customers are required to complete all test scenarios previously marked on the Full Certification Test Report within a trading day. If a customer does not complete a pre-agreed test scenario, the test will fail.

When all of the uncoordinated test scenarios have been completed, the customer must then complete a set of coordinated test scenarios, assisted by a tester.

The customer can repeat this part as many times as necessary, however additional test sessions may have to be booked if the testing exceeds two hours.

When all test scenarios have been completed, the customer should email the completed Certification Test Report to the tester. The email should be addressed to Market-access@borsaitaliana.it

After the Test

After the test the tester will check the details on the completed Full Certification Test Report and review the log files for the completed test scenarios. A report is generated detailing how the customer's application has performed during the test. If no re-testing is required, he report will be sent to the customer to sign off the application as fit for purpose and ready for production access.

The following items are checked:

- The functional behaviour and message sequencing in each scenario
- If the session was maintained for the entire period or if it dropped
- If any errors were produced over the time period

If multiple interfaces were included in the test, the results are concatenated into a single report.

The report will be run specifying a time ranged limited to a single day.

If the customer is required to repeat any of the testing they should do so within 24 hours of the original test.

By returning the signed copy of the Full Certification Test Report the customer is confirming that their application is fully conformant to all aspects of the SOLA Platform Technical Specifications and technically behaves as described in the guidance given in the technical specification.

4.0 Certification Test Scenarios

4.1 Test Procedure

Before proceeding with the certification test, customers must send the Certification Report to market-access@borsaitaliana.it and ask for an available date to schedule the conformance test session.

The certification report must contain the following information:

- · Sotware name, version and gateway interfaces
- which functionalities are supported by the software
- the Venue where the test will be run and the Venue(s) the software connects to

Customers must perform all of the steps in each of the test scenarios reported in this document and record the results in the relevant sections of the Test Report.

A Certification report will be run after the customer has confirmed a successful run of their application on the CDS.

The report will extract all the relevant functions performed by the application and presented them in a format to be reviewed by the testing team to confirm a pass or fail.

Prior to the report being run the customer will be required to confirm the **venue**, the **gateway interfaces** they are certifying and the **userIDs** they are using for each gateway. This will be detailed in the supporting certification report (detailed below) submitted by the customer. The reporting tool will use this information to extract all behaviour for a given time period.

Considerations for the report are listed below.

- The report will be run against any of the interfaces at once or against each separate interface individually depending on the customer application.
- 2. The report will be run specifying a time range limited to a single day.
- The report will extract all message interface behaviour and represent this in a readable format in order to identify a successful set of functional testing.
- 4. The report will identify if the session was maintained for the entire period or if it dropped.
- 5. The report will check for any and all errors produced over the time period.
- 6. The report will be sent to the customer to sign off the application as fit for purpose and ready for production access.
- 7. The customer is responsible for any information declared on the signed-off Certification Test Report.

4.2 Submitting execution report and notifying result

The Customer has to run the Self Certification tests (not coordinated), the Certification Report tests (coordinated) in coordination with the testing team and mark the result of test cases on Certification Report.

At the end of the Self Certification and Certification Session the Customer should consolidate the Certification Report and send a copy of it to the testing team at Market-access@borsaitaliana.it

The testing team will verify the reports within 1-3 business days.

The testing team will then send back the result of the test (PASS or FAIL) and the Certification Report for final customer sign-off.

Final sign off by the customer should be sent to Market-access@borsaitaliana.it.

4.3 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 SOLA 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 SOLA 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

The price and quantity specified in the test case description are indicative.

Customer must follow the prices and quantities accepted for the instrument on which it operates

4.4 Terminology

Term	Definition
Client	Refers to a computer system able to interact with the SOLA 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.

4.5 Technical Test Cases

4.5.1 Establishing a SAIL session

ID #: TEC	-01	Type: Technical	Requirement:	Mandatory	Co-ordinated Test: N		
Descriptio	Description: Establishing the first SAIL connection of a trading session.						
Comment	s: First Time U	ser Connection (Messa	ige Type TC).				
Prerequis	sites						
None.							
			Expected Results				
#	Test Steps		Trading Engine Resp (SAIL)	oonses	Market Information (HSVF)		
1	Client: Conn	ects to SOLA.	Connection establishe	d.			
	Sends a TC	message.	Sends a TK message				
	[Exchange N	Message ID: 0]	[User sequence ID: 0]				
2			Sends a Heartbeat me	essage question.			
			Sends a TH message				
3	response wit timeframe [In	,					

4.5.2 Terminating a SAIL session

ID #: TE	C-02	Type: Technical	Requirement:	Mandatory	Co-ordinated Test: N
Descripti	on: Terminating	a SAIL session			
Commen	nts: User's Disco	nnection Request (Mess	age Type TD)		
Prerequi	isites				
Execution	n of test case TE	EC-01			
		E	xpected Results		
#	Test Steps	Trading Engine Responses (SAIL) Market Information (HSVF)			
1	Client: Discon	nects from SOLA.	connection is terminal	ted.	
	Sends a TD m	nessage	ends a TL message		

4.5.3 Restarting a SAIL session

ID #: TE	C-03 Type: Technical	Requirement: Mandatory	Co-ordinated Test: N			
Commer	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					
#	Test Steps	Expected Results Trading Engine Responses (SAIL) Market Information (HSVF)				
1	Client: Reconnects to SOLA. Sends a TC message with a blank Exchange Message ID: [Exchange message ID: ""]	Sends an arbitrary number of messages and the connection is re-established. Sends a TK message: [User sequence ID != next expected User sequence ID]				

4.5.4 Disconnection Instruction Management – Exchange Disconnection

ID #: TE	C-04 Type: Technic	I Requirement:	Optional	Co-ordinated Test: N
Descript	ion: Disconnection Instruction Mar	agement – Disconnection by	Exchange; outs	standing quotes are cancelled.
Commer	nts: None.			
Prerequ	isites			
None.				
		Expected Results		
#	Test Steps	Trading Engine Responsible (SAIL)		Market Information HSVF)
1	Client: Connects to SOLA.	Connection established	i.	
	Sends a TC message:	Sends a TK message		
	[Exchange Message ID: 0]			
	[Inactivity Interval: 1]			
2	Client: Active Y(ON)			
3	Client: Specifies disconnection instructions.	Disconnection Instruction accepted.	on is	
	Sends a TA message:	Sends a TM message		
	[Disconnection Instruction: Q]			
4	Client: Sends a few quotes.	Quotes are accepted.		Quote or Market Depth sent.
	Sends several Q <i> messages</i>	Sends several LA mes	sages	Several /FFF or H/HF messages are sent.
			I	For strategy: Several FS or HS message are sent
5	Client: Stops flow of client messages for longer than the "Inactivity Interval" period define in the TC message of this connection.	SOLA disconnects clier cancels all outstanding	quotes.	Quote or Market Depth sent. Several F/FF or H/HF messages are sent. For strategy: Several FS or HS message are sent

6	Client: Reconnects and receives	Connection accepted.	
	missed messages.	Sends a TK message	
	Sends a TC message:	Quotes cancellation notice is	
	[Exchange message ID: " "]	sent.	
		Sends an KG message	

4.5.5 Disconnection Instructions Management – Client Disconnection

ID#: TI	EC-05 Type: Technical	Requirement: Optional	Co-ordinated Test: N
Descrip	tion: Disconnection Instruction Manage	ement – Disconnection by Client; out	standing quotes are cancelled.
Comme	ents: None.		
Prereq	uisites		
None.			
		Expected Results	
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)
1	Client: Specifies disconnection instructions.	Disconnection Instruction is accepted.	
	Sends a TA message:	Sends a TM message	
	[Disconnection Instruction: Q]		
2	Client: Active Y(ON)		
3	Client: Sends a few quotes.	Quotes are accepted.	
	Sends several Q <i> messages</i>	Sends several LA messages	
4	Client: Disconnects.	Disconnection is accepted.	Quote or Market Depth sent.
	Sends a TD message	Sends a TL message	Several /FFF or H/HF messages are sent.
		All outstanding quotes are cancelled.	For strategy: Several FS or HS message are sent
5	<u>Client:</u> Reconnects and receives missed messages.	Connection accepted. Sends a TK message	
	Sends a TC message: [Exchange message ID: " "]	Quotes cancellation notice is sent. Sends an KG message	

4.5.6 Disconnection Instruction Management – Quotes not Cancelled

ID #: TEC-06		Type: Technical	Requirement:	Optional	Co-ordinated Test: N	
Descriptio	Description: Disconnection Instruction Management – Disconnection by Client; outstanding quotes are not cancelled					
Comment	s: Instruction	to cancel quotes is rem	noved			
Prerequis	sites					
Execution	of test case 7	ΓEC-05				
			Expected Results			
#	Test Steps		Trading Engine Respon		flarket Information HSVF)	
1	Sends a TA	cifies ion instructions. A message: tion Instruction: Q]	Disconnection Instruction accepted. Sends a TM message	n is		
2	Client: Activ					
3	3 Client: Sends a few quotes. Sends several Q <i>messages</i>		Quotes are accepted. Sends several LA messa	ages S	Quote or Market Depth sent. Several F/FF or H/HF messages are sent. For strategy: Several FS or HS message are sent	
4	Client: Disc Sends a TL		Disconnection is accepted outstanding quotes are no cancelled. Sends a TL message	· II		
5	Client: Rec		Connection is accepted. Sends a TM message			

4.5.7 Sequence Resynchronization

ID #: TEC	C-07	Type: Technical	Requirement:	Mandatory	Co-ordinated Test: N
Description	on: Re-synchr	onization from out of seq	uence situation.		
Comment	ts: None.				
Prerequis	sites				
Client mu	st be disconn	ected.			
		E	Expected Results		
#	Test Steps		rading Engine Respo		arket Information SVF)
1	Client: Con	nects to SOLA C	Connection established	I.	
	Sends a To	C message:	Sends a TK message		
	[Exchange	Message ID: 0]			
2			Message is out of sequ		
	quote. [User Sequ		Client is disconnected. nust reconnect.	Cilett	

		Sends a TO message: [Received User Sequence ID: z] [Expected User Message ID: x]	
3	Client: Reconnects. Sends a TC message	Re-connection and Disconnection Instructions are accepted. Sends a TK	
4	Client: Sends an order or a quote. [User Sequence ID: x]	Message is in sequence. Order or quote is accepted.	

4.5.8 End of Transmission

ID #: TE	C-08	Гуре: Technical	Requirement:	Mandatory	Co-ordinated Test: N				
Descripti	Description: End of Transmission								
Commen	nts: None.								
Prerequi	isites								
Executio	n of test case TEC	-01							
		E	Expected Results						
#	Test Steps		rading Engine Resp SAIL)		Market Information (HSVF)				
1	Client: Sends ar Transmission m end of the tradin Restart SAIL Fro gateway.	essage at the ig day.	ends a TT message						

4.6 Unsolicited Service Test Cases

4.6.1 Group Status Change Notification

ID #: UI	NS-01	Type: Unsolicited	I Services	Requirement:	Optional	Co-ordinated Test: N		
Descrip	Description: Group State Change Notification							
Comme	Comments: None.							
Prerequ	uisites							
Choose	a Group and cha	nge the status of the	group.					
			Expected Results					
#	Test Steps		Trading En (SAIL)	gine Responses	Market Info	rmation		
1 Client: Is connected and has requested to receive NG message type.								
2			instrument (G message when an group change from ** to Continuous	Group Status A GR messa	·		

4.6.2 Instrument State Change Notification

ID#: UN	IS-02	Type: Unsolicited	Services	Requirement:	Optional	Co-ordinated Test: N			
Descript	escription: Instrument State Change Notification								
Commer	Comments: None.								
Prerequ	isites								
Choose	an instrument ar	nd change the status	of the instrument						
			Expected Res	ults					
#	Test Steps		Trading Engir (SAIL)	ne Responses	Market Infor (HSVF)	mation			
1	Client: Is connected and has requested to receive NI message type.								
2				essage when an up change from to Continuous	An F/FF or H	arket Depth sent. I/HF message is sent FS or HS message is sent			

4.6.3 Bulletin Message

ID #: UI	NS-03	Type: Unsolicited	Services	Requirement:	Optional	Co-ordinated Test: Y			
Descrip	escription: Bulletin message (Market Supervision message) sent from								
Comme	Comments: None.								
Prerequ	uisites								
MOC er	nters a bulletin to	be disseminated to m	narket participa	nts					
			Expected Results						
#	Test Steps		Trading Eng (SAIL)	ine Responses	Market In (HSVF)	formation			
1	Client: Is conr	nected on HSVF							
2	BIT: sends a to the clients	bulletin messages			Bulletin m An L mess	essage. sage is sent			

4.7 Order Creation Test Cases

4.7.1 Market Top order

ID #: OR	RD-01	Type: Order Creation		Requirement:	Optional	Co-ordinated Test: N			
Descrip	escription: Entering a Market Top order.								
Comme	Comments: None.								
Prerequ	Prerequisites								
		INST1 must be set to NST1 must be in 'Cor		_	no other orders r	nust be in the book.			
			Expected	Results					
#	Test Steps		Trading E (SAIL)	ngine Responses	Market Ir (HSVF)	nformation			
1	Client: Enters order for 20 construment IN: Sends an OE [Price type: A	ST1. message:	Order is pa Sends 1 N For Strates Sends 1 N	E message artially/full filled IT message	An F/FF For strate Trade se A C/CF n Strategy: A CS me	nessage is sent			

4.7.2 Limit Order

ID #: OR	#: ORD-02 Type: Order Creation		Requirement:	Manda	atory	Co-ordinated Test: N			
Descript	Description: Entering a limit order. The order opens the position.								
Comme	Comments: None.								
Prerequ	isites								
1. The bo	ook for instrume	nt INST1 must be set	to [Buy 12	2@0.10 – Sell 10@0	0.20].				
2. Group	for instrument I	NST1 must be in 'Cor	ntinuous T	rading' mode.					
			Expecte	ed Results					
#	Test Steps		3 3 1 11 11		Market Information (HSVF)				
1	Client: Enters 15@0.20, Op instrument IN Sends an OE [Open/Close: [Price type: L	en Position, for ST1. message:	Sends a The ord Sends a For Stree Sends a	booked. A KE message er is partially/fully tra NT message ategy NT message and essage per leg	aded.	An F/FF For stra Trade s A C/CF Strategy A CS m	message is sent		

4.7.3 Opening Order

ID #: OR	D-03 Type: Order Creation	on Requirement:	Mandatory	Co-ordinated Test: N					
Descript filled in.	Description: Entering an opening order (price Type: "O") during the pre-opening** phase. The order will participate to the auction and totally illed in.								
Comme	Comments: None.								
Prerequi	isites								
	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								
#	Test Steps	Expected Results Trading Engine Responses		nformation					
1	Client: Enters a Sell order 12@ opening price, Close Position, for instrument INST1. Sends an OE message: [Price type: O] [Duration Type: F] [Open/Close: C] the status of the instrument changes from Pre-opening to Opening	Order is booked. Sends a KE message The order is traded at opening price, during the auction phase Sends 1 NT message	Quote o An F/FF For strate Trade se	r Market Depth sent. or H/HF message is sent egy: FS or HS message is sent					

4.7.4 Limit Order during Pre-Opening Phase

ID #: OR	Type: Order Crea	tion Requirement:	Mandatory	Co-ordinated Test: N			
Descript	tion: Entering a limit order (price Type	pe: "L") during the pre-opening*	* phase. The order will partially	participate to the auction.			
Comme	nts: None.						
Prerequ	isites						
	k for instrument INST1 must be set to r instrument INST1 must be pre-op e		<u>01.50</u>].				
		Expected Results					
#	Test Steps	Trading Engine Response: (SAIL)	Market Information (HSVF)				
1	Client: Enters a Sell order 15@ opening price, Sends an OE message: [Price type: L] The status of the instrument changes from Pre –opening to Opening	Order is booked. Sends a KE message The order is traded at opening price. Remaining quantity with pass into continuous trading. Sends 1 NT message	II Trade sent	essage is sent HS message is sent			

4.7.5 Passive Limit Order

ID #: Of	ID #: ORD-05 Type: Order Creation		Requirement:	Optional	Co-ordinated Test: N		
Descrip	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 ast active date.						
Prerequ	uisites						
1. The b	pook for instrument INST1 must be	set to [Buy	2@200.00 -Sell 10@	@201.50].			
2. Grou	p for instrument INST1 must be in	'Continuous	Trading' mode.				
		Expected	Results				
#	Test Steps	Trading E (SAIL)	ngine Responses	Market II (HSVF)	nformation		
1	Client: 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 Sends an OE message: [Price type: L] [Duration Type: D] [GTD Data: YYYYMMDD (Represents the order's last active day)]	Order is be Sends a K	ooked. E message	An F/FF	r Market Depth sent. or H/HF message is sent egy: FS or HS message is sent		

4.7.6 Fill and Kill

ID #: OR	D-06 Type: Order Creat	ion Requirement:	Optional	Co-ordinated Test: N					
Descript	Description: Entering a 'Fill and Kill' order.								
Commer	Comments: None								
Prerequi	isites								
	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.								
		Expected Results	Expected Results						
#	Test Steps	Trading Engine Response (SAIL)	Market Informatio (HSVF)	n					
1	Client: Enters a Sell 'Fill and Kill'	Order is filled/cancelled	Quote or Market D	epth sent.					
	order 15@2.00 for instrument INST1.	Sends a KE message	An F/FF or H/HF m	nessage is sent					
	Sends an OE message:	Sends 1 NT message and message	NZ For strategy: FS or	For strategy: FS or HS message is sent					
	[Duration Type: E]								
		Sends 1 NT message and							
		1 NL message per leg							

4.7.7 Limit Order with Clearing Instruction and Owner Data

ID #: OR	RD-07	Type: Order Creation	Requirement: Mandatory	Co-ordinated Test: N					
Descript	escription: Entering a limit order with a Clearing Instruction and Owner Data.								
Comme	Comments: None.								
Prerequ	isites								
1. The m	narket for inst	rument INST1 must be se	t to [10@2.00 - <u>10@2.50</u>].						
2. Group	for instrume	nt INST1 must be in 'Conf	tinuous Trading' mode						
i.			Expected Results						
#	Test Steps	S	Trading Engine Responses (SAIL)	Market Information (HSVF)					
1		ers a Sell Limit Order	Order is booked.	Quote or Market Depth sent.					
	40@2.25 with a Clearing Instruction and Owner Data, for instrument INST1.		Sends a KE message	An F/FF or H/HF message is sent					
	Sends an	OE message:		Strategy: An HS message is sent					
	[Clearing I	nstruction: anything]							
	[Owner Da	ata: anything]							

4.7.8 Booked Order Filled at 2 Prices

ID #: OR	RD-08	Гуре: Order Creation	Requirement:	Optional	Co-ordinated Test: N				
Descript	Description: Entering a Book any price order that gets filled at 2 different prices.								
	Comments: None.								
	Prerequisites 1. Group for instrument INST1 must be in 'Continuous Trading' mode.								
		Expe	ected Results						
#	Test Steps		ing Engine Responses L)	Market (HSVF)	t Information)				
1	Client: Enters 2 10@2.50, 15@2	,		An F/F	or Market Depth sent. F or H/HF message is sent gy: An HS message is sent				
2	Client: Enters a price Order for 2 instrument INST Sends an OE m. [Price type: W]	10 contracts for 1. Send essage: Strate 2 NT	er is filled at 2 different pri 2.60.and 5@2.50 ds 2 NT messages degy: messages each followed message per leg	2 C/CF Strateg Per Leg Quote d by An F/F	sent. Finessage are sent gy: 2 CS are sent g: C or CF message is sent or Market Depth sent. Fior H/HF message is sent gy: An HS is sent				

4.7.9 Minimum Fill Order

ID#: OR	RD-09	Type: Order Creation	on	Requirement: Optional	Co-ordinated Test: N			
Descrip	Description: Entering a Minimum Fill volume order.							
Comme	nts: None.							
Prerequ	Prerequisites							
1. The m	narket for instrum	nent INST1 must be so	et to [10@	2.00 – <u>10@2.50</u>].				
2. Group	for instrument I	NST1 must be in 'Cor	ntinuous T	rading' mode.				
			Expected Results					
#	Test Steps		Trading (SAIL)	Engine Responses	Market Information (HSVF)			
1	10@2.40 for i	a Buy Limit Order nstrument INST1 ım fill volume of 5.	because	partially filled/eliminated it cannot be filled for the d volume.				
	Sends an OE	message:	Sends a KE message:					
	[Quantity Teri	m: M]						
	[Additional Qu	uantity: 5]						

4.7.10 Stop Order

ID #: OR	D-10 Type: Order Creati	on	Requirement:	Optional	Co-ordinated Test: N			
Descript	Description: Entering a Stop Order and being able to handle it when it gets triggered.							
Commer	nts: None.							
Prerequi	sites							
	ST21 needs to allow Stop Orders. for instrument INST1 must be in 'Co	ntinuous Tradin	g' mode					
3. The ma	arket for instrument INST21 must be st Price or the previous day's close for	set to [30@2.0	0 – 10@2.50].	.				
	Toot Stone	Expected Re	sults					
#	Test Steps	Trading Eng (SAIL)	ine Responses	Market (HSVF)	Information			
1	Client: 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 accellated booked. Sends a KE I [Status: S]	•	An F/FF	or Market Depth sent. For H/HF message is sent tegy: FS or HS message is sent			
2	Client: Enters an order on INST21 to sell 25@2.00.	at 2.00 again	message	Strategy Quote of	sent. message is sent y: 1 CS are sent and 1 C/CF message per leg or Market Depth sent. For H/HF message is sent tegy: FS or HS message is sent			

	1 NL message per leg	
	The remaining 4 contracts are booked at 2.00.	
	Sends a KE message	
	[Status:]	

4.7.11 Stop on Ask Order

ID #: OR	D-11 Type: Order Creati	on Requ	uirement:	Optional	Co-ordinated Test: N			
Description: Entering a Stop on Ask Order and being able to handle it when it gets triggered. (Not booked immediately)								
Commer	nts: None.							
Prerequi	isites							
1. The IN	IST21 needs to allow Stop Orders.							
2. Group	for instrument INST1 must be in 'Cor	ntinuous Trading' m	ode					
3. Instrur	ment Book must be clear							
4. The m	arket for instrument INST21 must be	set to [12@10.00 –	· 10@10.50].					
		Expected Result	ts					
#	Test Steps	Trading Engine (SAIL)	Responses	Market Inf (HSVF)	formation			
1	Client: Enters a Sell StopOnAsk Order 8@10.00 for instrument INST21, trigger price 10.25 Sends an OE message: [Additional Price: 10.25] [Special Price Term: I]	Order is accepted the book. Sends a KE mess. [Status: "S "]		An F/FF o	Market Depth sent. r H/HF message is sent gy: FS or HS message is sent			
2	Client: Enters a sell order on INST21 15@10.25.	Limit order triggers StopOrder. StopOrder match bid side. Trade 8@10.00 is done. Sends an NT message For Strategy Sends 1 NT message and 1 NL message per leg The remaining 4 Qty are booked at 10.00 on Bid side		Strategy: leg Quote or l An F/FF o	essage is sent 1 CS are sent and 1 C/CF message per Market Depth sent. r H/HF message is sent gy: FS or HS message is sent			
		Sends a KE mes	sage					

4.7.12 Stop on Bid Order

ID #: 0)RD-12	Type: Order Creati	ion	Requirement:	Optional	Co-ordinated Test: N			
	Description: Entering a Stop on Bid Order and being able to handle it when it gets triggered. (booked immediately)								
Comm	Comments: None.								
Prereq	Prerequisites								
2. Grou	 The INST21 needs to allow Stop Orders. Group for instrument INST1 must be in 'Continuous Trading' mode Instrument Book must be clear The market for instrument INST21 must be set to [10@10.00 – 10@10.35]. 								
#	Test Steps		Expected Re Trading Eng (SAIL)	ine Responses		Market Information (HSVF)			
1		rice: 9.90]	Order is acce booked Sends a KE r	pted, is immediate	y triggered and	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent			

4.7.13 Stop on Last Order

ID #: O	RD-13 Type	: Order Creation	tion Requirement: Opt		Co-ordinated Test: N			
Descri	Description: Entering a Stop on Last Order and being able to handle it when it gets triggered. (booked and traded immediately)							
Commo	Comments:							
Prereq	uisites							
1. The I	INST21 needs to allow S	top Orders.						
2. Grou	ip for instrument INST1 r	nust be in 'Continuous T	rading' mode					
3. Instru	ument Book must be clea	ar						
4. Two	opposite orders with Price	ce 10,20 must be traded						
		Expecte	d Results					
#	Test Steps	Trading (SAIL)	Engine Responses	Marke (HSVI	et Information F)			
1	Client Enters a bid or		accepted and is on the	Quote	e or Market Depth sent.			
	INST21 12@10.30.	book.		An F/I	FF or H/HF message is sent			
		Sends a	Sends a KE message		rategy: FS or HS message is sent			
2	Client: Enters a ask	•	enter	Trade	e sent.			
	Order 15@10.30 for INST21, trigger price	Order is	immediately triggered	A C/C	F message is sent			
	Sends an OE messa	StonOrd	er match bid side.					
	[Additional Price: 10	gy: 1 CS are sent and 1 C/CF message per leg						
	[Special Price Term:	Sanda a	Sends an NT message					
		For Stra	tegy					

	Sends 1 NT message and	Quote or Market Depth sent.
	1 NL message per leg	An F/FF or H/HF message is sent
	The remaining 3 Qty are booked at 10.30 on Ask side	For strategy: FS or HS message is sent
	Sends a KE message	

4.7.14 Ask Touched Order

ID #: OR	ID #: ORD-14 Type: Order Creation		Requirement:	Optional	Co-ordinated Test: N				
Descrip	Description: Entering an If Ask Touched Order and being able to handle it when it gets triggered. (Not booked immediately)								
Comme	Comments: None.								
Prerequ	Prerequisites								
1. The IN	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.								
		Expe	ected Results						
#	Test Steps	Trad (SAII	ling Engine Responses L)	Market Inform (HSVF)	nation				
1	Client: Enters a Bu IfAskTouched Ord for instrument INS price 10.75 Sends an OE mes [Additional Price: [Special Price Ter	er 8@10.00 T21, trigger ssage: [State	Order is accepted and is not ne book. ds a KE message dus: "S"]	An F/FF or H/	ket Depth sent. HF message is sent FS or HS message is sent				
2	Client: Enters a se INST21 15@10	Trade Send For S Send 1 NI	e 8@10.00 is done. ds an NT message Strategy ds 1 NT message and L message per leg ds a KE message	Quote or Mar	age is sent S are sent and 1 C/CF message per rket Depth sent. HF message is sent FS or HS message is sent				

4.7.15 Bid Touched Order

ID#: OF	Type: Order Creat	ion Requirement: Op	tional Co-ordinated Test: N					
Descrip	Description: Entering an If Touched on Bid Order and being able to handle it when it gets triggered. (booked immediately)							
Comme	Comments: None.							
Prerequ	Prerequisites							
1. The IN	NST21 needs to allow If Touched Ord	lers.						
2. Group	o for instrument INST1 must be in 'Co	ntinuous Trading' mode						
3. The m	narket for instrument INST21 must be	set to [10@10.00 - 10@10.35].						
		Expected Results						
#	Test Steps	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	Quote or Market Depth sent. An F/FF or H/HF message is sent For strategy: FS or HS message is sent					

4.7.16 Touched on Last Order

ID #: ORD-16 Type: Order Creation		tion Requirement:	Optional	Co-ordinated Test: N			
Descrip	Description: Entering a If Touched on Last Order and being able to handle it when it gets triggered. (booked and traded immediately)						
Comme	nts: None.						
Prerequ	isites						
1. The IN	NST21 needs to allow If Touched Ord	ders.					
2. Group	o for instrument INST1 must be in 'Co	ontinuous Trading' mode					
3. Two o	opposite orders with Price 10.20 mus	t be traded					
		Expected Results					
#	Test Steps	Trading Engine Responses (SAIL)	Marke (HSVF	t Information)			
1	Client: Enters a sell order on INST21 15@10.30.	Order is accepted and is on th book. Sends a KE message	An F/F	or Market Depth sent. For H/HF message is sent rategy: FS or HS message is sent			
2	Client: Enters a buy If Touched on Last Price 17@10.30 for instrument INST21, trigger price 10.10 Sends an OE message: [Additional Price: 10.10] [Special Price Term: T]	Order is immediately triggered If touch order match bid side. Trade 15@10.30 is done. Sends an NT message For Strategy Sends 1 NT message and 1 NL message per leg The remaining 2 Qty are book at 10.30 on Ask side Sends a KE message	A C/Cl Strate Quote An F/F	sent. F message is sent gy: 1 CS are sent and 1 C/CF message per leg or Market Depth sent. FF or H/HF message is sent rategy: FS or HS message is sent			

4.7.17 Circuit Breaker Triggered

ID #: OR	D-17 Type: Ord	der Creation	Requiremen	t: Mandatory	Co-ordinated Test: N			
Descript	Description: Circuit Breaker** Triggered to Y price limit violation							
Commer	Comments: None.							
Prerequi	Prerequisites							
2. Group	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							
		Expected Results						
#	Test Steps	Trading Engine Resp (SAIL)	onses	Market Information (HSVF)				
1	Client: Enters a Sell Order Q@P for instrument INST21. P>Y P <x (yhigh<p<xhigh)="" an="" message<="" oe="" sends="" th=""><th>Order is accepted and book. Sends a KE message</th><th>is on the</th><th>Quote or Market De</th><th>•</th></x>	Order is accepted and book. Sends a KE message	is on the	Quote or Market De	•			
2	Client: Enters a Buy order AT Market price for quantity Q	Orders is deleted due breaker (KE sent with Status: C) NI Message with Instruchanges in Suspended After 1minute NI mess Status 'N'	Order ument state	H send with Instrum Quote or Market De An F/FF or H/HF me after one minute H s	epth sent.			

4.7.18 Circuit Breaker Triggered

ID #: OR	D-18	Type: Order Creation		Requirement:	Mandatory	Co-ordinated Test: N			
Descript	Description: Circuit Breaker** Triggered to Z price limit violation								
Comme	Comments: None.								
Prerequisites									
	The INST21 needs to allow Circuit Breaker. 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								
			Expe	cted Results					
#	Test Steps			ng Engine onses .)	Market Inform (HSVF)	ation			
1	100@20 for in	20 <yhigh<xhigh< td=""><td>on the</td><th>is accepted and is book. Is a KE message</th><td>Quote or Mark An F/FF or H/F</td><td>et Depth sent. IF message is sent</td></yhigh<xhigh<>	on the	is accepted and is book. Is a KE message	Quote or Mark An F/FF or H/F	et Depth sent. IF message is sent			

	20> ZHigh or 20< ZLow		
2	Client: Enters an order on Sell 100@20	Orders is deleted due to circuit breaker (KE sent with Order Status : C) NI Message with Instrument state changes in Suspended as Status 'S'. After 1min NI message with instrument Status 'N'	Quote or Market Depth sent. An F/FF or H/HF message is sent H send with Instrument Status F after one minute H send with Instrument Status T

4.7.19 House Order

ID #: ORD)-19	Type: Order Creati	ion	Requirement:	Mandatory	Co-ordinated Test: N				
Description	Description: Entering a House order.									
Commen	Comments: None.									
Prerequis	Prerequisites									
1. The ma	rket for instru	ment INST1 must be	set to [12@2.	00 – <u>10@2.50</u>].						
2. Group f	or instrument	INST1 must be in 'C	ontinuous Trad	ding' mode						
			Expected Results							
#	Test Steps		Trading En (SAIL)	gine Responses	Market Info (HSVF)	rmation				
1		ers a Buy Limit	Order is boo	oked.	Quote or M	arket Depth sent.				
	Order 100@2.40, House for the instrument INST1.		Sends a KE	message	An F/FF or I	H/HF message is sent				
	Sends an 0	DE message:			For strategy	r: FS or HS message is sent				
	[Price type:	: L]								
	[Account ty	rpe: 2]								

4.7.20 Client Limit Order

ID #: O	RD-20	Type: Order Creation		Requirement:	Mandatory	Co-ordinated Test: N				
Descri	Description: Entering a Client Limit Order									
Comm	Comments: None.									
Prereq	Prerequisites									
The ma	arket for instrumer	nt INST1 must be set	to [10@2.00 –	10@2.50].						
		Test Steps		Expected Results						
#	Test Steps			ine Responses	Market Infor (HSVF)	mation				
1	II ——	Buy Limit Order	Order is book	red	Quote or Ma	rket Depth sent.				
	100@2.40, Pro, for instrument INST1.		Sends a KE i	message	An F/FF or H	/HF message is sent				
	Sends an OE r	message:	[Status:]		For strategy:	FS or HS message is sent				
	[Account Type: 1]									

4.7.21 Limit Order with Disclosed Quantity

ID#: OR	RD-21	Type: Order Creation	Requirement:	Optional	Co-ordinated Test: N					
Descrip	Description: Entering a Limit Order with a Disclosed quantity.									
Comme	Comments: None.									
Prerequ	Prerequisites									
	The market for instrument INST1 must be set to [10@2.00 – 10@2.50]. Group for instrument INST1 must be in 'Continuous Trading' mode									
	Test Steps	E	Expected Results							
#			Trading Engine Respons (SAIL)		larket Information HSVF)					
1	Client: Enters a 30@2.05 with a quantity of 25 for INST1. Sends an OE man [Quantity Term: [Additional Quantity Term]	Disclosed and prinstrument are sage: D]	Order is accepted and boo and only 25 contracts are Sends a KE message	shown.	Quote or Market Depth sent. n F/FF or H/HF message is sent for strategy: FS or HS message is sent					

4.7.22 Limit Order for Strategy

ID #: OF	RD-22 Type: Order (Creation Requirement:	: Optional Co-ordinated Test: N								
Descrip	Description: Entering a Limit Order for a Strategy (spread) that gets traded (Trade in Strategy Book)										
Comme	Comments: None.										
Prerequisites											
1. The ir	nstrument INST24 is a strategy a	nd contains 2 legs (spread INST22	22 – INST23)								
2. Group	p for instrument INST1 must be in	n 'Continuous Trading' mode									
3. The n	narket for instrument INST24 mu	st be set to [10@2.00 – 10@2.50].	0].								
4. The n	narket for instrument INST22 (1st	leg of spread) must be set to [5@3	@3.20 – 10@3.30].								
5. The n	narket for instrument INST23 (2 nd	leg of spread) must be set to [106	0@1.00 – 10@1.10].								
		Expected Results	Expected Results								
#	Test Steps	Trading Engine Response (SAIL)	Market Information (HSVF)								
1	Clients: Enters a Sell Limit Or 10@2.00 for instrument INST	•	For strategy: CS message is sent followed by 1 C/CF message per leg For the legs: C/CF [PriceIndicatorMarket = P] message is sent per leg Strategy Quote or Market Depth sent. An ES or HS message is sent								

4.7.23 Market Order at Instrument Limit

ID #: ORD-23 Type: Order Creation		eation	Class: Optional	Co-ordinated Test: N						
Descrip	Description: Entering a Market Order at instrument limit (Min/Max) price.									
Comments: None.										
Prerequisites										
1. 2. 3.	Group for instrument INST1 must be in 'Continuous Trading' mode.									
#	Test Steps		d Results							
m	rest Steps	Trading (SAIL)	Engine Responses	Market Information - HSVF						
1	Client: Enters a Buy @0.0001 for 20 contracts for instrument INST1. Client: Enters a Sell market for 12 contracts for instrument INST1. Sends an OE message: [Price type: M]	Complete Sends a [Status: 2 Trade Se Sends 1 For Strat Sends 1	KE message X] ent NT message	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 For strategy: CS message is sent followed by 1 C/CF message per leg						
2	Client: Enters a Sell @99999.5000 for 15 contracts for instrument INST1. Client: Enters a Buy market for 15 contracts for instrument INST1.	Sends a [Status: 2	KE message X]	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						
	Sends an OE message: [Price type: M]	For Strat	legy NT message and	For strategy: CS message is sent followed by 1 C/CF message per leg						

1 NL message per leg

4.7.24 Cross Order Validation

ID #: OI	RD-24 Type: Order Cre	ation Requirement:	Optional	Co-ordinated Test: N						
Descrip	Description: Cross Order validation normal type									
Comme	Comments: None.									
Prerequ	Prerequisites									
2. Instru	1. Group for instrument INST1 must be in 'Continuous Trading' mode 2. Instrument Book must be clear 3. Instrument must have underlying: ENI (on IDEM), SBER (on LSEDM), SCH or EUI (on Curve)									
#	Test Steps	Expected Results								
	1.55.5045	Trading Engine Respons (SAIL)	es Market II (HSVF)	nformation						
1	Client: Enters two regular Buy/Sell orders in order to create a spread for instrument INST1.	Orders are accepted and be and spread is created. Sends a KE message		Market Depth sent. or H/HF message is sent						
2	Client: Enters a cross order within the spread Send an Cross Order through OX message	Order is accepted and trad Sends a KO message and messages with Special Tra Indicator= "D"	two NT C<> mes	essage is sent. esage is sent with Price Indicator Marker						

4.7.25 Cross Order Block

ID #: OR	D-25	Type: Order Creati	ion	Requirement:	Optional	Со-о	rdinated Test: N			
Descript	Description: Cross Order Block									
Comme	Comments: None.									
Prerequi	Prerequisites									
2. Instrur	1. Group for instrument INST1 must be in 'Continuous Trading' mode 2. Instrument Book must be clear 3. Instrument must have underlying: ENI (on IDEM), SBER (on LSEDM), SCH or EUI (on Curve)									
			Expected Results							
#	Test Steps		Trading (SAIL)	Engine Responses	Mar (HS	ket Informa VF)	tion			
1	,	two regular rs in order to create astrument INST1.	and spre	re accepted and boo ad is created. KE message			t Depth sent. message is sent			
2	Client: Enters within the spre Send an Cros through OX m Qty>Block(50	ead s Block Order essage	Sends a	accepted and tradec KO message and tv es with Special Trade = "B"	/o NT C<>	•	is sent. sent with Price Indicator Marker			

4.7.26 Committed Order

ID #: OF	D #: ORD-26 Type: Order Creation Re			Requirement:	Optional	Co-ordinated Test: Y			
Descrip	Description: Committed order (interbank)								
Comme	ents: None.								
Prerequ	uisites								
1. Grou	p for instrument IN	NST1 must be in 'Co	ntinuous Trading	' mode					
2. Instru	ıment Book must	be clear							
3. Instru	ument must have	e underlying: ENI (c	on IDEM), SBER	(on LSEDM), SCH	or EUI (on C	urve)			
			Expected Res	sults					
#	# Test Steps		Trading Engine Responses (SAIL)		Market In (HSVF)	Market Information (HSVF)			
1	Client: Enters Buy/Sell order create a sprea	-	Orders are acc and spread is a Sends a KE m			Market Depth sent. or H/HF message is sent			
2	within the spre	a committed order ead specifying as BIT (0201) nessage with Price	Order is accep Sends a Ke m	ted and traded. essage					
3		committed order ead specifying as party	Sends a Ke m	ted and traded. essage and two NT n Special Trade		ssage is sent. sage is sent with Price Indicator Marker =			

4.7.27 Committed Block Order

ID #: OR	D-27	Type: Order Creati	on	Requirement:	Optional	Co-ordinated Test: Y				
Descript	Description: Committed Block order (interbank)									
Commer	Comments: None.									
Prerequi	Prerequisites									
1. Group	for instrument II	NST1 must be in 'Cor	ntinuous Tradin	g' mode						
	ment Book must									
3. Instru	ment must hav	e underlying: ENI (c	on IDEM), SBEI	R (on LSEDM), SC	H or EUI (on (Curve)				
	Test Steps		Expected Results							
#			Trading Eng (SAIL)	ine Responses	Market (HSVF)	Information				
1	Client: Enters	-	Orders are ad	ccepted and booked	d Quote o	or Market Depth sent.				
		ad for instrument	Sends a KE i		An F/FF	or H/HF message is sent				
	INST1.		CONGS & NE I	noodago						
2		a committed order ead specifying as	Order is acce	epted and traded.						
	counter party		Sends a Ke r							
	Send OE mes	sage With Price								

	Type ='C' Qty>500		
3	BIT: Enters a committed order within the spread specifying as Client counter party	Order is accepted and traded. Sends a Ke message and two NT messages with Special Trade Indicator = "K"	Trade message is sent. C<> message is sent with Price Indicator Marker = "K"

4.7.28 While Connected Orders

ID #: Of	RD-28	Type: Order Creati	on	Requirement:	Optional	Co-ordinated Test: N				
Descrip	Description: While connected orders									
Comme	Comments: None.									
Prerequ	Prerequisites									
1. Group	p for instrument II	NST1 must be in 'Cor	ntinuous Tradi	ng' mode		-				
				Expected Results						
#	Test Steps		Trading En (SAIL)	gine Responses	Market Infor (HSVF)	mation				
1	II ——	a regular order duration type = W	Order is acc	epted.	F/FF or H/H	F messages Sent				
2	Client: Discon connection on	nection and re the systems	(Eliminated	s changed to I OnDisconnect) as Client perform re	F/FF or H/HF	Fmessages Sent				

4.7.29 Matched Principal Order

ID #: O	RD-29 Type: Order Crea	tion	Requirement:	Optional	Co-ordinated Test: N					
Descrip	Description: Entering a Limit order with account type Matched Principal.									
Comme	Comments: None.									
Prerequ	Prerequisites									
1. 2. 3.	2. Group for instrument INST1 must be in 'Continuous Trading' mode									
		Expected Res	Expected Results							
#	Test Steps	Trading Engin	e Responses	Market Informat (HSVF)	ion					
1	Client: Enters a Buy Limit Order 100@2.40, Matched Principal for the instrument INST1. Sends an OE message: [Price type: L] [Account type: 6]	Order is booke Sends a KE me		Quote or Market An F/FF or H/HF	·					

4.7.30 Market Maker Limit Order

ID #: OR	D-30	Type: Order Creati	on	Requirement:	Optional	Co-ordinated Test: N				
Descript	Description: Entering a Limit order with account type Market Maker.									
Commer	Comments: Not supported on IDEM									
Prerequi	Prerequisites									
1.	The book for in	nstrument INST1 mus	t be set to [10	@2.00 – 10@2.50].						
2.	Group for instr	ument INST1 must be	e in 'Continuo	us Trading' mode						
3.	The trader ID r	must be granted for th	ne account Ma	rket Maker						
			Expected F	Results						
#	Test Steps		Trading En (SAIL)	gine Responses	Market In	formation				
1		a Buy Limit Order	Order is boo	oked.	Quote or	Market Depth sent.				
		rith Account Type for the instrument	Sends a KE	message	An F/FF o	r H/HF message is sent				
	Sends an OE	nds an OE message:								
	[Price type: L]	1								
	[Account type	: 4]								

4.7.31 Best Price Setter

ID #: OR	D-31 Type: Order Creati	on Requirement: C	Optional Co-ordinated Test: N								
Descript	Description: Entering a limit order that becomes a best price setter.										
Comme	Comments: Not supported on IDEM										
Prerequ	Prerequisites										
1. 2. 3.	2. Group for instrument INST1 must be in 'Continuous Trading' mode										
ш	Total Change	Expected Results									
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)								
1	Client: Enters a Sell Limit Order 40@101.10 with a Clearing Instruction for instrument INST1. Sends an OE message: [Clearing Instruction: anything]	Order is booked. Sends a KE message Sends a BP Message	Quote or Market Depth sent. An F/FF or H/HF message is sent								

4.8 Order Cancellation Test Cases

4.8.1 Cancelling an Order

ID #: CX	(L-01	Type: Order Cance	ellation	Requirement:	Mand	atory	Co-ordinated Test: N					
Descript	Description: Cancelling an order.											
Comme	Comments: None.											
Prerequ	Prerequisites											
The mar	ket for instrumen	t INST1 must be set	to [10@2.	00 – 10@2.50].								
			Expecte	ed Results								
#	Test Steps		Trading (SAIL)	յ Engine Response	es	Market Inform (HSVF)	nation					
1	Client: Enters order 10@2.2d INST1. Sends an OE	0 for instrument		•		An F/FF or H/H	ket Depth sent. HF message is sent FS or HS message is sent					
2	Client: Cancel order. Sends an XE I [Cancelled Order]	· ·	Sends a	cancelled. a KZ message Status: "A"]		An F/FF or H/h	ket Depth sent. HF message is sent 'S or HS message is sent					

4.8.2 Cancelling an order by Market Operations

ID #: CX	L-02 Type: Order Cand	ellation	Requirement:	Mandatory	Co-ordinated Test: Y					
Descript	Description: Cancelling an order by Market Control.									
Comme	Comments: None.									
Prerequ	Prerequisites									
The mar	ket for instrument INST1 must be set	to [10@2.0	0 – 10@2.50].							
		Expected	d Results							
#	Test Steps	Trading (SAIL)	Frading Engine Responses SAIL)		nformation					
1	Client: Enters a regular Sell order 10@2.20 for instrument INST1. Sends an OE message	Order is I Sends a [Order II	KE message:	An F/FF	r Market Depth sent. or H/HF message is sent egy: FS or HS message is sent					
2	BIT: Cancels the previous order. Sends an XE message: [Cancelled Order ID: x]	Sends a	cancelled. NZ message atus: "M"]	An F/FF	r Market Depth sent. or H/HF message is sent egy: FS or HS message is sent					

4.8.3 Cancelling a Partially Filled Order

ID #: C	XL-03	Type: Order Canc	ellation	Requirement:	Mand	atory	Co-ordinated Test: N				
Descr	escription: Cancelling a partially filled order.										
Comn	omments: None.										
Prere	rerequisites										
The ma	he market for instrument INST1 must be set to [10@2.00 – 10@2.50].										
			Expecto	ed Results							
#	Test Steps		Trading (SAIL)	Engine Response	S	Market Information (HSVF)					
1		a regular Buy	Order is	booked.		Quote or Market Depth sent.					
	order 30@2.5	60 for instrument	Sends a	a KE message:		An F/FF or H/HF message is sent					
	Sends an OE	message	[Order I	D: x]		For strategy: I	S or HS message is sent				
		3	Trade 1	0@2.50		Trade sent.					
			Sends a	an NT message		A C/CF messa	age is sent				
			For Stra	ategy			CS message is sent followed by 1 C/CF				
			Sends	1 NT message and		message per l	leg				
			1 NL m	essage per leg							
2	II	ls the previous		The remaining quantity of the		Quote or Mar	ket Depth sent.				
	order.			order is cancelled.			HF message is sent				
	Sends an XE	message:	Sends a	a KZ message		For strategy: I	FS or HS message is sent				
	[Cancelled Or	rder ID: x]	[Status:	"A"]							

4.9 Order Modification Test Cases

4.9.1 Modifying the Price of an Order

ID #: MC	DD-01	Type: Order Modifi	ication	Mandatory	Co-ordinated Test: N							
Descript	Description: Modifying the price of an order; quantity remains unchanged.											
Comme	Comments: The order is cancelled to "clear" the testing environment.											
Prerequ	iisites											
The mar	rket for instrumer	nt INST1 must be set t	o [10@2.00 –	10@2.50].								
			Expected R	esults								
#	# Test Steps		Trading En (SAIL)	gine Responses	Market Info (HSVF)	rmation						
1	Client: Enter order 20@2. Sends an Ol		Order is boo Sends a KE [Order ID: x	message:	An F/FF or	arket Depth sent. H/HF message is sent r: FS or HS message is sent						
2	Client: Modif order 20@2. Sends an Ol [Quantity Sig [Quantity: 20	M message: gn: =]	Order is boo Sends a KIV [Order ID: y	1 message:	An F/FF or	arket Depth sent. H/HF message is sent r: FS or HS message is sent						

	[Modified Order ID: x]			
3	Client: Cancels the order.	Order is cancelled.	Quote or Market Depth sent.	
	Sends an XE message:	Sends a KZ message:	An F/FF or H/HF message is sent	
	[Cancelled Order ID: y]	[Status: A]	For strategy: FS or HS message is sent	

4.9.2 Modifying Order Quantity

ID #: MOI	D-02 Type: Order Modif	Mar	ndatory	Co-ordinated Test: N							
Description	Description: Modifying the quantity (absolute) of an order.										
Comment	Comments: The order is cancelled to "clear" the testing environment.										
Prerequis	Prerequisites										
The mark	The market for instrument INST1 must be set to [10@2.00 – 10@2.50].										
		Expected	Results								
#	Test Steps	Trading E (SAIL)	·			nation					
1	Client: Enters a regular Sell order 1@2.25. Sends an OE message	1@2.25.	ccepted and booker KE message: : x]	d at	An F/FF or H	rket Depth sent. /HF message is sent FS or HS message is sent					
2	Client: Modifies the previous order 20@2.25. Sends an OM message: [Quantity Sign: =] [Quantity: 20] [Modified Order ID: x]	accepted and the Quantity is now		An F/FF or H	ket Depth sent. /HF message is sent FS or HS message is sent						
3	Client: Cancels the order. Sends an XE message: [Cancelled Order ID: y]	Order is of Sends a I	KZ message:		An F/FF or H	ket Depth sent. /HF message is sent FS or HS message is sent					

4.9.3 Modifying an Order that was Previously Modified

ID#: MC	DD-03	Type: Order Modi	fication	Requirement:	Mandatory	Co-ordinated Test: N						
Descript	ion: Modifying an	order that has been	previously modified a	nd partially filled.								
Comme	nts: The order is o	ancelled to "clear" to	ne testing environmen	t.								
Prerequ	Prerequisites											
The mar	The market for instrument INST1 must be set to [10@2.00 – 10@2.50].											
			Expected Results									
#	Test Steps		Trading Engine Re (SAIL)	sponses	Market Information (HSVF)							
1	Client: Enters a Order 21@2.50 Sends an OE r	0.	Order is accepted a 21@2.50. Sends a KE messag [Order ID: x] Trade 10@2.50 Sends an NT messag For Strategies, send message per leg	ge: age (partial fill)	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 For strategy: CS message is sent followed by 1 C/CF message per leg							
2	Client: Modifies order 21@2.50 Sends an OM [Quantity Sign: [Quantity: 21] [Modified Orde	message:	Order is booked. Mo accepted and the Q 21 and price is 2.50 Sends a KM messa [Order ID: y]	uantity is now	Quote or Market Dept An F/FF or H/HF mess For strategy: FS or HS	sage is sent						
3	Client: Modifies order 21@2.40 Sends an OM [Quantity Sign: [Quantity: 21] [Modified Order Client: Cancels	nessage: r=] r ID: y]	Order is booked. Me accepted and the Q 21 and price is 2.40 Sends a KM messa [New Order ID: z] Order is cancelled.	uantity is now	Quote or Market Dept An F/FF or H/HF mess For strategy: FS or HS Quote or Market Dept	sage is sent S message is sent						
	Sends an XE n		Sends a KZ messag	ge	An F/FF or H/HF mess For strategy: FS or HS							

4.9.4 Modifying a Market Top Order

ID #: MOD-04 Type: Order Modifi		ification	Requirement:	Op	otional	Co-ordinated Test: N					
Descripti	Description: Modifying a Market Top order and assigning it a limit price.										
Commer	Comments: The order is cancelled to "clear" the testing environment. (Conditional to ORD01)										
Prerequ	Prerequisites										
The market for instrument INST1 must be set to [10@2.00 – 12@2.50]; no other orders must be in the book.											
	Expected Results										
#	Test Steps		Trading Eng (SAIL)	ine Responses		Market In (HSVF)	formation				
1		a Buy Market	Sends a KE	message:		Quote or	Market Depth sent.				
	order for 20 C		[Order ID: x]		,	An F/FF o	or H/HF message is sent				
	Sends an OE [Price type: M	o .	Trade 12@2 remaining 8@	.50 and the 2.50 is booked.	1	For strate	egy: FS or HS message is sent				
			Sends an N7	r message (partial fil	1)	Trade se	nt				
			For Strategy				nessage is sent				
			Sends 1 NT	message and		For strategy: CS message is sent followed by 1 C/					
			1 NL messa	ge per leg		message per leg					
2	III ——	es the previous		ked. Modification is		Quote or	Market Depth sent.				
	order 9@2.40		9 and price is	d the Quantity is now s 2.40.	'	An F/FF o	or H/HF message is sent				
	Sends an OM		Sends a KM	message:	1	For strate	egy: FS or HS message is sent				
	[Quantity Sign	1. +j	[Order ID: y]								
	[Price type: L	1	[Status: " "]								
	[Modified Ord										
3	Client: Cancels the previous Order is cancelled.		celled.		Quote or	Market Depth sent.					
	order.		Sends a KZ	message		An F/FF o	or H/HF message is sent				
	Sends an XE	0	[Status: "A"]			For strate	egy: FS or HS message is sent				
	[Cancelled Or	ruer ID: yj					_				

4.10 Indication of Interest to Trade Test Cases

4.10.1 Indication of Interest to Trade

ID #: IIT	-01 Type: Indi	cation of Interest to Trade	Requirement:	Optional	Co-ordinated Test: N			
Descript	Description: Sending an Indication of Interest to Trade message (previously known as Request for Quote).							
Commer	Comments: None.							
Prerequ	isites							
None.								
ш	Took Stone	Expected Results	Expected Results					
#	Test Steps	Trading Engine Res (SAIL)		arket Informatio ISVF)	n			
1	Client: Enters a Indication Interest to Trade for the instrument INST1 for any quantity. Sends an RQ message	of Indication of Interest t accepted. Sends a KO message	А	ndication of Intere				

4.10.2 Responding to Indication of Interest to Trade

ID #: IIT	-02	Type: Indication of	f Interest to Trade	Requiremen	nt: Optional	Co-ordinated Test: Y		
Descript	Description: Responding to an Indication of Interest to Trade message (previously known as Request for Quote).							
Comme	Comments:							
Prerequ	uisites							
	No market for instrument INST1. Client is connected.							
			Expected Results					
#	Test Steps	Test Steps	Trading Engine Res (SAIL)	onses	Market Information (HSVF)			
1	Interest to	an Indication of Frade for the INST1 for any	Indication of Interest t accepted.	o Trade is				
2	market for i	ponds by posting a nstrument INST1. DE or a Q <i></i>	Market is accepted. Sends a KE or an LA	message	Quote or Market Dept An F/FF or H/HF mess For strategy: FS or HS	age is sent		

4.11 Bulk Quote Test Cases

4.11.1 Entering Bulk Quote

ID #: BU	Q-01	Type: Bulk Quote	Requirement: Mandatory for Mar	ket Makers	Co-ordinated Test: N		
Descripti	Description: Entering bulk quotes.						
Commer	nts: None.						
Prerequi	isites						
1. No ma	arket for instrum	ent INST1.					
2. Partici	pant must be co	onfigured as Market Ma	aker on group GRP1.				
3. Partici	pant must send	Clearing Data messag	ge BD (for traderID/GroupID)				
			Expected Results				
#	Test Steps		Trading Engine Responses (SAIL)	ation			
1	and 1 ask) on 10@1.00, Ask	message (if not)	Quotes are accepted and booked. Sends a KD message Sends an LA message		et Depth sent. F message is sent S or HS message is sent		
2		a regular Sell order strument INST1.	Order is accepted Trade 5@1.00. Sends an NT message For Strategy Sends 1 NT message and 1 NL message per leg The market is now [5@1.00 – 10@1.20].	For strategy: FS Trade sent. A C/CF messag	F message is sent S or HS message is sent ge is sent S message is sent followed by 1 C/CF		

4.11.2 Modifying Bulk Quote

ID#: E	3UQ-02	Type: Bulk Quote	Requirement: Mandatory for f	viarket wakers	Co-ordinated Test: N		
Descri	Description: Modifying the price on quotes when some have been rejected.						
Comm	ents: None.						
Prerec	Prerequisites						
1. No r	market for instrume	ents in group GRP1.					
2. Inst	rument INST10 ha	s to be forbidden.					
3. Part	icipant must be co	nfigured as Market M	aker on group GRP1.				
4 Parti	cipant must send (Clearing Data messag	ge BD (for traderID/GroupID)				
			Expected Results				
#	Test Steps		Trading Engine Responses (SAIL)	Market Informa (HSVF)	ition		
1	101 instrumer on both sides 1000@100.00	GRP1. At least of must be quoted with bids of	All quotes are accepted and booked except the 2 on the forbidden instrument. The markets for selected instruments in group GRP1 are now		et Depth sent. H/HF messages are broadcasted everal FS or HS message are		

	quote message must be sent.	[1000@100.00 - 900@100.50].	
	Sends a Q <i> message</i>	Sends an LA message:	
		[Number of quotes in error: 002]	
		[Error code: 1004]	
2	Client: Modifies the price of all	Quotes are modified. No error	Quote or Market Depth sent.
	quotes previously accepted.	message is returned. Market is now:	Several F/FF or H/HF messages are broadcasted
	Sends a Q <i> message</i>	[1000@100.10 - 900@100.30]	For strategy: Several FS or HS message are broadcasted
		Sends an LA message	S. Gadacted

4.11.3 Modifying quantity of quotes

ID#:BU	JQ-03 Type: Bulk Quote	Requirement: Mandatory for	or Market Makers	Co-ordinated Test: N		
Descrip	Description: Modifying the quantity for quotes.					
Comme	ents: None.					
Prerequ	uisites					
1. No m	arket for instruments in group GRP1.					
2. Instru	ment INST10 has to be forbidden.					
	cipant must be configured as Market I	• .				
4 Partici	ipant must send Clearing Data messa	age BD (for traderID/GroupID)				
		Expected Results				
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)			
1	Client: 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. 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]. Sends an LA message: [Number of quotes in error: 002] [Error code: 1004]	Quote or Market Depth Several F/FF or H/HF r For strategy: Several F broadcasted	nessages are broadcasted		
2	Client: Modifies the quantity of all quotes previously accepted. Sends a Q <i> message</i>	Quotes are modified. No error message is returned. Market is now: [1010@100.00 – 800@100.50] Sends an LA message	Quote or Market Depth Several F/FF or H/HF r For strategy: Several F broadcasted	messages are broadcasted		

4.11.4 Cancelling all Quotes

ID#: BUG	Q-04a Type: Bulk Quote	Requirement: Mandatory for Market Makers Co-ordinated Test: N					
Description	Description: Cancelling all quotes (Global Cancellation, formerly known as "Panic Quote").						
Commen	Comments: None.						
Prerequi	sites						
1. No ma	rket for instruments in group GRP1.						
2. Particip	pant must be configured as Market N	laker on group GRP1.					
3. Particip	pant must send Clearing Data messa	age BD (for traderID/GroupID)					
		Expected Results					
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)				
1	Client: Enters 40 quotes (20 bid	Quotes are accepted and booked.	Quote or Market Dep	oth sent.			
	and 20 ask) on instruments of group GRP1, Bid = 10@1.00,	The markets are now [10@1.00 – 10@1.20] for all instruments.	Twenty (20) F/FF or H/HF messages are sent				
	Ask = 10@1.20.	Sends an LA message	For strategy: Twenty (20)FS or HS message are sent				
	Sends a Q <i> message</i>						
2	Client Enters a regular Sell order 10@1.00 for instrument INST1.	Order is accepted. Trade 10@1.00.	Quote or Market Dep				
		Sends an NT message	An F/FF or H/HF mes				
		For Strategy	For strategy: FS or H	IS message is sent			
		Sends 1 NT message and	Trade sent. A C/CF message is s	cont			
		1 NL message per leg		ssage is sent followed by 1 C/CF			
			message per leg	sage to sent tellowed by 1 0,01			
3	Client: Cancels all quotes with a	Quotes are cancelled. Market for	Quote or Market Dep	oth sent.			
	GC message with Type of Cancellation "QuotesOnly".	instrument INST1 is now [0@0.00 – 10@1.00].	Twenty (20) F/FF or	H/HF messages are sent			
	Sends a GC message	Sends a KG message	For strategy: Twenty	(20)FS or HS message are sent			
	[Type of Cancellation=Q]						

4.11.5 Cancelling all Orders

ID#: BU	Q-04b	Type: Bulk Quote	Requirement: Mandatory for Market Makers Co-ordinated Test: N				
Description	Description: Cancelling all Orders with Global Cancellation (Global Cancellation, formerly known as "Panic Quote").						
Commen	Comments: None.						
Prerequi	Prerequisites						
1. No ma	rket for instrume	ents in group GRP1.					
2. Particip	oant must send	Clearing Data messag	e BD (for traderID/GroupID)				
			Expected Results				
#	Test Steps		Trading Engine Responses (SAIL)	Market Inform (HSVF)	nation		
1	Client: Enters	,	Orders are booked.	Quote or Mar	ket Depth sent.		
	INST1.	10 for instrument	Sends a KE message	Five (5) F/FF	or H/HF messages are sent		
	Sends an OE	message		For strategy: I	Five (5) FS or HS message are sent		

2	Client Enters a regular Sell order	Order is accepted. Trade <u>5@1.10</u> .	Quote or Market Depth sent.
	5@1.10 for instrument INST1.	Sends an NT message	An F/FF or H/HF message is sent
		For Strategy	For strategy: FS or HS message is sent
		Sends 1 NT message and	Trade sent.
		1 NL message per leg	A C/CF message is sent
			For strategy: CS message is sent followed by 1 C/CF message per leg
3	Client: Cancels all orders with a	Orders are cancelled.	Quote or Market Depth sent.
	GC message with Type of Cancellation "OrdersOnly".	Sends a KG message	Five (5) F/FF or H/HF messages are sent
	Sends a GC message		For strategy: Five (5) FS or HS message are sent
	[Type of Cancellation=0]		

4.11.6 Cancelling all Orders and Quotes

ID #: BU	Type: Bulk Quote	Requirement: Mandatory for M	larket Makers Co-ordinated Test: N				
Descripti	Description: Cancelling all Orders and Quotes (Global Cancellation, formerly known as "Panic Quote").						
Commer	Comments: None.						
Prerequ	isites						
1 No ma	arket for instruments in group GRP1.						
	ipant must be configured as Market M	aker on group GRP1.					
	ipant must send Clearing Data messa						
01.1 01.1101		Expected Results					
#	Test Steps						
#	rest steps	Trading Engine Responses (SAIL)	Market Information (HSVF)				
1	Client: Enters 40 quotes (20 bid	Quotes are accepted and booked.	Quote or Market Depth sent.				
	and 20 ask) on instruments of group GRP1, Bid = 10@1.00,	The markets are now [10@1.00 – 10@1.20] for all instruments.	F/FF or H/HF messages are sent				
	Ask = 10@1.20.	Sends an LA message	For strategy: FS or HS message are sent				
	Sends a Q <i> message</i>	Orders are booked.					
	Client: Enters 5 Buy orders	Sends a KE message					
	10@1.10 for instrument INST1.	Ü					
	Sends an OE message						
2	Client: Enters 2 regular Sell orders:	Orders are accepted.	Quote or Market Depth sent.				
	5@1.00 for instrument INST1	Trades <u>5@1.00</u> and 5@1.10	An F/FF or H/HF message is sent				
	5@1.10 for instrument INST1.	Sends an NT message	For strategy: FS or HS message is sent				
	<u>Je 1.10</u> for instrument mor i.	For Strategy	Trade sent.				
		Sends 1 NT message and	A C/CF message is sent				
		1 NL message per leg	For strategy: CS message is sent followed by 1 C/CF message per leg				
3	Client: Cancels all orders and	Quotes are cancelled. Market for	Quote or Market Depth sent.				
	quotes with a GC message with Type of Cancellation "All".	instrument INST1 is now [0@0.00 – 10@1.00].	F/FF or H/HF messages are sent				
	Sends a GC message	Sends a KG message	For strategy:)FS or HS message are sent				
	[Type of Cancellation=A]						

4.11.7 Handling Unsolicited Cancellations of All Quotes

ID #: B l	JQ-05	Type: Bulk Quote	Requirement: Mandatory for Market Makers Co-ordinated Test: Y				
Descrip	tion: Handling	unsolicited cancellati	on of all quotes (done by the	Market Operation Center.).			
Comme	Comments: None.						
Prerequ	Prerequisites						
1. No m	arket for instru	ıments in group GRP	1.				
		_	t Maker on group GRP1.				
3. Partio	cipant must se		ssage BD (for traderID/Group	ID)			
			Expected Results				
#	Test Steps	1	Trading Engine Responses (SAIL)	Market Information (HSVF)			
1	bid and 20 instruments Bid = 10@ 10@1.20.	ask) on Sof group GRP1,	Quotes are accepted and booked. Sends an LA message	Quote or Market Depth s Twenty (20) F/FF or H/HI For strategy: Twenty (20)			
2	Client: Ente order 10@ instrument	1.30 for In	Order is accepted and is traded against the booked quotes. Trade 10@1.20. Sends an NT message For Strategy Sends 1 NT message and 1 NL message per leg	Trade sent. A C/CF message is sent For strategy: CS messag per leg Quote or Market Depth s An F/FF or H/HF messag For strategy: FS or HS m	ge is sent		
3	BIT: Cance the particip	ant.	Quotes are cancelled. Sends an NP message (cancellation reason: M) *cancellation reason could be filled "S" in case of cancellation by the system.	Quote or Market Depth s Twenty (20) F/FF or H/HI For strategy: Twenty (20)			

4.11.8 Unsolicited cancellation of all quotes by Trader

ID#: BU	Q-06 Type: Bulk Quote	Requirement: Mand	atory for Market Makers	Co-ordinated Test: N		
Descripti	on: Handling unsolicited cancell	ation of all quotes (done by Trad	ler).			
Commer	Comments: None.					
Prerequ	isites					
1. No ma	arket for instruments in group GF	RP1.				
2. Partici	pant must be configured as Mar	ket Maker on group GRP1.				
3. Partici	pant must be enable for Global	Cancellation				
		Expected Results				
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)			
1	Client: Enters 40 quotes (20 bid and 20 ask) on instruments of group GRP1, Bid = 10@1.00, Ask = 10@1.20. Sends a Q <i> message</i>	Quotes are accepted and booked. Sends an LA message	Quote or Market Depth se Twenty (20) F/FF or H/HF or For strategy: Twenty (20) F			
2	Client: Cancels all quotes trough a GC message.	Quotes are cancelled. Sends an NP message (Quote cancellation reason: A –Cancelled By Trader)	Quote or Market Depth se Twenty (20) F/FF or H/HF in For strategy: Twenty (20) F			

4.11.9 Unsolicited Cancellation of Quote by Circuit Breaker

ID #: DU	#: BUQ-07 Type: Bulk Quote Requirement: Mandatory for Market Makers Co-ordinated Test: N								
Descripti	Description: Handling unsolicited cancellation of all quotes (CancelledByCircuitBreaker).								
Commer	nts: None.								
Prerequi	Prerequisites								
1. No ma	arket for instruments in group GR	RP1.							
2. Partici	pant must be configured as Mar	ket Maker on group GRP1.							
3. Partici	pant must send Clearing Data m	essage BD (for traderID/Groupl	D)						
4. Two o	pposite orders with Price 10 mus	st be traded							
		Expected Results							
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)						
1	Client Price 20								
	XLow <ylow<zlow<yhigh< 20<zhigh<xhigh< td=""><td></td><td></td><td></td></zhigh<xhigh<></ylow<zlow<yhigh< 								
2	Client Enters a regular Buy	Order is accepted and	Quote or Market Depth sent.						
	order 100@20 for instrument INST1.	booked.	Twenty (20) F/FF or H/HF mes	sages are sent					
		Sends 1 an KE message	For strategy: Twenty (20) FS of	r HS message are sent					
			0-						

3	Client: Enters 100 quotes	Quotes are deleted due to	Trade sent.
	(50 bid and 50 ask) on	circuit breaker (NP sent	A C/CF message is sent
	instruments of group GRP1,	with cancellation reason:	A C/OF Message is sent
	Bid = 50@19.5, Ask =	C))	For strategy: CS message is sent followed by 1 C/CF message
	50@20.	NI Message with	per leg
	Sends a Q <i> message</i>	Instrument state changes in	
		Suspended as 'S'	Quote or Market Depth sent.
		After 1minute NI Message	'
		with Instrument Status 'N'.	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".

4.11.10 Unsolicited Cancel of Quotes on Disconnect

ID #: BU	IQ-08	Type: Bulk Quo	Requirement: Mandatory for Market Makers Co-ordinated Test: N							
Descript	Description: Handling unsolicited cancellation of all quotes (EliminatedOnDisconnect)									
Commer	Comments: None.									
Prerequ	Prerequisites									
1. No ma	No market for instruments in group GRP1.									
2. Partic	ipant must be	configured as Marl	ket Maker	on group GRP1.						
3. Partic	ipant must se	nd Clearing Data m	iessage B	D (for traderID/GroupI	D)					
			Expecte	ed Results						
#	Test Steps Trading En Responses (SAIL)			Market Information (HSVF)						
1	Client: Ente	ers quotes Buy	Quotes booked.	are accepted and	Quote or Market Depth ser	nt.				
	and Sell qu	otes.	Sends a KD message	Twenty (20) F/FF or H/HF I						
			Sends an LA message		For strategy: Twenty (20) FS or HS message are sent	S or HS message are sent				
2	Degreest for	r Diagonnostion	Dogging	as TI Massage and	Trade sent.					
2	by the Clier	r Disconnection nt Send TD	Receives TL Message and Client gets disconnected		A C/CF message is sent					
	Message		and quo	otes are removed.		is sent followed by 1 C/CF message				
					Quote or Market Depth ser	nt.				
					An F/FF or H/HF message is sent					
					For strategy: FS or HS mes	ssage is sent				
3	Client: Re-c the system	Client: Re-connection on the system Quotes are deleted (NP sent with Quote cancellation reason: I (EliminatedOnDisconnect)		h Quote ation reason: I	••	is sent followed by 1 C/CF message				
					Quote or Market Depth ser For strategy: FS or HS mes	nt. An F/FF or H/HF message is sent ssage is sent				

4.12 Trade Management Test Cases

4.12.1 Many Fills for Same Order

ID#: TR	D-01 Type: Trac	le Management	Requirement:	Mandatory	Co-ordinated Test: N				
Descripti	Description: Handling many fills for the same order.								
Commer	Comments: None.								
Prerequ	Prerequisites								
1. The m	narket for instrument INST1 m	ust be set to [12@2	2.00 – 10@2.50].						
2. Group	for instrument INST1 must b	e in 'Continuous Tr	ading' mode.						
		Expecte	d Results						
#	Test Steps		Engine Responses	Market In (HSVF)	formation				
1	Client: Enters a Sell order quote for instruments INST 75@2.40. Sends an OE message	1	accepted. KE or an LA message	e An F/FF o	Market Depth sent. or H/HF message is sent gy: FS or HS message is sent				
2	Client: Enters 10 Buy orde instrument: INST1 2@MKT 3@MKT, 5@MK 6@MKT, 7@MKT, 8@MK 9@MKT, 11@N	2@2.40, 5@2.40, 6@2.40, 9@2.40, 10@2.40 Sends 10 For each Sends 1 1 NL me	s: 3@2.40, 4@2.40, 7@2.40, 8@2.40, 1, 11@2.40. 0 NT messages of the 10 strategies NT message and essage per leg or instrument INST1 is 22.00 – 10@2.40].	For strates	nt. nessage is sent for each trade gy: CS message is sent followed by 1 ssage per leg for each strategy trade				

4.12.2 Manual Trade Cancellation

ID #: TR	Type: Trade Mana	agement F	Requirement:	Mandatory	Co-ordinated Test: Y					
Descript	escription: Handling manual cancellation of a regular trade by the Market Operation Center.									
Commer	Comments: None.									
Prerequ	isites									
Execution	on of test case TRD-01									
		Expected Results								
#	Test Steps	Trading Engine Respor (SAIL)		larket Information ISVF)						
1	BIT: Manually cancels the first	The 2 trades are cancelle	d. Tr	ade Cancellation and	Summary.					
	and the last Trades from Test Case TRD-01 (2@2.40 and	Sends 2 NX messages	Tv	Two (2) I/IF and N/NF messages are sent						
	11@2.40).	For each of the 2 Strategi	es							
		Sends 1 NX message and	d Fo	For Strategy: Two (2) IS and NS messages are s						
		1 NY message per	leg							

4.12.3 Manual Trade Creation and Cancellation

ID #: TF	ID #: TRD-03 Type: Trade Management Requireme		Requirement:	Optional	Co-ordinated Test: Y					
Descript	Description: Handling manual trade creation and cancellation.									
Comme	Comments: None.									
Prerequ	uisites									
			Expected Re	esults						
#	Test Steps		Trading Eng (SAIL)	ine Responses	Market Info (HSVF)	rmation				
1	11	a manual trade for	A first trade is	s created.	Trade sent.					
	instrument INST1 by using the TraderID of the client on both		Sends one NT message		A C/CF mes	sage is sent.				
	sides of the tr	rade.	For Strategy			For strategy: CS message is sent followed by 1 C/CF message per leg				
			Sends 1 NT	message and	C/CF messa	ige per leg				
			1 NL messa	1 NL message per leg						
2		a manual trade for	A second tra	de is created	Trade sent					
		ST1 by using the ne client on one	Sends one N	IT message	A C/CF mes	sage is sent				
		ferent TraderID for the opposite side of	For Strategy			: CS message is sent followed by 1				
	the trade.	ile opposite side of	Sends 1 NT	message and	C/CF messa	ige per leg				
			1 NL messa	ge per leg						
3		rades created in	Trades are c	ancelled.	Trades Can	cellation.				
	Steps 1 and 2	2 .	2 NX messag	ges are sent.	I/IF and N/N	NF messages sent				
			For each of t	he 2 Strategies						
			Sends 1 NX	message and	For Strategy	r: IS and NS messages are sent				
			1 NY messa	ge per leg						

4.12.4 Trade Amend

ID #: TR	PD-04	Type: Trade Mana	gement Requirement:	Optional	Co-ordinated Test: Y				
Descrip	Description: Handling manual trade amend from Market Operation Center (MOC).								
Comme	Comments: None.								
Prerequ	iisites								
Execution	on of test case TI	RD-01							
			Expected Results						
#	Test Steps		Trading Engine Respons (SAIL)	ses Marke (HSVF	t Information ;)				
1	price and o	ally amends juantity of the rom Test Case @2.40).	A trade is amended. Sends one NX message [PTT Cancellations and Amendments=C] Sends one NT message [PTT Cancellations and Amendments=A]	An I/IF New T A C/C	ellation and Summary. F an N/NF messages are sent. Frade sent. F message is sent Cancellation and Amendments=A				

4.12.5 Manual Trade Acceptance

ID #: TR	D-05 Type: Trade Man	agement	Requirement:	Optional	Co-ordinated Test: Y					
Descrip	Description: Handling manual trade amend from Market Operation Center (MOC).									
Comme	Comments: currently not supported on IDEM.									
Prerequ	Prerequisites									
INST1 h	as to support Manual Trade Accepta	nce								
		Expected Resu	ılts							
#	Test Steps	Trading Engine	Responses	Market Informa (HSVF)	ation					
1	Client: Enters two regular Buy/Sell orders in order to create a spread for instrument INST1.	Orders are according and spread is of Sends a KE me		Quote or Market Depth sent. An F/FF or H/HF message is sent						
2	Client: Enters two cross orders within the spread with the same quantity and price Send two Cross Orders through OX messages	messages [Spe	essage and two NT	Trade message is sent. C<> message is sent with Price Indicator Marker ="C"						
3	BIT: Manually Accept the trade	The trade is acc Sends one NT [Proposal Statu	message							

4.13 Market Maker Protection Test Cases

4.13.1 Max Volume

ID #: MMT	-01 Type: Trade Mana	gement Requirement:	Mandat	ory for MM	Co-ordinated Test: N				
Description	Description: Max Volume: is designed to protect market making participants from "excessive" trades								
Comments	s: Enabled by default for all Market	t Makers							
Prerequis	ites								
For this te	st one MM (Participant) and one T	RADER (Exchange Controlle	d) are need	ed.					
Set MM pr	otection Max Volume to 100 ON in	nstrument A of Group Z (in BE	message)						
Set MM pr	otection to Advanced (in RP mess	age)							
		Expected Results							
#	Test Steps	Trading Engine Response (SAIL)	es .	Market Information (HSVF)					
1	Client:	Quote is accepted.							
	Buy 150 of A @ Price P	Sends a LA message							
	Sell 150 of A @ Price P + 1 Tick								
	Sends an Qi message:								
2	Client:	Trade is done							
	Sell 100 of A @ Market Price Sends 1 NT message is sent								
	Sends an OE message	An NP message is sent							

4.13.2 Delta Volume

ID#: MMT	Type: Trade Mana	gement	Requirement:	Man	datory for MM	Co-ordinated Test: N				
Descriptio	Description: Delta Volume: is designed to protect market making participants from "excessive" trades									
Comments	s: Enabled by default for all Market	Makers								
Prerequis	Prerequisites									
Set MM pr	rotection Max Volume to 2000									
Set MM pr	rotection Max Delta to 1000									
Set MM pr	rotection to Advanced									
		Expected	d Results							
#	Test Steps	Trading Engine Responses (SAIL) Market Information (HSVF)								
1	Client:	Quote is	accepted.							
	Quote on Instrument A of Group Z:	Sends a	LA message							
	Buy 1010 of A @ Price P									
	Sell 1010of A @ Price P + 1 Tick									
	Sends an Qi message:									
2	Client: enters	Trade is	done							
		Sends 1	NT message is sent							
	Sell 1010 of A @ Market Price	An NP m	essage is sent							
	Sends an OE message									

4.14 Market Maker Alarms

4.14.1 Market Maker Alarms

ID #: Al	LR-01	Type: Trade Ma	nagement	Require	ement: Mandatory for Market Maker	Co-ordinated Test: N				
Descrip	Description:									
Comme	Comments: For this test one MM (Participant) and one TRADER (Exchange Controlled) are needed.									
Prerequ	uisites									
			Expected Results							
#	# Test Steps		Trading Engine Responses (SAIL)		Market Information (HSVF)					
1	on Instrum to Group A spread an obligation		Order is accepted Sends an LA messa No market makers a are generated		H/HF or F/FF messages sent.					
2	on Instrum	e MM will Quote nents belonging AA not fulfilling	Order is accepted Sends an LA messa Sail Messages MM	Ü	H/HF or F/FF messages sent.					

	its spread obligations	received after 2 minutes advising that spread obligations are not fulfilled	
3	Client: The MM will Quote on Instruments belonging to Group AA not fulfilling its volume obligations	Order is accepted Sends an LA message Sail Messages MM is received after 2 minutes advising that spread obligations are not fulfilled	H/HF or F/FF messages sent.
4	Client: The MM will not Quote on any Instruments belonging to Group AA	Sail Messages MM is received after 2 minutes advising that prices are missing Q	H/HF or F/FF messages sent.
5	Client: The MM will Quote on Instruments belonging to Group AA not fulfilling comparable size deviation	Sail Messages MM is received after 2 minutes advising that Quantities outside comparable size deviation [Alert Type = 9]	H/HF or F/FF messages sent.

4.14.2 Market Maker Alarms under Stressed Market Condition

ID #: ALR-02 Type: Trade Management		Requirement: Mandatory for Market Maker			Co-ordinated Test: Y					
Descripti	Description:									
Commen	Comments: For this test one MM (Participant) and one TRADER (Exchange Controlled) are needed.									
Prerequis	Prerequisites									
The trade	r has Market	making obligation	s for Group AA							
			Expected Results							
#	Test Steps		Trading Engine Responses (SAIL)		Market Information (HSVF)					
1		s Bulletin Stressed Market Start on Group			L(1) Regular Text Bulletin [Bulletin type = 2]					
2	on Instrum to Group A spread and obligation	e MM will Quote nents belonging AA fulfilling its d volume	Order is accepted Sends an LA message No market makers alarmare generated		H/HF or F/FF messages sen	ıt.				
3	on Instrum to Group A	e MM will Quote nents belonging AA not fulfilling obligations	Order is accepted Sends an LA message Sail Messages MM is received after 2 minutes advising that spread obligations are not fulfill	S	H/HF or F/FF messages sent	t.				
4	on Instrum to Group A	e MM will Quote nents belonging AA not fulfilling obligations	Order is accepted Sends an LA message Sail Messages MM is received after 2 minutes		H/HF or F/FF messages sent	t.				

		advising that spread obligations are not fulfilled	
5	Client: The MM will not Quote on any Instruments belonging to Group AA	Sail Messages MM is received after 2 minutes advising that prices are missing Q	H/HF or F/FF messages sent.
6	Client: The MM will Quote on Instruments belonging to Group AA not fulfilling comparable size deviation	Sail Messages MM is received after 2 minutes advising that Quantities outside comparable size deviation [Alert Type = 9]	H/HF or F/FF messages sent.

4.15 Drop Copy Test Cases

4.15.1 Drop Copy

ID #: DC-01 Type: Drop Copy extended		d messages Requirement: Optional		Co-ordinated Test: N			
Descriptio	Description: It allows customers to manage orders entered by other traders in the firm						
Comments	s: Drop copy user type needs to be us	ed					
Prerequis	ites						
Customer	must connect two users:						
- One nor	mal order routing user;						
- One Dro	pp Copy user;						
		Expected Results					
#	Test Steps	Trading Engine Response (SAIL)	Market Information (HSVF)				
1	Client:	Order is accepted and is not the book.	ot on				
	Enter orders with normal OR user;	Sends a KE message					
	- modify some of these orders	[Status: "I "]					
	- cancels some of those orders leaving some other orders active on the market Sends Internal messages cancellation for	In the drop copy connection these messages will be recin the extended format, ple verify that in the messages KE, KZ and NZ you can se additional field:	eived ase KM ,				
		Price Type					
		Previous Displayed Quanti	'y				
		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	
		Filler String	
		Filler String	
		Remaining Quantity	
		Filler String	
2	Client:	Trade is done	
	Perform the following operation:	Sends 1 NT message is sent	
	Match partially an existing order	In the drop copy connection these messages will be received	
	Cancel an existing trade	in the extended format, please	
	Cancel an existing trade on a leg of a Strategy trade	verify that in the messages	
	or a orialogy rado	NT: Execution Notice	
	Sends an OE message	NL: Leg Execution Notice	
	Gondo din GE moddago	NX: Execution Cancellation Notice	
	Sends Internal messages	NY: Leg Execution Cancellation	
	cancellation for trades	Notice	
		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	
	Clearing Firm	
	Connection ID	
	Exchange ID	
	OrderTradingMode	
	OrderTimeStamp	
	Strategy Group	
	Strategy Instrument	
	Strategy Verb	
	Strategy Trade Number	
	Leg Number	
	MatchNumber	
	NumberInMatch	

4.16 User Defined Strategies (FLEXCO)

4.16.1 New Strategy Creation

ID #: FLX	Type: New Strate	Type: New Strategy Instrument Creation		ent: Optional	Co-ordinated Test: N				
Description	Description: New Strategy Creation.								
Commen	Comments: None.								
Prerequi	sites								
None.									
		Expected Results							
#	Test Steps	Trading Engine Respo (SAIL)	nses	Market Information (HSVF)					
1	Client:	Sends NI and KN Messa	ages						
	Send ON message specifying the Number of legs and the Instruments	Creation Status ='C'		Sends JS/NS/HS n	nessages				

4.16.2 Existed Strategy Modification

ID #: FLX	Type: New Strategy Insti	Type: New Strategy Instrument Creation		Optional	Co-ordinated Test: N				
Description	Description: Existed Strategy Modification								
Commen	Comments: Strategy Already Exists and the System will modify								
Prerequi	Prerequisites								
Execution	n of test case FLX01								
		Expected Results							
#	Test Steps	Trading Engine Res (SAIL)	sponses	Market Information (HSVF)	1				
1	Client:	Sends NI and KN Me	essages						
	Send ON message specifying the Number of legs and the Instruments	Creation Status ='M'		Sends JS/NS/HS m	essages				

4.17 Bundle Order Test Scenarios

4.17.1 Bundle Order against Different Counterparties

ID #: BO-01		Type: Bundle Order	Requirement:	Optional	Co-ordinated Test: Y				
Description	Description: Multiple proposal request against different counterparties completed successfully								
Prerequis	Prerequisites								
1.	1. The book for instrument INST1 must be set to [Buy 12@2.00 – Sell 10@6]; no other orders must be in the book.								
2.	The book for in	strument INST2 must b	pe set to [Buy 12@2.00	- Sell 10@5];	no other orders must be in the book.				
3.	Group for instru	ument INST1 and INST	2 must be in _Continuo	ous Trading mo	ode.				
			Expected Results						
#	Test Steps		Trading Engine Resp (SAIL)	onses	Market Information (HSVF)				
1	on INST1 and	Bundle Order (BO) d INST2 specifying unterparty1 and	Proposal acknowledge indicating the double of specified in the initial Proposal Status = W: Waiting for approval. The proposal legs with Status = W: Waiting for approval reproposal to be sent to the Entering Firm ID and the sided proposal to be see Opposite Firm ID (in the PR).	f Legs roposal er ID used. Order fer to the the the reverse end to	None				
			Proposal Type= B: Bu	ndle Order					
2	Exchange: Pr Acceptance v Proposal (OB	vith Bundle							
3	Client		Bundle leg acceptance sent to the Initiator Par with the details of multi accepted. Order Status = (blank): Order put in the order to Proposal Status= W: Waiting for approval.	ticipant ple leg(s)					
4	Proposal Upounsolicited		Proposal leg acceptant sent to the Initiator Par with the details of multi accepted. Order Status=(blank): (in the order book Proposal Status=W; Wapproval.	ticipant ple leg(s) Order put					
5	Execution No unsolicited	tice (NT)			Trade price is updated for INST1 and INST2				

4.17.2 Bundle Order against Different Counterparties Cancelled

ID #: BO-02		Type: Bundle Order	Requirement:	Optional	Co-ordinated Test: N				
Description	on: Multiple prop	osal requests against c	different counterpartie	s cancelled.					
Prerequis	Prerequisites								
1.	• ,								
2.					no other orders must be in the book.				
3.	Group for instru	ument INST1 and INST		ious Trading me	ode				
#	Test Steps		Expected Results						
			Trading Engine Res (SAIL)	ponses	Market Information (HSVF)				
1	Client: Client submit Bundle Order (BO) on INST1 and INST2 specifying Exchange counterparty1 and counterparty2		Proposal acknowledg indicating the double specified in the initial Request with the Trac Proposal Status = W: approval.	of Legs Proposal der ID used.	None				
			The proposal legs wit Status = W: Waiting for approval r proposal to be sent to Entering Firm ID and sided proposal to be so Opposite Firm ID (in t PR). Proposal Type= B: B	efer to the the the reverse send to he original					
2	Client: Propos (XP)		Proposal cancellation any leg (Original Order Proposal and the Ref Reason.	er ID) of the					
3	Client		Proposal cancellation acknowledgement with Order Status and the Reason. Specifies thused. Proposal Status=R:	th the latest Refusal e Trader ID					
4	Proposal Upd unsolicited		Sent to the PR Initiate connection. Contains only the refute latest order status indicates the refusal Proposal status=R: Note: No further propupdates (PU) will be after Proposal Status Refused	used leg with s and reason. Refused osal received					

4.17.3 BO Leg Refusal

ID #: BO-03 Type: Bundle Order			Requirement:	Optional	Co-ordinated Test: Y			
Description	Description: BO leg refusal by participant.							
Prerequis	sites							
1. 2.	, , , , , , , , , , , , , , , , , , ,							
			Expected Results					
#	Test Steps		Trading Engine Resp (SAIL)	onses	Market Information (HSVF)			
1	Client: Client submit Bundle Order (BO) on INST1 and INST2 specifying Exchange counterparty1 and counterparty2		Verify Proposal acknowledgement (KB)		None			
2	Exchange: Pi Cancellation							
3	Client		Sent to the BO initiator connection. Contains only the refusion indicating the latest Or and the Refusal Reason Proposal Status = R: F	sed leg der Status on. Refused	None			
			Note: No further Propoupdates (PU) will be reafter Proposal status=Refused.	eceived				

4.17.4 BO Automatic Cancellation

ID #: BO-04		04	Type: Bundle Order	Requirement: Opti	onal	Co-ordinated Test: N		
De	Description: BO automatic cancellation at market closure (expiry).							
Pre	erequis	sites						
	1.	The book for in	nstrument INST1 must b	oe set to [Buy 12@2.00 – Sel	l 10@6]; n	no other orders must be in the book.		
	2.			. ,		no other orders must be in the book.		
	3.	Group for instru	ument INST1 and INST	2 must be in Continuous Tra	ding mode	Đ.		
		Took Stone		Expected Results				
#		Test Steps		Trading Engine Responses (SAIL)		Market Information (HSVF)		
1	Client: Client submit Bundle Order (BO) on INST1 and INST2 specifying Exchange counterparty1 and counterparty2		Bundle Order (BO) d INST2 specifying unterparty1 and	Verify Proposal acknowledgement (KB)	1	None		
				Order expiration notice at the of the trading day.	e end			
				Order status=E: The order h been eliminated by the tradir engine.				
				Bundle orders are valid only during the trading day.				
				No specific message (PU or will be sent at market closure all confirmed legs will be removed.	, II			

4.17.5 Unsolicited Bundle order Proposal Notice

ID #: BO -	.05	Type: Bundle Order	Requirement:	Mandatory	Co-ordinated Test: Y			
11	Description: unsolicited Bundle Order proposal Notice sent from the Exchange to the Clients. Clients have to confirm to manage PN message							
Prerequi	sites							
1. 2. 3.	2. The book for instrument INST2 must be set to [Buy 12@2.00 – Sell 10@5]; no other orders must be in the book.							
			Expected Results					
#	Test Steps		Trading Engine Resp (SAIL)		Market Information (HSVF)			
1 Exchange submit the BO (Bundle order request)		Proposal acknowledg	ement KB					
2		ŭ	Exchange sends PN (Notice)	Proposal				

4.18 Third Party Trade Test Scenarios

4.18.1 Third Party Trade

ID #: TPT	-01	Type: Third Party	Trade	Requirement:	Optio	nal	Co-ordinated Test: Y		
Description	Description: Third Party Trade request completed successfully								
Prerequis	Prerequisites								
1.	1. The book for instrument INST1 must be set to [Buy 12@2.00 – Sell 10@6]; no other orders must be in the book.								
2.	Group for instrument INST1 must be in _Continuous Trading mode.								
			Expect	ed Results					
#	Test Steps		Trading (SAIL)	g Engine Response	S	Market (HSVF)	Information		
1	(PR) on INST	unterparty1 and	indicatir specifie Request Proposation Waiting The prostatus = Waiting proposation Entering sided proposation (PR).	al acknowledgement of the double of Leg do in the initial Proposit with the Trader ID al Status = W: for approval. posal legs with Order W: for approval refer to all to be sent to the grim ID and the reproposal to be send to the firm ID (in the orient ID) all Type= T: ealer Broker Order.	s sal used. er o the verse o	None			
2	Exchange: Pr Acceptance v Proposal (OB	vith Bundle							
3	Client		sent to with the accepte Order S Order p Proposa	leg acceptance noti the Initiator Participal details of multiple led. Status = (blank): aut in the order book al Status= W: for approval.	ant eg(s)				
4	Proposal Upo unsolicited	date (PU)	sent to with the accepte Order S in the o	Status=(blank): Orde rder book al Status=W; Waitin	ant eg(s) r put	Trade p	rice is updated for INST1		
5	Execution No unsolicited	tice (NT)				Trade p	rice is updated for INST1		

4.18.2 Third Party Trade Cancelled

ID #: TPT	T-02 Type: Third Party	Trade	Requirement: (Optional	Co-ordinated Test: N				
Description	Description: Multiple proposal requests against different counterparties cancelled.								
Prerequi	Prerequisites								
1.	1. The book for instrument INST1 must be set to [Buy 12@2.00 – Sell 10@6]; no other orders must be in the book.								
2.	Group for instrument INST1 must be in _Continuous Trading mode								
		Expecte	ed Results						
#	Test Steps	Trading (SAIL)	Engine Responses		Market Information (HSVF)				
1	Client: Client submit Proposal Request (PR) on INST1 specifying Exchange counterparty1 and counterparty2	double of Request Proposa The proposa Waiting sent to the sided proposa	al acknowledgement indicate of Legs specified in the interpretation of Legs specified in the interpretation of Legs with the Trader ID used all Status = W: Waiting for posal legs with Order State of the American of the Entering Firm ID and opposal to be send to Opposal to be send to Opposal PR). If Type= T: Aler Broker Order.	nitial Proposal d. or approval. atus = W: proposal to be I the reverse	None				
2	Client: Proposal Cancellation (XP)	(Original	Il cancellation specifying I Order ID) of the Propos Reason.						
3	Client	the lates Reason	Il cancellation acknowled of Order Status and the I . Specifies the Trader II al Status=R: Refused	Refusal	_				
4	Proposal Update (PU) unsolicited	Contains order sta	the PR Initiator Participals only the refused leg with attus and indicates the real status=R: Refused of further proposal Updatal after Proposal Status:	ith the latest efusal reason.					

4.18.3 Third Party Trade Leg Refusal

ID #: TPT-03 Type: Third Party		Trade	Requirement:	Optional	Co-ordinated Test: Y				
Description	Description: TPT leg refusal by participant.								
Prerequi	Prerequisites								
1. 2.	· · · · · · · · · · · · · · · · · · ·								
		Expected Re	sults						
#	Test Steps	Trading Engi (SAIL)	ne Responses	Market (HSVF)	Information				
1	Client: Client submit Proposal Request (PR) on INST1 specifying Exchange counterparty1 and counterparty2	Verify Propos	al acknowledgement (KB) None					
2	Exchange: Proposal Cancellation (XP)								
3	Client	connection. Contains only the latest Ord Reason. Proposal Stat Note: No furth	the refused leg indica er Status and the Refu us = R: Refused her Proposal updates (ed after Proposal statu	PU)					

4.18.4 Third Party Trade Automatic Cancellation

ID #:	TPT-04 Type: Third F	Requirement: Optional	Co-ordinated Test: N					
Desc	Description: TPT automatic cancellation at market closure (expiry).							
Prere	Prerequisites							
	The book for instrument INST1 must be set to [Buy 12@2.00 – Sell 10@6]; no other orders must be in the book.							
	2. Group for instrument INST1 m	ust be in Continuo	ous Trading mode.					
		Expected Resu	Expected Results					
#	Test Steps	Trading Engine	e Responses	Market Information (HSVF)				
1	Client:	Verify Proposal	acknowledgement (KB)					
	Client submit Third Party Trade (TPT) on INST1 specifying Exchange counterparty1 and counterparty2			None				
2		Order expiration	n notice at the end of the trading day.					
		Order status=E	: The order has been eliminated by the trading engin	e.				
		•	des are valid only during the trading day.					
			ssage (PU or PN) will be sent at market closure, but a will be removed.	all				

4.18.5 Unsolicited Third Party Prosopal Notice

ID #: TPT	T -05	pe: Third Party Trade	Requirement:	Mandatory	Co-ordinated Test: Y				
Description	Description: unsolicited Proposal Notice sent from the Exchange to the Clients. Clients have to confirm to manage PN message								
Prerequisites									
1.	1. The book for instrument INST1 must be set to [Buy 12@2.00 – Sell 10@6]; no other orders must be in the book.								
2.	Group for instrument INST1 must be in _Continuous Trading mode.								
		Expected	Expected Results						
#	Test Steps	Trading (SAIL)	Engine Responses	Market Inform (HSVF)	nation				
1	Exchange submit proposal request	the PR Receve a	Proposal Notice from ange.	None					
	Client: Receive a Third Proposal notice	Inter Dea	age Proposal Type T: ler Broker Order						

4.19 Pre-Trade Validation

4.19.1 Exposition Risk Limit Rejection

Description: A new order hits a configured Exposition RiskLimit and is rejected. 1. RiskLimits are configured on the Participant's Trader team or F 2. A RiskLimit matching the order's Side, Firm or Trader team and 3. The market for instrument INST1 must be set to [10@101.00 – 4. Group for instrument INST1 must be in 'Continuous Trading' m	Firm. d Instrument or Group is already reached. - 10@102.00].				
1. RiskLimits are configured on the Participant's Trader team or F 2. A RiskLimit matching the order's Side, Firm or Trader team and 3. The market for instrument INST1 must be set to [10@101.00 – 4. Group for instrument INST1 must be in 'Continuous Trading' m	d Instrument or Group is already reached 10@102.00].				
 A RiskLimit matching the order's Side, Firm or Trader team and The market for instrument INST1 must be set to [10@101.00 – Group for instrument INST1 must be in 'Continuous Trading' m 	d Instrument or Group is already reached 10@102.00].				
 3. The market for instrument INST1 must be set to [10@101.00 – 4. Group for instrument INST1 must be in 'Continuous Trading' m 	- <u>10@102.00</u>].				
Group for instrument INST1 must be in 'Continuous Trading' m					
	node				
Expected Results					
Expedica results	Expected Results				
# Test Steps Trading Engine Respon	Market Information (HSVF)				
1 Client: Order is rejected.	Quote or Market Depth sent.				
Enters a Sell Limit Order Sends a ER message	An F/FF or H/HF message is sent				
40@101.10 with a Clearing [Status:]					
INST1.	Strategy: An HS message is sent				
A RiskLimit matching the order's Side, Firm or Trader team and Instrument or Group is already reached.					
Sends a OE message					

4.19.2 Kill Switch

ID#: PTV	7-02 Type: Pre-Trad	Co-ordinated T	est: N					
Descripti	Description: Kill Switch by Risk Manager Participant							
Prerequi	Prerequisites							
1. 2.								
		Expected	Expected Results					
#	Test Steps	Trading E	ngine Responses		Market Inform (HSVF)	ation		
1	Risk Manager Participant send the RT message	Sends NZ [Status = F	message to the star	andard users for ord				

4.19.3 Risk Limit Configuration

ID#: PT\	/-03 Type: Pre-Trade Validatio	n Requirement: Optional	Co-ordinated Test: N					
Description	Description: Risk limits configuration or update by Risk Manager							
Prerequi	Prerequisites							
1.	1. The market for instrument INST1 must be set to [10@2.00 – 10@2.50].							
		Expected Results						
#	Test Steps	Trading Engine Responses (SAIL)	Market Information (HSVF)					
1	Client enters Risk Limits Configuration: MK to set risk limits for their managed entities or MQ to set Market Maker Risk limits for their managed entities Firm, Trader, Reset, Nember of Risk Limit Block, Group, Instrument, Max Order Quantity, Max Traded Long=5, Max Traded Short, Max Exposed Long=25, Max Exposed Short, Max Traded Spreads, Max Exposed Spreads	Sends LB message - Exchange acknowledges with Bulk Command Message Acknowledge						
2	Insert an order on Buy Side for quantity 25 on INST 1 at price P1	Risk Limits Configuration MK/MQ is sent out Order/Modification Acknowledgment KE/KM Risk Limits Usage Notice MN or NQ						

3	Insert an order on Buy Side for quantity 1 on INST 1	Error Message ER 3103	
		ExposedLong limit exceeded at the trader/instrument level	
4	Insert an order on Sell Side for quantity 6 on INST 1 at price P1	Execution Notice NT message Risk Limits Usage Notice MN message Order Cancellation NZ message with status T	

Certification Guide

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