ASX Trade ITCH & OUCH
Application Conformance Process

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1. Introduction

The ASX Application Conformance Test Process is designed to help protect market participants from any erroneous application behaviour that may be disruptive to the Market due to non-conformance.

The following Conformance Test Process applies to any application that connects to the ASX Production environment for trading or market data services.

All customer applications must pass the ASX Conformance process prior to accessing the Production market for trading or receipt of market data.

Except for certain mandatory functions, customers are required to complete only the Conformance test scenarios which relate to the functionality they will use in the Production environment. All other test scenarios may be omitted.

1.1 Purpose

The purpose of this document is to provide an overview of the ASX Trade ITCH and OUCH Conformance test and set expectations regarding conduct and expected results.

1.2 Readership

This document outlines the test phases customers need to pass to certify ITCH Market Data or OUCH order entry related software applications.

Technical staff within ASX Trade participants and information vendors and other market participants that connect directly to the ASX Trade Platform are expected to read this document and understand the requirements of this process.

1.3 Enquiries

Please contact CTS@asx.com.au or your Technical Account Manager if you have any questions relating to this document.

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2. ASX Conformance Process

The ASX conformance process provides procedures that customers can use to ensure that their application software conforms to ASX operating rules and technical specifications.

ASX expects customers to become conversant with the ASX development platform and develop their applications to a state of readiness for Conformance testing. At this point they can contact ASX to schedule a date and time to undertake the Conformance test. ASX requires customers to have finalised their software, meaning that said software is in a production-ready state, before booking the test.

A member of the CTS team will arrange a suitable timeslot and setup a conference call with the customer. This will be approximately 1 hour in length. During this session the CTS person will run through all the test scenarios in this document and provide feedback on the pass/fail status at the end of the session.

2.1 When to Repeat Conformance Testing?

While it is encouraged to perform regular testing, customers are required to perform software conformance with the ASX when:

- Software is modified in any way that may affect or directly impact ASX connectivity or messaging.
- Additional ASX facing functionality is added to an already conformed application.
- Software is recompiled for a new operating system.
- ASX upgrades or changes its production environment and deems the change mandatory.
- During extended periods of absence when the software is not connected to ASX.
- Erroneous or disruptive behaviour is identified in the Production Environment.
- Upon specific request from the ASX.

ASX software conformance testing is optional but recommended when:

- Customer software is recompiled on the same operating system with minor changes, or new builds which have no assumed impact to ASX connectivity or messaging.
- Independent Software Vendor (ISV) applications have passed conformance testing and the same software and version is to be used by new or existing customers of the ISV on new customer infrastructure.

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2.2 Non-Compliant software

Warning:

ASX reserves the right to block access to the Production system by non-compliant software. ASX will require successful completion of a conformance test prior to re-connection.

2.3 Application Conformance Testing

To successfully complete application conformance testing the customer's software application needs to have established a connection to the ASX Trade Testing Environment (FTE/ETE). These platforms simulate the ASX production environment and is designed to give a production-like platform to develop and test against.

2.4 Prior to Conformance

Customers should ensure they have read and understand the specification documents pertaining to the interfaces they are developing against.

Customers should then discuss the intended functionality of their applications with their TAMs to ensure all steps were followed and the process is fully understood.

The CTS team will be available to assist customers in completing their tests, if required.

Customers must submit the conformance test checklist as provided by the CTS team with all functions not supported by the software clearly marked.

The checklist must be sent to CTS@asx.com.au prior to the test to validate the successfully attempted test scenarios.

2.5 Expectations during Conformance

- Customers are responsible for ensuring prices and statistics relating to market data are calculated correctly and displayed according to best market practices.
- Customer must maintain a stable connection throughout documented sequence of tests.
- Customers testing market data applications must ensure that securities with frequently updating information are thoroughly tested.
- Customers should refer to the ASX Operating Rules and Procedures for guidelines on acceptable market behaviour. Adherence to these guidelines is required throughout all customer application conformance testing. Failure to comply with these guidelines will result in failure of the conformance test.
- Customers should perform all tests in the documented sequence.

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2.6 Categories

Mandatory – these test cases must be attempted and passed.

Supported Functionality – these cases are conditionally mandatory if you intend to support this functionality in production.

Optional - can be skipped if the application does not support this function. The function may not be used in production.

Not Supported – on the checklist, “Optional” and “Supported Functionality” cases can be set to Not Supported only if this functionality will not be used in production.

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3. ASX Trade OUCH – Self-Testing

The customer is responsible for completing this section of the conformance test without the direct supervision of ASX. All activities performed during this segment of the conformance test are logged. On completion of this segment of the conformance test, ASX will review logs to ensure that applicable test scenarios were successfully completed by the customer application.

3.1 Connection Suite

The following set of test scenarios define how applications must connect and disconnect from the environment to meet ASX conformance requirements.

3.1.1 Log on

Category	Mandatory for OUCH applications
Description	The application must perform a standard Logon.
Requirements	It is expected that the tester will have confirmed network connectivity to the test environment prior to commencement of accreditation

#	Test Scenarios	Expected Results
1.	Establish a connection and log on to the gateway by sending a Logon Request “L” Packet.	Participant sends a Logon message. Application will then need to maintain a heartbeat.

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3.1.2 Log out

Category	Mandatory for OUCH applications
Description	The purpose of this test is to ensure that applications log out gracefully.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	Terminate the session by sending a Logout Request “O” Packet.	Participant sends a log out message to gracefully log out of the system.

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3.2 Equity Order Management Suite

3.2.1 Equity Order Entry

Category	Mandatory for OUCH applications
Description	The purpose of this test is to ensure that the application can successfully place an “Enter Order” in an equity instrument with a unique Order Token and receive a valid acknowledgement from the exchange. For the purpose of this test the participant must enter a regular Limit (OUCH order type = “Y”) order.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” message with “Y” OUCH order type and day validity.	The order is acknowledged with an “Order Accepted” message and entered in the market.

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3.2.2 Equity Order Modification

Category	Mandatory for OUCH applications
Description	The purpose of this test is to ensure that the application can successfully modify the previously placed order with the existing OUCH Order Token, and receive a valid acknowledgement from the exchange. For the purpose of this test, the participant may modify either the price or quantity used in the previous order.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will amend either the quantity or price of the previous order using a “Replace Order” message.	The amendment of either price or quantity is acknowledged with an “Order Replaced” message.

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3.2.3 Equity Order Cancellation

Category	Mandatory for OUCH applications
Description	The purpose of this test is to ensure that the application can cancel the previously placed order, referencing the OUCH Order Token in the previously amended order, and receive a valid acknowledgement from the exchange confirming the order was cancelled.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will cancel the previous order using a “Cancel Order” message.	The cancellation of the order is acknowledged with an “Order Cancelled” message.

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3.3 Centre Point Order Management Suite

3.3.1 Centre Point – Mid-point only

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point order with a Mid-point only “N” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point order type with a Mid-point only “N” order type.	The order is acknowledged and entered in the market.

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3.3.2 Centre Point – Dark Limit Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point order with a Dark Limit “D” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point order type with a Dark Limit “D” order type.	The order is acknowledged and entered in the market.

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3.3.3 Centre Point – Sweep Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Sweep orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point order with a Sweep “S” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point order type with a Sweep “S” order type.	The order is acknowledged and entered in the market.

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3.3.4 Centre Point – Dual-posted Sweep Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Dual-posted Sweep orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point order with a Dual-Posted Sweep “P” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point order type with a Dual-posted Sweep “P” order type.	The order is acknowledged and entered in the market.

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3.3.5 Centre Point – Block w/ MAQ Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Block w/ MAQ orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point Block w/ MAQ “B” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point Block w/ MAQ “B” order type.	The order is acknowledged and entered in the market.

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3.3.6 Centre Point – Dark Limit w/ MAQ Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Dark Limit w/ MAQ orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point Dark Limit w/ MAQ “F” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point Dark Limit w/ MAQ “F” order type.	The order is acknowledged and entered in the market.

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3.3.7 Centre Point – Limit Sweep w/ MAQ Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Limit Sweep w/ MAQ orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point Limit Sweep w/ MAQ “T” order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a Centre Point Limit Sweep w/ MAQ “T” order type.	The order is acknowledged and entered in the market.

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3.3.8 Centre Point – Any Price Block Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Any Price Block orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point Any Price Block "C" order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an "Enter Order" Message specifying a Centre Point Any Price Block "C" order type.	The order is acknowledged and entered in the market.

3.3.9 Centre Point – Any Price Block w/ MAQ Order

Category	Supported Functionality - Mandatory for OUCH applications supporting Centre Point Any Price Block w/ MAQ orders.
Description	The purpose of this test is to ensure that the application can successfully send a new Centre Point Any Price Block w/ MAQ "E" order type and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an "Enter Order" Message specifying a Centre Point Any Price Block w/ MAQ "E" order type.	The order is acknowledged and entered in the market.

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3.4 Auxiliary Functionality Suite

3.4.1 Unintentional Crossing Protection

Category	Supported Functionality - Mandatory for OUCH applications supporting the use of UCP key.
Description	The purpose of this test is to ensure that the application can successfully send an “Enter Order” with UCP key and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” Message specifying a UCP key	The order is acknowledged with the UCP key and entered into the market.

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3.4.2 FaK/FoK Time Validity

Category	Supported Functionality - Mandatory for OUCH applications supporting FaK or FoK validity orders.
Description	The purpose of this test is to ensure that the application can successfully send an “Enter Order” with Fill or Kill / Fill and Kill time validity and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” message with Fill and Kill (FaK) validity i.e. Time in Force = 3 on a supported OUCH order type.	The FaK order is acknowledged and entered into the market.
2.	The application will need to send an “Enter Order” message with Fill or Kill (FoK) validity i.e. Time in Force = 4 on a supported OUCH order type.	The FoK order is acknowledged and entered into the market.

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3.4.3 Short Selling

Category	Supported Functionality - Mandatory for OUCH applications supporting orders with short sell volume.
Description	The purpose of this test is to ensure that the application can successfully send an “Enter Order” with a positive short sell quantity and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” message with a short sell quantity greater than zero (side may equal “T” or “C”).	The order is acknowledged and entered into the market with appropriate short sell quantity.

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3.4.4 Cancel by Order ID

Category	Supported Functionality - Mandatory for OUCH applications supporting the cancellation of firm orders using Order ID.
Description	The purpose of this test is to ensure that the application can successfully cancel an existing firm order by specifying the Order ID and receive a valid acknowledgement from the exchange.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” message.	The order is acknowledged and entered into the market. An order ID is provided in the Order Accepted message.
2.	The application will then cancel the order by sending a “Cancel Order” message and specify the Order ID.	The order cancellation is acknowledged and the order is removed from market.

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4. ASX Trade OUCH – ASX Assisted Testing

This phase of the conformance test process is allocated for one to one testing between the application developer and an ASX test specialist. These scenarios will be tested in a controlled manner with both sides on the phone confirming each test in turn independently.

This session should only be booked with ASX when the "Self-testing" phase is successfully completed.

4.1 Order Status Verification

Category	Mandatory for OUCH applications.
Description	The purpose of this test is to ensure that the application can successfully receive various fills, acknowledgements and cancellations for orders and update their order book accordingly.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send three New Order message with Day Validity.	The orders are acknowledged and entered into the market.
2.	ASX will partially or fully fill the entered order. Customer will need to advise how many lots were traded and the remaining quantity on market.	The application receives an Order Executed message will details of the fill.
3.	ASX will cancel one of the two remaining orders. Customer will need to confirm which of the orders have been cancelled.	The application receives confirmation of cancellation and updates the firm order book accordingly.

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4.2 Account Disable

Category	Mandatory for OUCH applications.
Description	The purpose of this test is to ensure that the application does not attempt multiple Login retry attempts once their Account is disabled.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	Establish a connection and log on to the gateway by sending a Logon Request "L" Packet.	Participant is connected to the OUCH platform and will then need to maintain a heartbeat.
2.	CTS will subsequently disconnect the session and then change the password to prevent a successful re-logon.	The Participant will receive a Logout message with Account disconnected in the central system, then the application may make a first log-in try as soon as possible.
3.	The Application may perform another Logon but must cease reattempts before 3 rejections.	The application must cease connection attempts before entering an invalid password 3 times with an interval of greater than 5 seconds between each reconnect attempt as OUCH accounts lock after 3 attempts.

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4.3 OUCH Recovery

Category	Mandatory for OUCH applications.
Description	The application must be able to recover lost messages.
Requirements	A logged in OUCH connection.

#	Test Scenarios	Expected Results
1.	The application will need to send an “Enter Order” message with “Y” OUCH order type and day validity.	The order is acknowledged with an “Order Accepted” message and entered in the market.
2.	Session is terminated ungracefully. Application process to be killed, alternatively ASX to force disconnect the user.	Session disconnected.
3.	If Cancel on Disconnect is configured the application waits for the time out. Alternatively CTS will cancel the entered order while the application is disconnected.	NA
4.	Establish a connection and log on to the gateway by sending a Logon Request “L” Packet and Requested Sequence Number ‘1’ (recover all).	Participant sends a Logon message and confirms the missing messages have been recovered and the duplicate messages discarded.

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5. ASX Trade ITCH – Self-Testing

5.1 Rewinder Gap Request – Request Packet

Category	Mandatory for ITCH applications
Description	The purpose of this test is to ensure that the application can send a Market Data Gap Request (Request Packet). Multiple requests may be required to recover the messages in a detected gap due to the maximum payload size of one UDP packet. Only the number of messages that completely fit will be returned.
Requirements	Network connectivity to Rewinder server.

#	Test Scenarios	Expected Results
1.	Send a Request Packet specifying the sequence number of the first message to re-transmit and the number of messages to be resent.	The Request server will respond with the requested sequence message as defined in the ASX Trade ITCH and Glimpse specification.

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5.2 Glimpse Snapshot

Category	Mandatory for ITCH applications
Description	The purpose of this test is to ensure that the application can use the Glimpse service to receive a data snapshot of the market.
Requirements	Network connectivity to Glimpse server.

#	Test Scenarios	Expected Results
2.	The client application makes a connection to the Glimpse IP/port and establishes a TCP/IP connection.	The Glimpse service sends a current market data picture and end of snapshot message.

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6. ASX Trade ITCH - ASX Assisted Testing

6.1 Order and Trade Validation

Category	Mandatory for ITCH applications
Description	The purpose of this test is to ensure that the application can correctly receive market data updates.
Requirements	Participant must subscribe to ITCH market data

#	Test Scenarios	Expected Results
1.	ASX enters orders on the outright market on a contract as agreed with the participant.	The participant will need to confirm the price and size of the orders as received by their feed.
2.	ASX to then trade existing order and question the participant on the current price and volume of the order.	Participant to answer what volume is left on the order and confirm the order state. Participant to confirm Total volume traded for contract.

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6.2 Session State validation

Category	Mandatory for ITCH applications
Description	The purpose of this test is to ensure that the application can correctly receive market data updates.
Requirements	Participant must subscribe to ITCH Market Data

#	Test Scenarios	Expected Results
1.	ASX will edit the current session state of an instrument of the participants choosing.	The participant will need to confirm the new Trading Session State of the agreed product.

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