

**- Test Script -
New Warrants Market Model
UTP Direct**

Version 1.0

Written by Customer Technical Support

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This document has no contractual value and is subject to change without notice

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HISTORY

- V1.0 First version

OVERVIEW

When the Warrants & Certificates market migrates to the Universal Trading Platform (UTP) engine Liquidity Providers (LPs) for the new market model will need to be able to send quotes via the Bulk Quote messages in UTP-Direct or FIX 4.2 UTP protocol. The MMTP and FIX Euronext protocols will no longer be supported after the migration.

The technical documentation attached to this test script is “Universal Trading Platform for Cash Markets – CCG BINARY Message Specifications – version 2.3”

The main changes following the migration to the UTP engine are the following:

- the MMTP and FIX Euronext are no longer available for sending Bulk Quote messages
- LP's can no longer send single order messages as an LP to send Quotes for instruments on the new market model
- The Instrument State Change message (MMTP 0106/ FIX Euronext 35=f) will no longer be sent via SLE following the migration
- Check On Quantity (COQ) will no longer be available
- The opening mechanism for instruments on the new market model has been simplified (further explanation can be found in the script)

Below you will find a mapping of the different MMTP, FIX Euronext and UTP-Direct messages dedicated for the new market model:

MMTP	FIX Euronext	UTP-Direct	FIX 4.2 UTP
Bulk Quote (0501)	Bulk Quote (U0501)	Bulk Quote (B)	Bulk Quote (UB)
Confirmation of Bulk Quote (0572)	Confirmation of Bulk Quote (U0572)	Bulk Quote Ack (J)	Bulk Quote Ack (UJ)
Ask For Quote (0502)	Ask For Quote (U0502)	Quote Request (L)	Quote Request (UL)
Request For Execution (0503)	Request For Execution (U0503)	Request For Execution (M)	Request For Execution (UM)
Start One Side Only Period (0504)	Start One Side Only Period (U0504)	One Side Only Period (O)	One Side Only Period (UO)
Start One Side Only Period confirmation (0505)	Start One Side Only Period confirmation (U0505)	One Side Only Period Ack (P)	One Side Only Period Ack (UP)
Warrants Phase Change Notice (0506)	Warrants Phase Change Notice (U0506)	One Side Only Period Notice (N)	One Side Only Period Notice (UN)

The main characteristics of the new market model are the following:

- No trade can be executed on an instrument without the presence of the LP managing the instrument
-
- The absence of an LP triggers the halting of the instrument concerned and the LP is immediately informed
-
- No trade can be executed outside of the LP quotes (static thresholds are replaced by LP quotes)
-
- No trade can be executed without confirmation of the LP quotes for the Leverage products market segment
-
- A new Bulk Quote functionality is provided to the LP in order to allow him to update up to 150 instruments in one single message
-
- Market participants are informed at which limit the LP is present in the order book
-
- The LP can inform the market of a Bid Only and Offer Only situation. When the LP changes the instruments side situation, the market is warned through a public message 505 (05 on EMF)

See below for an overview of the type of warrant products which the LP can use or receive the different new messages for.

Type of warrant product	Bulk Quote message	Order Entry as LP	Request for Execution	Quote Request
Plain vanilla warrant	Yes	No	No	Yes
Leverage knock out product	Yes	No	Yes	Yes
Investment product	Yes	No	No	Yes

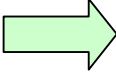
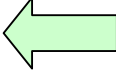
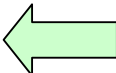
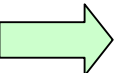
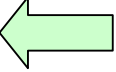

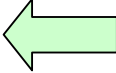
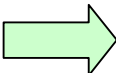
Below you will find an overview of the different states of a group on UTP and the equivalent on NSC:

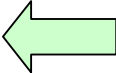
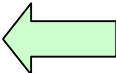
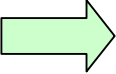
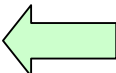
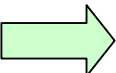
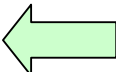
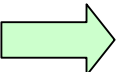
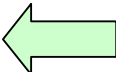
NSC	UTP MD	UTP
Beginning of Day Inquiry	EAMO	Early Monitoring
Pre-Opening	COCA	Core Call
Opening	COAU	Core Auction
Market Session	COCO	Core Continuous
Trading at Last	TAL	Trading At Last
Surveillance Intervention	COMO/LAMO	Core Monitoring/Late Monitoring
End of Day Inquiry	N/A	N/A
Interrupted	HALT	Halted
Forbidden	CLSD	CLSD

Please note that the following types of orders aren't allowed on UTP-W:

- Peg order
- VFA/VFC
- IOC (cross)
- VOF
- Market To Limit

Please find following a typical scenario for the new Warrants & Certificates market model:

Nr	LP	WAY	W&C system	WAY	Broker
1	LP sends Bulk Quote message (B)		W&C receives Bulk Quote (B)		
2	LP receives message Bulk Quote Ack (J)		W&C confirms Bulk Quote message via Bulk Quote Ack (J)		
3	LP receives public Quote message (140) (EMF L4)		W&C sends update of Market sheet by Limit via public Quote message (140) (EMF L4)		Broker receives public Quote message (140) (EMF L4)
4			W&C receives Order Entry message		Broker sends aggressive order message (D) (MMTP 0001/FIX 35=D)
5			W&C sends Order Ack message (a) (MMTP 0172/FIX 35=8)		Broker receives Order Ack message (a) (MMTP 0172/FIX 35=8)
6	LP receives Request for Execution message (M)		W&C sends Request for Execution message (M) to LP if instrument is part of the Leverage market segment		
7	LP confirms the execution by replying to the Request for Execution message via a Bulk Quote message (B)		W&C receives Bulk Quote message (B) within x seconds		

Nr	LP	WAY	W&C system	WAY	Broker
8	LP receives message Bulk Quote Ack (J)		W&C confirms Bulk Quote via message (J)		
9	LP receives Order Fill message (2) (RFE is sent even if LP is not touched by the aggressing order)		Message (2) (MMTP 0105/FIX 35=8) to both parties involved		Broker receives Order Fill message (2) (MMTP/FIX 35=8)
10	LP receives public Quote message (140) (EMF L4)		W&C sends update of Market sheet by Limit via public Quote message (140) (EMF L4)		Broker receives public Quote message (140) (EMF L4)
11	LP receives a public Instrument State Change message (505) (EMF 05) HaltReason R: "Halted. No LP"		W&C sends a public Instrument State Change message (505) (EMF 05) to all members		LP receives a public Instrument State Change message (505) (EMF 05) HaltReason R: "Halted. No LP"
12	LP receives Quote Request (L)		W&C sends Quote Request (L) to LP.		

Purpose of the *Test Script*

The purpose of this script is to enable LPs and brokers to test their solutions, either in-house or those provided by ISVs, in order to confirm the compatibility of their software with the W&C system's new market model.

Euronext provides a script in order to help clients to test their software functionalities, to ensure both integrity and stability. The aim of these tests will be to check that any developments made on the client trading solutions side are consistent with the functional evolutions implemented for the private messages.

When and how should the validation test be carried out?

The validation tests take place on the NSC testing environment, the External User Acceptance platform (EUA).

A dedicated and specially trained team within Euronext Customer Technical Support (CTS) will provide assistance and support during the monitored test sessions with clients who have requested it.

CTS tel: +33 (0)1 4927 5050; email: cts@nyx.com

The Conformance test is being performed with the Universal Trading Platform Support Desk +33 1 49 27 50 90; email utp@nyx.com

TEST UNIT 01: QUOTE REQUEST MESSAGE (L) – LP ONLY

In certain conditions the LP will receive an unsolicited Quote Request message (L) informing him that there are no more quotes in the instrument.

The conditions can be one of the following:

During Call mode

- The LP is not present 15 minutes before the group opening
- The LP is not present 2 seconds before the group or the instrument opening

During the session (for both Investment products and Leverage knock out products)

- The LP is not present following the cancellation of a quote by the LP or by the CMO resulting in the fact that there are no longer any quotes present
- The LP is not present following the complete matching of his quotes
(in both cases described above the instrument will change into a halted status at the same time)

Test UNIT preparation:

The client and Euronext select more than one instrument listed on the W&C EUA environment to use during this Test UNIT.

The client is the LP for the selected instruments.

CTS makes sure that the selected instruments are empty and available for trading.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	MESSAGE(S) INVOLVED
1. Quote Request – type “M”	<ul style="list-style-type: none"> - The group to which the instrument belongs is in Call status - CTS and the LP make sure that there are no quotes in the instrument and that the instrument is not in a One Side Only period - 15 minutes before the opening of the group the LP receives an Quote Request message including Action code “No Quote 15 minutes before an auction” type “M” 	<ul style="list-style-type: none"> - CTS and the client confirm receipt of the unsolicited Quote Request message (M) including “Action code” type “M” 	<ul style="list-style-type: none"> - LP receives (M) type” M”

<p>2. Quote Request – type “S”</p>	<ul style="list-style-type: none"> - The group to which the instrument belongs is in Call status - CTS and the LP make sure that there are no quotes in the instrument and that the instrument is not in a One Side Only period. - 2 seconds before the opening of the group the LP receives a Quote Request message including Action code “No Quote 2 seconds before an auction” type “S” 	<ul style="list-style-type: none"> - CTS and the client confirm receipt of the unsolicited Quote Request message (L) including Action code type “S”. - CTS and the client confirm that the instrument remains halted after the opening 	<ul style="list-style-type: none"> - LP receives (L) type “S”
<p>4. Cancellation of quotes by LP</p>	<ul style="list-style-type: none"> - The instrument is in session status - The LP enters quotes in the instrument - The LP cancels one of the quotes - The LP receives a Quote Request message including Action code “Quote Cancelled by the Liquidity Provider” type “A” 	<ul style="list-style-type: none"> - CTS and the client confirm receipt of the unsolicited Quote Request message (L) including Action code type “A” CTS and the client confirm that the instrument has automatically halted - 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP sends (B) - LP receives (J) - LP receives (L) type “A” - LP and CTS receive public 505 (EMF 05) HaltReason R: “Halted. No LP”
<p>5. Cancellation of quotes by Market Control</p>	<ul style="list-style-type: none"> - The LP enters quotes in the instrument - The instrument is in session status - CTS representing CMO cancels one of the quotes - The LP receives a Quote Request message including action code “Quote Cancelled by Market Control” type “C” 	<ul style="list-style-type: none"> - Once the Quote has been cancelled by CTS, the LP will not receive a Cancellation Notice. Instead the LP receives an unsolicited Quote Request message (L) including Action code “Quote Cancelled by Market Control” type “C”. - CTS and the client confirm that the instrument has automatically halted - 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP receives (L) Type “C” - LP and CTS receive public 505 (EMF 05) HaltReason R: “Halted No LP”
<p>6. Quotes matched</p>	<ul style="list-style-type: none"> - The LP enters quotes in the instrument - CTS matches the quote on only on side - The LP receives a Quote Request message with action type “Quote Completely Matched” type “X” 	<ul style="list-style-type: none"> - Following the execution of one the quotes of the LP, CTS and the client confirm receipt of the unsolicited Quote Request message (L) including Action code type “X” - CTS and the client confirm that the instrument has automatically halted 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP receives (M) - LP sends (B) - LP receives (J) - LP receives (2) - LP receives (L) Type “X” - LP and CTS receive public 505

			(EMF 05) HaltReason R: "Halted No LP"
7. Quote Request during One Side Only Period	<ul style="list-style-type: none"> - The LP changes the status of the instrument to One Side Only Period by sending a message (O) - The LP receives a Confirmation message of the One Side Only Period via the message (P) - The LP receives a non-solicited message (N) indicating the starting of the One Side Only Period - The LP sends a Bulk Quote on the same side as the one he is indicating in the (O) message - The instrument is in session status - CTS cancels the quote - The LP receives a Quote Request message (L) with action type "C" 	<ul style="list-style-type: none"> - Once the quote has been cancelled by CTS the client confirms that a public 505 (EMF 05) is sent indicating that the instrument changes to Halted state. - The LP will receive an Order Killed message (4) message. Followed by a Quote Request message (L) with action code "Quote cancelled by the Market Control" type "C" - 	<ul style="list-style-type: none"> - LP sends (O) - LP receives (P) - LP and CTS receive (N) type Y - LP and CTS receive 505 (EMF 05) ActionAffectingState Y - LP sends (B) - LP receives (J) - LP receives (4) - LP receives (L) Type "C" - LP and CTS receive public 505 (EMF 05) HaltReason R: "Halted No LP"

TEST UNIT 02: BULK QUOTE MESSAGE (B) and (J) – LP ONLY

CYCLE OBJECTIVES:

The aim of this test cycle is to see if the LP is able to enter, modify and cancel his quotes via the new Bulk Quote message.

Furthermore, CTS will run tests with the LP to see if he's able to manage multiple instruments via a single Bulk Quote message.

It is important that the LP is aware that following the migration it will no longer be possible to enter quotes via the single order entry message (D) as an LP for instruments that belong to the new market model.

- The extended Response message (x) can be sent in two cases:

1. In case the client has a drop copy channel, a copy of the trade message including further information concerning the trade is sent in real time over this channel. The following information can be important and can only be found in the Extended Response message:

- LeavesQty
- CumQty
- OrdStatus
- ExecType

2. In case a failover of DC1 to DC2 occurs on NYSE Euronext's side, an Extended Response message (w) is sent after the failover occurred containing the status of all outstanding orders. However, in case of a failover to DC2, all quotes that were sent via a Bulk Quote will be eliminated. Following the failover, a Quote Request will be sent to the LP for each of their instruments.

Test UNIT preparation:

The client and Euronext select more than one instrument listed on the W&C EUA environment to use during this Test UNIT.

The client is the LP for the selected instruments.

CTS makes sure that the selected instruments are empty and available for trading.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	MESSAGE(S) INVOLVED
1. Bulk Quote entry	- The LP sends a Bulk Quote message (B) on the buy and sell side of an instrument	- CTS and the client confirm the entry of the quotes via message (B) - The client confirms receipt of the message Confirmation of Bulk Quote (J) without any error codes - The client confirms at which limit the LP is present via public message Quotes (140) (EMF L4)	- LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4)

2. Bulk Quote modification of price	<ul style="list-style-type: none"> - The LP modifies the outstanding quotes by sending a different price in the Bulk Quote message (B). The quantity field is filled but not changed 	<ul style="list-style-type: none"> - The client confirms receipt of the message Confirmation of Bulk Quote (J) without any error code - The client confirms the price and quantity via public message 140 (EMF L4) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4)
3. Bulk Quote modification of quantity	<ul style="list-style-type: none"> - The LP modifies the outstanding quotes by sending a different quantity in the Bulk Quote message (B). The price field is filled but not changed 	<ul style="list-style-type: none"> - The client confirms receipt of the Confirmation of Bulk Quote message (J) without any error code - The client confirms the price and quantity via public message 140 (EMF L4) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4)
4. Bulk Quote cancellation	<ul style="list-style-type: none"> - The LP cancels the outstanding quotes by leaving the price and quantity field empty for the given instrument in the Bulk Quote message (B) 	<ul style="list-style-type: none"> - CTS and the client confirm the cancellation of the quotes - The client confirms receipt of the Confirmation of Bulk Quote message (J) without any error code - The client confirms that the LP is no longer present in the order book via public message 140 (EMF L4) and that the instrument is halted - LP receives Quote Request message (L) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - LP receives (L)
5. Bulk Quote entry in multiple instruments	<ul style="list-style-type: none"> - The LP sends quotes on at least two instruments via one single Bulk Quote message 	<ul style="list-style-type: none"> - CTS and the client confirm the entry of the quotes for all instruments - The client confirms at which limit the LP is present 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4)
6. Bulk Quote modification and cancellation in multiple instruments	<ul style="list-style-type: none"> - The LP sends a modification of the quotes for one instrument and a cancellation for another instrument via one single Bulk Quote message 	<ul style="list-style-type: none"> - CTS and the client confirm the entry of the quotes for the instruments - The client confirms the modification and the cancellation of the outstanding quotes via the public message 140 (EMF L4) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - LP receives (L)
7. Bulk Quote modification rejection	<ul style="list-style-type: none"> - The LP modifies the outstanding quotes by sending a different quantity in the Bulk Quote message (B). However the LP leaves the price field empty in the message (B) 	<ul style="list-style-type: none"> - The client confirms receipt of the Confirmation of Bulk Quote message (J) including the rejection of the modification. - The client confirms the fact that his application is able to understand the rejection - The client confirms that he understands that both the price and quantity fields need to be filled in case of a modification of his quotes 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - LP sends (B) - LP receives (J)

8. Rejection of single order message type LP	<ul style="list-style-type: none"> - No quotes are outstanding in the instrument. - The LP sends a valid single order entry message (D) with account type LP. 	<ul style="list-style-type: none"> - The LP confirms the rejection of the single order message by Order/Cancel/Replace Reject (8). 	<ul style="list-style-type: none"> - LP sends (D) - LP receives (8)
11. Purge of Quotes by CMO	<ul style="list-style-type: none"> - The LP sends a Bulk Quote message (B) on the buy and sell side of an instrument - CTS cancels the quotes 	<ul style="list-style-type: none"> - The LP confirms having received two Order Killed messages (4). - The LP confirms having received a Quote Request message (L) with Action code "Quote Cancelled by the Market Control" type "C" - The LP confirms that the instrument has been halted 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - LP receives (4) (buy) - LP receives (4) (sell) - LP receives (L) - LP receives public 505 (EMF 05) HaltReason R "Halted. No LP"
12. Partial execution of a Quote sent via a Bulk Quote message	<ul style="list-style-type: none"> - The LP sends a Bulk Quote message (B) on the buy and sell side of an instrument - Broker partially executes one of the outstanding Quotes 	<ul style="list-style-type: none"> - The LP confirms that one Order Filled message (2) has been sent to inform of the partial execution. - If the LP has a drop copy channel the client acknowledges that the message (x) the full information of the trades 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - LP receives (M) (Leverage) - LP receives (2)
13. Full execution of a Quote sent via a Bulk Quote message	<ul style="list-style-type: none"> - The LP sends a Bulk Quote message (B) on the buy and sell side of an instrument - CTS fully executes one of the outstanding Quotes 	<ul style="list-style-type: none"> - The LP confirms that an Order Filled message (2) has been sent to inform of the execution. - If the LP has a drop copy channel the client acknowledges that the message (x) shows the full information of the trades - The LP confirms that the instrument has been halted 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - LP receives (M) (Leverage) - LP receives (2) - LP receives (L) - LP receives public 505 (EMF 05) HaltReason 3 "Halted. No LP"

TEST UNIT 03: REQUEST FOR EXECUTION MESSAGE (M) LP ONLY

Each time a broker sends an order that potentially executes an order inside the threshold of the LP's quotes that are leverage knock out products, a Request for Execution message will be sent to the LP. This allows the LP to avoid any execution at an outdated price. The Request for Execution message won't be sent for investment products or instruments that are plain vanilla products.

The LP will only receive a Request for Execution message if the LP sent his quotes via a Bulk Quote message.

The Request for Execution message does not inform the LP of the price, quantity or side of the matching order. It only informs the LP which instrument is involved.

The LP has several options following a Request For Execution message. The LP can:

- Confirm the outstanding quotes by sending a new Bulk Quote message (B) including same price and quantity. In this case a match will occur.
- Modify his quotes by issuing a new Bulk Quote message (B) with a different quantity and the same price. In this case a match will occur.
- Modify his quotes by issuing a new Bulk Quote message (B) with a different price. However the price remains the best bid or best ask. In this case a match will occur depending on the price of the broker.
- Modify his quotes by issuing a new Bulk Quote message (B) with a different quantity and price. However the price remains the best bid or best ask. In this case a match will occur depending on the price of the broker.
- Modify his quotes by issuing a new Bulk Quote message (B) with a different price that will change the position of the LP in the order book. If the Quotes are no longer the best bid or ask the order of the broker enters in the book but no execution will occur.
- Not answer to the Request for Execution message. In this case the trade will take place after a predetermined period defined by CMO.

Find below an overview of the type of warrant products for which the LP receives a Request For Execution message

Type of warrant product	Request for Execution	Quote Request
Plain vanilla warrant	No	Yes
Leverage knock out product	Yes	Yes
Investment product	No	Yes

Test UNIT preparation:

The client and Euronext select more than one instrument listed on the W&C EUA environment to use during this Test UNIT.

The client is the LP for the selected instruments.
 CTS makes sure that the selected instruments are empty and available for trading.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	MESSAGE(S) INVOLVED
1. LP confirms Quotes	<ul style="list-style-type: none"> - The LP enters quotes in the instrument - The CTS enters an order that can cause an execution - The LP receives a Request for Execution message - The LP confirms the quotes by sending a new Bulk Quote message 	<ul style="list-style-type: none"> - The LP confirms receipt of the Request for Execution message (M) - CTS and the client confirm the execution of the order via the Order Filled message (2) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and broker receive 140 - CTS sends (D) - CTS receives (a) - LP receives (M) - LP sends (B) - LP receives (J) - LP and CTS receive (2) - LP and CTS receive 140
2. LP changes Quotes	<ul style="list-style-type: none"> - The LP enters quotes in the instrument - The CTS enters an order that can cause an execution - The LP receives an Request for Execution message - The LP avoids an execution by changing the price of his quotes 	<ul style="list-style-type: none"> - The LP confirms receipt of the Request for Execution message (M) - CTS and the client confirm that the order was entered in the order book but was not executed following the Bulk Quote 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 - CTS sends (D) - CTS receives (a) - LP receives (M) - LP sends (B) - LP receives (J) - LP and broker receive 140
3. LP doesn't reply	<ul style="list-style-type: none"> - The LP enters quotes in the instrument - The broker enters an order that can cause an execution - The LP receives a Request for Execution message - The LP does not react to Request for Execution message within the delay 	<ul style="list-style-type: none"> - The LP confirms receipt of the Request for Execution message (M) - CTS and the client confirm the execution of the order via the message (2) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and broker receive 140 - CTS sends (D) - CTS receives (a) - LP receives (M) - LP and CTS receive (2) - LP and CTS receive 140
4. LP confirms Quotes of multiple instruments	<ul style="list-style-type: none"> - The LP enters quotes for more than one instrument - CTS enters an order for each instrument that can execute as fast as possible 	<ul style="list-style-type: none"> - The LP confirms receipt of multiple Request for Execution messages (M) - CTS and the client confirm the execution of each of the orders via the Order Filled message (2) 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive several 140 (EMF L4) - CTS sends several (D)

	<ul style="list-style-type: none"> - The LP receives a Request for Execution message for each of the orders - The LP confirms the price of each instrument by sending a Bulk Quote message 		<ul style="list-style-type: none"> - CTS receives several (a) - LP receives several (M) - LP sends (B) - LP receives (J) - LP and CTS receive several (2)
5. Execution between brokers	<ul style="list-style-type: none"> - The LP enters quotes in the instrument - CTS sends an order at a price inside the quotes of the LP on the buy side - CTS enters an order on the sell side that matches with the previous order - The LP receives a Request for Execution message - The LP confirms the quotes or does not reply 	<ul style="list-style-type: none"> - CTS and the client confirm the execution of the order via the message (2) - The client confirms that he understands that a broker can trade with a broker as long as they respect the LP quotes. 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and broker receive 140 - CTS sends order (D) (buy) - CTS receives (a) - CTS sends order (D) (sell) - CTS receives (a) - LP receives (M) - CTS receives (2) (buy) - CTS receives (2) (sell)

TEST UNIT 04: ONE SIDE ONLY PERIOD O/P

CYCLE OBJECTIVES:

In certain circumstances the LP might wish to move to a Bid Only or an Offer Only situation for an instrument. The LP has the possibility of informing the market in real time when he will only be present on the buy or sell side. When the LP uses this message, the following two messages will be sent to the market:

- SLE: One Side Only Period Notice (N)
- Public feed: a public Security Change Notice 505 (EMF 05) with ActionAffectingState Y or Z

If the LP wishes to inform the market that the One Side Only Period has ended, he places a Bulk Quote message for both sides of the book. The above two messages will be sent again informing the market of the end of the One Side Only Period.

If the LP decides to change the status of one of his instruments to a "One Side Only Period" there shouldn't be any outstanding quotes in this instrument

The collar of the instrument is calculated in the following way during a One Side Only period.

During a Bid Side Only Period the collar is the price of the LP Quote and the dedicated reference table that can be found below:

Bid Price	Thresholds
B < 0,10	0.02
B in [0.10;0.20]	0.04
B in [0.20;0.75]	0.06
B in [0.75;1.25]	0.08
B in [1.25;2.00]	0.10
B in [2.00;5.00]	0.14
B in [5.00;10.00]	0.30
B in [10.00;50.00]	1.50
B in [50.00;100.00]	3.00
B > 100.00	5.00

For example, if the LP price on the bid side is 0.74, the virtual offer is 0.80 (0.74 + 0.06)

When an LP providing liquidity on an instrument values his product at a bid price lower than one tick, he moves to an offer only situation.

As in a Bid Only situation, a virtual LP Bid quote is defined and set to the instrument tick size.

CYCLE PREPARATION:

The client and Euronext select one instrument listed on the W&C EUA environment to use during this Test UNIT.

The client is the LP for the selected instrument.

CTS makes sure that the selected instrument is empty and available for trading.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	MESSAGE(S) INVOLVED
1. Bid Side Only Period	<ul style="list-style-type: none"> - LP makes sure that no quotes are outstanding in the instrument LP sends a One Side Only Period message (O) 	<ul style="list-style-type: none"> - The LP confirms receipt of the Confirmation message (P) - The LP confirms receipt of the unsolicited One Side Only Period Notice message (N) with field PeriodStatus set to Beginning "Y" and the field "Side" set to "1" - The LP confirms receipt of the public message Stock State Change 505 (EMF 05) informing of the start of the One Side Only phase "Y" for the Bid side "A" 	<ul style="list-style-type: none"> - LP sends (O) - LP receives (P) - LP receives (N) type Y - LP receive 505 (EMF 05) type Y
2. End of Bid Side Only Period	<ul style="list-style-type: none"> - LP sends a One Side Only Period message (O) on the Bid side of the instrument - LP sends a quote on the other side of the order book to inform the market of the end of the One Side Only phase 	<ul style="list-style-type: none"> - The LP or the broker confirms receipt of unsolicited One Side Only Period Notice message (U) with field PeriodStatus set to End "Z" and the field "Side" is empty - The LP confirms receipt of the Stock State Change 505 (EMF 05) informing of the End of the One Side Only phase via field ActionAffectState = "Z" and PeriodSide = Null - 	<ul style="list-style-type: none"> - LP sends (O) - LP receives (P) - LP receives (N) type Y - LP and CTS receive 505 (EMF 05) type Y - LP sends (B) - LP receives (J) - LP and CTS receive (N) type Z - LP and broker receive 505 (EMF 05) - LP and CTS receive 140 (EMF L4)
3. Sell Side Only Period	<ul style="list-style-type: none"> - LP makes sure that no quotes are outstanding in the instrument - LP sends a One Side Only Period message (O) 	<ul style="list-style-type: none"> - The LP confirms receipt of the Confirmation message (P) - The LP confirms receipt of the unsolicited One Side Only Period Notice message (N) with field PeriodStatus set to Beginning "Y" and the field "Side" is set to "V" 	<ul style="list-style-type: none"> - LP sends (O) - LP receives (P) - LP and CTS receive (N) type Y - LP and CTS receive 505 (EMF 05) type Y

		<ul style="list-style-type: none"> - The LP confirms receipt of the Stock State Change 505 (EMF 05) message announcing the start of the One Side Only phase "Y" for the Offer side "V" 	
4. End of Sell Side Only Period	<ul style="list-style-type: none"> - LP sends a One Side Only Period message (O) on the Sell side of the instrument - LP sends a quote on the other side of the order book to inform the market of the end of the One Side Only phase 	<ul style="list-style-type: none"> - The LP or the broker confirms receipt of the unsolicited One Side Only Period Notice message (N) with field PeriodStatus set to End "Z" and the field Side is empty - The LP or the broker confirms receipt of the Stock State Change message 505 (EMF 05) advising of the End of the One Side Only phase via field ActionAffectState = "Z" and PeriodSide = Null 	<ul style="list-style-type: none"> - LP sends (O) - LP receives (P) - LP and CTS receive (N) type Y - LP and CTS receive 505 (EMF 05) type Y - LP sends (B) - LP receives (J) - LP and CTS receive (N) type Z - LP and CTS receive 505 (EMF 05) - LP and CTS receive 140 (EMF L4)
5. Partial execution during One Side Only Period	<ul style="list-style-type: none"> - LP sends a One Side Only Period message (O) on the Offer side of the instrument - LP sends Bulk quote on the Offer side - CTS sends aggressive order - LP and broker receive partial execution 	<ul style="list-style-type: none"> - LP confirms receipt of the Request for Execution message (M) - LP and CTS confirm receipt of the Order Filled message (2) 	<ul style="list-style-type: none"> - LP sends (O) - LP receives (P) - LP and CTS receive (N) type Y - LP receives 505 (EMF 05) type Y - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - CTS sends (D) - CTS receives (a) - LP receives (M) - LP sends (B) - LP receives (J) - LP and CTS receive (2) - LP and CTS receive 140 (EMF L4)
6. Rejection of "Start One Side Only Period"	<ul style="list-style-type: none"> - LP sends Bulk Quote in the instrument - LP sends a One Side Only Period message (O) while the Quote is still in the book 	<ul style="list-style-type: none"> - LP confirms the receipt of a One Side Only Period Ack message (P) including error code 20504 - LP confirms that he understand that no quotes can be outstanding if the LP wants to start a One Side Only period. 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP sends (O) - LP receives (P)
7. Quote Request	<ul style="list-style-type: none"> - LP sends a One Side Only Period 	<ul style="list-style-type: none"> - LP confirms receipt of the Request for Execution 	<ul style="list-style-type: none"> - LP sends (O)

<p>message during One Side Only Period</p>	<p>message (O) on the Offer side of the instrument</p> <ul style="list-style-type: none"> - LP sends quote on the Offer side - CTS sends an order executing the full quantity of the LP - LP confirms the quotes by sending a message (B) - LP and broker receive execution - LP receives Quote Request message (L) 	<p>message (M) following the aggressive order from CTS</p> <ul style="list-style-type: none"> - LP and CTS confirm that the quote has been executed - LP and CTS receive Order Fill message (2) - LP confirms receipt of the Quote Request message (L) 	<ul style="list-style-type: none"> - LP receives (P) - LP and CTS receive (N) type Y - LP and CTS receive 505 (EMF 05) type Y - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - CTS sends (D) - CTS receives (a) - LP receives (M) - LP sends (B) - LP receives (J) - LP and CTS receive (2) - LP receives (L) - LP and CTS receive 505 (EMF 05) - LP and CTS receive 140 (EMF L4)
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TEST UNIT 07: AUCTION PERIOD

CYCLE OBJECTIVES:

If the instrument on W&C is in Call or Halted mode, each time an order is entered, modified or cancelled, the Indicative Matching Price (IMP) is calculated. This cycle shows in which case the instrument opens and in which case the instrument remains in Call or Halted mode.

Orders are accepted as usual and along with the quotes of the LP make up the Indicative Matching Price (IMP).

The position of the LP in the ten best limits is broadcast to the market, except if the LP quote is overridden by the IMP.

If no quotes are provided by the LP, he is informed by the system through a dedicated message, Quote Request (L).

During the opening of an instrument on NSC for the new market model of the Warrants & Certificates platform a Check on Quantity (COQ) was done. A quantity check was carried out in order to determine if an LP quote could be processed as an aggressive quote so that the matching price was forced to the quote price.

This COQ will no longer be done after the migration of the platform to the UTP engine.

This test-cycle will recreate the following cases that can occur at the opening of the instrument:

- The LP is not present in the order book and the instrument remains in the same status until the LP is present on both sides
- The LP fulfills his obligations and the calculated IMP is between LP quotes, the instrument opens at the IMP
- The LP fulfills his obligations and the calculated IMP is outside LP quotes, the IMP will be readjusted to the crossed LP quote and the instrument opens. Any orders that are outside the LP quotes are executed at the breached LP price

Please note that the specific behaviour of unfilled market orders currently implemented and which depends on the instrument status will not apply for the new market model. When there is an unfilled Market Order, a TOP is always defined if there is at least one counterpart.

CYCLE PREPARATION:

The client and Euronext select more than one instrument listed on the W&C EUA environment to use during this Test UNIT.

The client is the LP for the selected instruments.

CTS makes sure that the selected instruments are empty and available for trading.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	MESSAGE(S) INVOLVED
1. LP is not present at opening	<ul style="list-style-type: none"> - instrument is in Call mode - CTS enters several orders - Following the opening of the group the instrument changes into status "Halted no LP" 	<ul style="list-style-type: none"> - The client confirms that he understands that the instrument changes into status "Halted no LP" because the LP is not present in the order book at the opening of the instrument 	<ul style="list-style-type: none"> - LP and CTS receive 140 (EMF L4) - LP receives (L) type M - LP receives (L) type S
2. LP is present and IMP is inside quotes	<ul style="list-style-type: none"> - Instrument is in Call mode - LP enters quotes - CTS enters orders at a price between the best bid and best offer of the LP - The instrument opens 	<ul style="list-style-type: none"> - Prior to the opening the client confirms the IMP - The client confirms that he understands that the instrument is open because the LP is present and the calculated IMP is between LP quotes 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - CTS sends (D) - CTS receives (a) - LP and CTS receive 140 (EMF L4) - CTS and LP receive 505 type O -
3. LP is present and IMP is not inside quotes	<ul style="list-style-type: none"> - Instrument is in Call mode - LP enters quotes - The broker enters orders at a price outside the IMP - The instrument opens 	<ul style="list-style-type: none"> - Prior to the opening the client confirms the IMP - The client confirms that he understands that the orders that breach the LP quotes match at the same price as the LP quotes 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - CTS sends (D) - CTS receives (a) - LP and CTS receive 140 (EMF L4) - CTS and LP receive 505 type O - LP and CTS receive (2)LP and CTS receive 140 (EMF L4)
4. Market order at opening	<ul style="list-style-type: none"> - Instrument is in Call mode - LP enters quotes with a quantity of 1000. - CTS enters an order at market price with a quantity of 1000. - The instrument opens 	<ul style="list-style-type: none"> - The LP receives an execution and confirms that one of his quotes is totally matched. - The instrument changes to Halted. No LP mode - The LP receives Quote Request 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - CTS sends (D) - CTS receives (a)

			<ul style="list-style-type: none"> - LP and CTS receive 140 (EMF L4) - CTS and LP receive 505 type O - LP and CTS receive (2) - LP receives (L) - LP and CTS receive 505 type R - LP and CTS receive 140 (EMF L4)
5. CMO cancels outstanding quotes of LP	<ul style="list-style-type: none"> - Instrument is in Call mode - LP enters quotes - CTS enters orders at a price between the best bid and best offer of the LP - The instrument opens - CTS cancels the outstanding LP quotes 	<ul style="list-style-type: none"> - The client confirms that the instrument changes to Halted mode automatically following the cancellation of the LP quotes by CTS 	<ul style="list-style-type: none"> - LP sends (B) - LP receives (J) - LP and CTS receive 140 (EMF L4) - CTS sends (D) - CTS receives (a) - LP and CTS receive 140 (EMF L4) - CTS and LP receive 505 type O - LP receives (4) (buy) - LP receives (4) (sell) - LP receives (L) - LP and CTS receive 505 type R