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**BORSA
İSTANBUL**

**EQUITY MARKET
BISTECH OUCH CERTIFICATION
PROGRAM**

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EQUITY MARKET BISTECH OUCH CERTIFICATION PROGRAM

..... A.Ş.’ BISTECH OUCH ORDER ENTRY STAGE
CONNECTIVITY TEST

To The Attention of Our Members:

The purpose of this test is to enable our members to test their own systems as they are in BISTECH OUCH environment.

Certification program consists of two levels; Basic Level and Market Making. Market Making builds upon the Basic level testing certification so the participant is obligated to have the based level certification first.

Order entry part of the test is segmented according to required phases of routine operation. It comprises Opening Session, Continuous Transaction and Throttling (Maximum number of orders allowed in unit time) test sections.

Please perform the below transactions in order and make sure to check the messages incoming at every step when you carry out these transactions.

First, determine the impact expected to occur when order is sent to the system.

Whether expected impact occurred or not after order or any request is sent to the system will be controlled by dimensional and contextual integrity and accuracy of the response which reached you with respect to the activity at the first degree. By controlling whether the activities are accurately processed or not at your main system which is the source of the activities carried out from every channel at the back in the second degree, proper blanks below each option will be ticked.

Inform the officers immediately if an unexpected situation occurs.

Please send the document to Borsa Istanbul officers after filling the part spared for you at the end of the test.

Legal Liability fully pertains to the member in disputes which may arise between the customers and members who do not use some of order and transaction functions in their OUCH programs which are taking part in existing transaction rules of Equity Market and allowed by Equity Market to be used with BISTECH OUCH.

For this reason, we recommend our members to inform their customers on this subject and form the proper legal basis with their customers.

Our members are fully responsible for faultless perform of the member system.

NOTE: During the test, it is necessary to check that the heartbeat messages are received by remaining connected to the system in the steps run. It is expected that the institutions participating in the test do not design their systems in a way that reconnects between the scenario steps.

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SECTION 1:

CONNECTIVITY TEST

1. Login Request Packet

- Send the Login Request Packet with 0 (zero) in Requested Sequence Number field and empty Requested Session field (Password=123456). Login Accepted Packet should be received.

Expected messages are received. Problem with messages

2. Heartbeat Packet

- The server and the client should send a Server Heartbeat Packet anytime more than 1 second passes where no data has been sent to the counter side. At this step, it should be confirmed that Heartbeat Packet of server is received and Heartbeat Packet is sent by client fulfilling the Heartbeat requirement mentioned above.

Expected messages are received. Problem with messages

3. Logout Request Packet

- Send Logout Request Packet and system terminates the TCP/IP socket.

Expected messages are received. Problem with messages

4. Login Request Packet Failure

- Send the Login Request Packet with 0 (zero) in Requested Sequence Number field and empty Requested Session field (Password=123). **Login Rejected** will be received with Reject Reason Code=A (Incorrect Username/Password).

Expected messages are received. Problem with messages

5. Login Request Packet

- Send the Login Request Packet with 0 (zero) in Requested Sequence Number field and empty Requested Session field (Password=123456). Login Accepted Packet should be received.

Expected messages are received. Problem with messages

SECTION 2 :

ORDER ENTRY AND FUNCTIONALITY

Instruments that will be used during test are listed below with Partition, Base Price and OrderBookID information:

<i>Instrument</i>	<i>Part</i>	<i>Base Price</i>	<i>Order Book ID</i>
ACSELE	1	6.000	70616
ADELE	1	6.000	70676
AKBNKE	1	5.000	70796
ALCARE	1	5.000	71116
ARCKE	1	5.000	71376
ASELSE	1	5.000	71536
ALBRKE	1	6.000	71096
GARANE	2	5.000	74196
GERELE	2	6.000	74416
HATEKE	2	5.000	74816
ECILCE	2	6.000	73396
AKBNK.AOF	1	5.000	201868
GARAN.AOF	2	5.000	336340
KARELE	3	5.000	75576
MGROSE	3	5.000	76576
OYAKCE	3	5.000	77046
MAVIE	3	6.000	76386
ZORENE	4	5.000	79596
TCELE	4	7.000	78296
VAKKOE	4	5.000	79096
TBORGE	4	6.000	78276
DJIST.F	2	5.000	73156

Reference Data (Security Definition, Security Status, Price Limits etc.) regarding the instruments that are listed will be available through FIX Reference Data and ITCH Market Data connection.

Order Details:

- ✓ For Order Entry via OUCH Protocol, OrderBookID (SecurityID) of the instrument must be used instead of Symbol name. OrderBookID of the instruments that are used for Certification Test are given on the table above.
- ✓ Orders should be **Limit** priced **Day** and **Client** orders unless it is noted otherwise.
- ✓ For orders with AccountType **FUND**, AFK field (Client/Account) with **XRM** value must be included in the order.
- ✓ Values sent in Account and Reference fields will not be checked (pass-through fields). These are mandatory fields OUCH protocol and should be sent in compliance with below table (Enter Order) which originally published in OUCH Specification Document.

Name	Offset	Length	Value	Notes
Client/Account	34	16	Alpha	Mandatory for Fund orders. Agency/Fund Code (AFK)
Customer Info	50	15	Alpha	Client Reference field.
Exchange Info	65	32	Alpha	Client Account number.

- Clients are allowed to send Cancel Order and Enter Order (New) messages instead of sending Replace Order. Please note that cancelling an order and sending a new one will definitely cause losing the time priority of the order while it is possible to retain the time priority with Replace Order message in certain circumstances.

DropCopy Connection

Execution Report messages of Order Entry/Replace/Cancel messages that are entered via OUCH protocol will be received over FIX DropCopy connection. Clients will be provided with DropCopy connection details to be used during the Certification Test on request.

Default configuration of DropCopy connection is aimed at receiving messages of all users of the participant without any filter (FIX, TW, OUCH). It is possible to configure the DropCopy connection to receive messages of specific users.

OPENING AUCTION

1. **ADEL.E** enter orders listed below and receive Order Accepted messages.

- i. ADEL.E – BUY – 200 lot – 6.200 TL – DAY - CLIENT [Order Token=10]
- ii. ADEL.E – BUY – 90 lot – 6.090 TL – DAY - CLIENT [Order Token=20]
- iii. ADEL.E – SELL – 80 lot – 6.080 TL – DAY - CLIENT [Order Token=30]
- iv. ADEL.E BUY – 100 - 6.190 TL - DAY – CLIENT [Order Token=40]
- v. ADEL.E BUY –50 - 6.180 TL - DAY – CLIENT [Order Token=50]

Expected messages are received. Problem with messages

2. **ADEL.E** cancel below orders with **Order Token** as reference (Cancel Order by Order Token) and receive Order Cancelled messages.

- i. (Order Token=20) ADEL.E – BUY – 90 lot – 6.090 TL – Day - Client

Expected messages are received. Problem with messages

3. **ADEL.E** cancel below orders with **OrderID** as reference (Cancel Order by OrderID) and receive Order Cancelled messages.

- i. (Order Token=40) ADEL.E – BUY – 100 lot – 6.190 TL – Day - Client

Expected messages are received. Problem with messages

4. **ADEL.E** modify quantity of below orders and receive Order Replaced messages.

- i. (Order Token=30) – SELL – 79 lot – 6.070 TL – Day- Client [Order Token=60]

Expected messages are received. Problem with messages

5. **ADEL.E** enter below orders and receive Order Rejected messages with order reject codes indicated below.

- i. BUY – 100 lots – 10.000 TL – Day – Client [Order Token=70]

Order Reject Code: (-420131) “The premium is outside the allowed price limits for this instrument”

- ii. SELL – 150 lots – 6,000 TL – Day - Client [Order Token=10]

(A previously used Order Token should be sent !)

Order Reject Code: (-800002) “The token is not unique”

Expected messages are received. Problem with messages

6. **ADEL.E** Opening Auction will be ended. Check the Order Executed messages related with below executions:

- i. ADEL.E – BUY – 200 lot – 6.200 TL – Day - Client [Order Token=10]
ii. (Original Order Token=30) – ADEL.E - SELL – 79 lot – 6.070 TL – Day - Client [Order Token=60]

Check Order Executed messages of trade below:

- i. Trade: 79 lot 6.200 TL

Expected messages are received. Problem with messages

CONTINUOUS AUCTION

7. **GARAN.E** enter below orders and receive Order Accepted messages.

- i. BUY – 100 lot – 5.200 TL – Day - Client [Order Token=80]

- ii. SELL–20 lot – 5.200 TL – Day – Client [Order Token=90]

Check Order Executed messages of trade below:

- i. Trade 1: 20 lot 5.200 TL

Expected messages are received. Problem with messages

8. **GARAN.E** modify quantity of your partially traded order and receive Order Replaced message.

i. (Original Order Token=80) BUY – 70 lot* – 5.200 TL – Day – Client **[Order Token=100]**

*Order with original quantity of 100 lots is partially executed and remains 80 lots in the orderbook before modification. When order is modified as 70 lots, partially executed quantity will be extracted and passive order in the orderbook will be updated as 50 lots. Check and confirm that 50 is received in the quantity (LeavesQty =50) field in Order Replaced message. *(This warning messages is for users who send Order Replace for order modification.)*

Expected messages are received. Problem with messages

9. **GARAN.E** modify quantity of your partially traded order and receive Order Replaced message.

i. (Original Order Token=80) BUY – 90 lot – 5.200 TL – Day – Client **[Order Token=110]**

*** When you change the amount of your original order from 100 lots to 90 lots, considering the partially traded 20 lots, the quantity in the order book will be updated to 70 lots. 70 Lots will be displayed in the amount field in the Order Replaced Message. Please check that there are 70 lots in the LeavesQty field in the Execution Report message sent to Drop (151=70) and that this amount is processed correctly in your system. (This warning applies to members who use the order change message – Order Replace.)

Expected messages are received. Problem with messages

10. **KAREL.E** enter below orders and receive Order Accepted messages.

i. BUY – 100 lot – 5.200 TL – Day - Client **[Order Token=120]**
ii. SELL– 60 lot – 5.200 TL –Day – Client **[Order Token=130]**

Check Order Executed messages of trades below:

i. Trade 1: 60 lot 5.200 TL

Expected messages are received. Problem with messages

11. **KAREL.E** modify quantity of your partially traded order and receive Order Replaced message.

- i. (Original Order Token=120) BUY – 50 lot – 5.200 TL – Day – Client [Order Token=140]

***Your order, that original amount was 100 lots, was partially processed and was listed as 40 lots in the order book. When you change the order amount to 50 lots, your order will be completely eliminated, although no cancellation request will be sent, since 60 lots were previously traded and the amount to be traded will be filled (or even more). In the Replaced message, Order State will appear as 2 (Not On book). In the Execution Report message sent to the Drop, check that there is 0 lot in the LeavesQty field (151=0) and that this quantity is processed correctly in your system. (This warning is valid for members who use the order change message - Order Replace.)

Expected messages are received. Problem with messages

12. VAKKO.E enter below orders and receive Order Accepted messages.

- | | | |
|------|------------------------------------------------|-------------------|
| i. | BUY – 100 lot – 5.200 TL – Day - Client | [Order Token=150] |
| ii. | BUY – 200 lot – 5.190 TL – Day – Client | [Order Token=160] |
| iii. | SELL – 450 lot- 5.190 – Fill and Kill – Client | [Order Token=170] |

Check Order Executed messages of trades below:

- i. Trade 1: 100 lot 5.200 TL
ii. Trade 2: 200 lot 5.190 TL

Expected messages are received. Problem with messages

Check the Cancelled message for the following order has been received:

- i. 150 lot (left) [Order Token=170]

Expected messages are received. Problem with messages

Throttling Test

13. Send below BUY and SELL orders for 500 times each, total of 1000 orders in compliance with the Throttling limit of 100 orders per second which is configured in the system for your user at the moment of test.

Throttling limit is configured as 100 orders per second. Therefore, total of 1000 orders below mustbe sent at a pace rate of 100 orders per second in 10 seconds.

- | | | |
|------|-------------------------------------------------|---------------------|
| i. | ALBRK.E BUY – 10 lot – 6.000 TL – DAY – CLIENT | [Order Token=10000] |
| ii. | ALBRK.E SELL – 10 lot – 6.100 TL – DAY - CLIENT | [Order Token=20000] |
| iii. | ECILC.E BUY – 10 lot – 6.000 TL – DAY - CLIENT | [Order Token=30000] |
| iv. | ECILC.E SELL – 10 lot – 6.100 TL – DAY - CLIENT | [Order Token=40000] |
| v. | MAVLE BUY – 10 lot – 6.000 TL – DAY - CLIENT | [Order Token=50000] |

- | | |
|-------------------------------------------------------|---------------------|
| vi. MAVI.E SELL – 10 lot – 6.100 TL – DAY - CLIENT | [Order Token=60000] |
| vii. TBORG.E BUY – 10 lot – 6.000 TL – DAY - CLIENT | [Order Token=70000] |
| viii. TBORG.E SELL – 10 lot – 6.100 TL – DAY - CLIENT | [Order Token=80000] |

Expected messages are received. Problem with messages

Failover to Secondary Gateway

Terminate connection with Primary OUCH Gateway IP and Ports and connect to secondary OUCH Gateway IP and Port provided.

- Send Login Request Packet without resetting Sequence number (with the last sequence number received from system) and receive Login Accepted Packet.

Expected messages are received. Problem with messages

- Enter below orders to the secondary system and receive Order Accepted messages:
 - ARCLK.E BUY PRICE: 5.000 20 LOT (*Partition1*) [Order Token=180]
 - GEREL.E BUY PRICE: 6.060 20 LOT (*Partition2*) [Order Token=190]
 - OYAKC.E BUY PRICE: 5.000 10 LOT (*Partition3*) [Order Token=200]
 - TCELL.E BUY PRICE: 7.500 10 LOT (*Partition4*) [Order Token=210]

End of Day Batch

End of Day Batch will be processed. Check cancel messages (Order Cancelled) for Expired Day orders.

Expected messages are received. Problem with messages

Logout from the system after expected cancel messages are received. System will be terminated after End of Day Batch.

Expected messages are received. Problem with messages

SECTION 3:

MARKET MAKER FUNCTIONALITY TEST

Notes

- ✓ In order to participate in Market Making functionality tests, the basic level test steps must be completed in the certification test document.
- ✓ Orders should be **Limit** priced, **Day** and **Client** orders.
- ✓ Values of Account and Reference fields will be checked for only steps that indicate these values in the scenario. These fields should be sent in compliance with OUCH Specification document.
- ✓ PartyID of MassQuote messages must be “PYM” .
- ✓ There will be response from the system for successful MassQuote entries. MassQuote Acknowledgement message will be also sent if one or more Quote entry has incorrect value. MassQuote message will be validated by Exchange operator and the user will be informed too.
- ✓ It is strongly recommended that the Quote IDs are taken from the same numbering series as the Order Token in cases where Orders and Quotes are submitted through the same OUCH session. This principle is applied for test steps below and previously used Order Tokens/TradeReportIDs are not used.
- ✓ “QuoteItem” value that will be given to each quote entry is started from 1 and incremented by one for each quote entry. Given QuoteItems are expected for MassQuote messages that include more than one quotes.
- ✓ Entered successful MassQuotes will be checked from Trader Workstation by Exchange Operator. The user will be received message for successful entries.
- ✓ Confirmation messages regarding the orders and trades carried out should be checked by the member as follows;
 - Mass Quote Acknowledgement or Mass Quote Rejection messages must be received from OUCH channel
 - Quote Status Report, Execution Report and TCR messages must be received from Drop Copy channel
- ✓ The basic functions of the system are controlled in OUCH Market Maker Certification test scenarios. The relevant session transaction types and the tools that can be used are defined by general rules and may differ.

CONTINUOUS TRADING

1. **ALCAR.E** enter below orders and receive Execution Report messages.

- i. BUY – 100 lot – 4,950 TL [Order Token=220]
- ii. SELL – 700 lot – 5,100 TL [Order Token=230]

Expected messages are received. Problem with messages

2. **ALCAR.E** enter MassQuote at price levels 5,100 – 5,110 and 500 lots each side.

[Order Token=500]

OPENING SESSION ORDER MATCHING

The Opening Session will be concluded. Check the upcoming Mass Quote Ack Message (in the Ouch channel) and Execution Report / Trade Capture Report / Quote Status Reports (in the Drop Channel) regarding the following transactions:

- i. **ALCAR.E** - İşlem : 500 lot 5.100 TL

Expected messages are received. Problem with messages

- 2. **ALCAR.E**, enter a quotation order for 500 lots at prices 5,200 – 5,250. Check that the Mass Quote Acknowledgement- Reject message has been received. [Order Token=510]

NOTE: Quotation entry is not allowed at this stage.

Expected messages are received. Problem with messages

Quotation Entry in P_SaltQuotation Session (Before Continuous Auction Session)

1. Enter a quotation order for 500 lots of ASELS.E instrument at prices 5.08 - 5.09. **[Order Token=520]**

Check the Mass Quote Ack Message (in the Ouch channel) and Execution Report / Trade Capture Report / Quote Status Reports (in the Drop Channel):

Expected messages are received. Problem with messages

2. Modify the quotation on ASELS.E instrument to 5.07 – 5.080. **[Order Token=530]**

Check the Mass Quote Ack Message (in the Ouch channel) and Execution Report / Trade Capture Report / Quote Status Reports (in the Drop Channel):

Expected messages are received. Problem with messages

3. Cancel the listing on ASELS.E instrument **[Order Token=540]**

Check the Mass Quote Ack Message (in the Ouch channel) and Execution Report / Trade Capture Report / Quote Status Reports (in the Drop Channel):

Expected messages are received. Problem with messages

CONTINUOUS AUCTION

4. Enter quotation orders for 500 lots each at prices 5,000 – 5,250 in the DJIST.F

[Order Token=550]

Expected messages are received. Problem with messages

5. Cancel only the BUY side of the quote DJIST.F

Order Token=560]

Expected messages are received. Problem with messages

6. DJIST.F Cancel the SELL side of the quote.

[Order Token =570]

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Expected messages are received. Problem with messages

7. Enter quotes with a single quote message for the prices and quantities specified in the instruments below (MassQuote).ayne

[Order Token=580]

ACSEL.E : BUY: 6,300 TL 500 Lot – SELL: 6,550 500 Lot (*QuoteEntryID=1*)

HATEK.E : BUY: 5,300 TL 500 Lot – SELL: 5,450 500 Lot (*QuoteEntryID=2*)

MGROS.E : BUY: 5,000 TL 500 Lot – SELL: 5,200 1000 Lot (*QuoteEntryID=3*)

ZOREN.E : BUY: 5,000 TL 500 Lot – SELL: 4,800 1000 Lot (*QuoteEntryID=4*)

8. Check that the message stating that the quote in the 4th row has been rejected (Mass Quote Acknowledgment - Some Quotes Rejected) has been received.

Expected messages are received. Problem with messages

Test Evaluation

Title of the Brokerage House/ISV	
Technical Staff Participated in the Test (Client)	
Exchange Official Participated in the Test	
General Evaluation (to be filled by BIST officials)	

Please contact with bitechsupport_autoticket@borsaistanbul.com for your questions.