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PREFACE

PURPOSE

This document outlines important details regarding the latest software release for Phase 2 of the Euronext Optiq® migration: full trading chain, including Order Entry Gateway, Matching Engine and Market Data Gateway for Cash markets.

This document is a supporting document to the interface technical specifications.

ASSOCIATED DOCUMENTS

The following list identifies the associated documents, which either should be read in conjunction with this document, or which provide other relevant information for the user:

- Euronext Cash Markets – Optiq OEG Client Specifications – SBE Interface
- Euronext Cash Markets – Optiq OEG Client Specifications – FIX 5.0 Interface
- Euronext Cash Markets – Optiq Kinematics Specifications
- Euronext Cash Markets – Optiq CCG to OEG Changes Highlight
- Euronext Cash Markets – Optiq & TCS Error List
- Euronext Cash and Derivatives Markets – Optiq File Specification
- Euronext Cash Markets – Optiq MDG Client Specifications
- Euronext Cash Markets – Change Highlights – Optiq MDG Phase 1 to 2
- Optiq Technical Note SBE

Clients are advised to also refer to the Euronext Rules and Regulations documents for more details.

For the latest version of documentation please visit <http://www.euronext.com/optiq>

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DOCUMENT & REVISION HISTORY

For the details of this and previous updates of this document please refer to the [Appendix](#) at the end of this document.

Version	Change Description
1.7.0	Update for the software release of Optiq trading chain for the Cash markets

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1. INTRODUCTION

Euronext announced the launch of its new generation technology program in May 2016, which will deliver improved customer experience through the migration from its current technology platform Euronext UTP to its new leading edge platform: Optiq®.

This document describes the update of functionalities in the software delivery that are made available in virtual EUA (V-EUA) as of 19 March 2018¹.

Further software releases with customer facing functionalities are due to be delivered in March 2018.

1.1 GLOSSARY

This section provides a list of some terms & abbreviations commonly used in this document. Please note that some of these terms are described in more details in the dedicated sections within this document or in the associated Optiq specifications documents.

- **Order Entry Gateway (OEG)**: is the software that manages the access for exchanges' clients, and acts as the private interface between the clients and the Optiq matching engine.
- **Market Data Gateway (MDG)**: is the software that provides high-speed, real-time market data (public messages) for the Euronext markets.
- **Optiq Segment**: defines a universe of instruments habitually sharing common trading properties. An OPTIQ Segment can contain one or several asset classes. An OPTIQ Segment access is setup through a Logical Access.
- **Partition**: is a technical subdivision of an Optiq Segment. An Optiq Segment may be comprised of at least one or several partitions, physically independent one from another, but connected to each other within the context of the Optiq Segment. Instruments may move from one partition to another within an OPTIQ segment.
- **Logical Access**: is an OEG (Order Entry Gateway) entry point, setup for clients to connect to a single OPTIQ Segment, containing the technical configuration for the client's connectivity. Multiple logical accesses can share the same SFTI line.
- **OE Session**: the individual physical connection, to a single Partition. A single Logical access may have as many OE sessions as there are partitions in the Optiq segment.
- **Disaster Recovery (DR)**: A Euronext Disaster Recovery event occurs when Euronext switches client systems processing from the Euronext production environment to the Euronext DR environment. The DR environment provides redundant standby systems to be used upon the failure of the Euronext production environment.
- **Central Order Book (COB)**: the Euronext Trading Platform's order book, managed in Optiq, in which all submitted orders for on-exchange, on-book handling and any modifications thereto are held until matched, expired or withdrawn.
- **Trade confirmation System (TCS)**: Euronext's Trade Confirmation System (TCS) is used for declaring, publication and reporting of transactions made off the Central Order book (COB) but on-exchange, for all instruments (equities, ETFs, warrants, certificates and bonds) listed on Euronext Cash Markets and, more generally, for other regulated market trades, such as negotiated deals, block trades and volume weighted average price (VWAP) trades.

¹ V-EUA opened according to the trading pattern identified in section 3.5. However, in case of technical issue, the service level will guarantee a maximum opening time at 10 a.m. CET. The V-EUA platform is closed for maintenance every Tuesday until 13:00 CET.

2. OEG CONNECTIVITY

2.1 CONNECTIVITY TESTING

As announced in the [Info Flash](#) on 8 August 2017, connectivity Telnet testing is available in the virtual EUA environment (V-EUA).

Customers wishing to test the new order entry (OE) software need to be connected to the order entry gateway in EUA. V-EUA access information (login and port) was provided to the Member Connectivity Administrators (MCA) of Euronext's clients by the Customer Access Services (CAS) team in August-September 2017.

For questions on accessing the V-EUA environment, please contact Customer Access Services (CAS)

- Tel: +33 1 8514 8589
- Email: cas@euronext.com

3. OVERVIEW OF THE OEG DELIVERY

Below please find an overview of the updated set of functionalities, made available in V-EUA as of 19 March 2018 with this software delivery.

This software delivery contains the functionalities required for the start of conformance testing.

Functionalities not required to start conformance testing and not explicitly identified as available in this document may be present in the system, however are still in progress of delivery. Use of such functionalities at this time may result in unexpected behaviour. A future version of the release notes for coming deliveries will provide information on when these functionalities are ready for use.



Important note: This document provides a high level overview of the latest delivery for Optiq. For full details of functionalities, message structures and behaviour, clients are advised to review the Optiq OEG and MDG specification documents.

3.1 OEG LOGICAL ACCESS: EQUITIES, FUNDS, FIXED INCOME, WARRANTS AND CERTIFICATE SEGMENTS

Four Euronext segments (Equities, Funds, Fixed Income, Warrants and Certificates) and Luxembourg Stock Exchange, are available for testing with this software release. These segments are set up in the target configuration with four (4) partitions for the Equities segment, and one partition each for Warrants and Certificates, Funds, Fixed Income segments and Luxembourg Stock Exchange.

As mentioned above, the V-EUA Logical Accesses that have already been provided to the Member Connectivity Administrators (MCA) in August-September 2017 remain unchanged for all available segments.

To use newly available services of TCS messages via OEG client should contact CAS team to adjust their logical access to be enable the use of this service, or should specify this when requesting new logical accesses.

Note: For P-EUA and Production environments logical accesses are setup separately for individual segments based on client requests.

Partitions available with this software release cover the full scope, and are the following:

Optiq Segment Name	Partition ID	IP of Individual Partition
Equities	10	212.197.223.23
	11	212.197.223.24
	12	212.197.223.25
	13	212.197.223.26
Funds (ETFs)	20	212.197.223.27
Fixed Income	30	212.197.223.29
Warrants and Certificates	40	212.197.223.28
Luxembourg Stock Exchange	50	212.197.223.35

3.2 REFERENTIAL DATA

The full, target population of instruments and trading groups available in V-EUA can be used for testing in V-EUA with this release. As for Phase 1, the referential that is available for testing will be made available via the Cash Standing Data files on the Euronext File Service (EFS).

The instruments made available for testing will use the EMM values of

- 1 [Cash and Derivative Central Order Book (COB)] for submission of orders to Central Order Book, and
- 5 [On-Exchange Off-book declarations] for submission of declarations to the Trade Confirmation System

Please Note:

- Submission of messages for EMM value of 5 [On-Exchange Off-book declarations] that are managed via Trade Confirmation System will become available in a later delivery

3.3 OEG ADMINISTRATIVE MESSAGES

Find below the list of administration messages that are in scope of this software release in V-EUA on all available Optiq segments.

SBE Messages	FIX Messages
■ Logon (100)	■ Logon (A)
■ Logon Ack (101)	<i>Handled by Logon (A) in FIX</i>
■ Logon Reject (102)	■ Reject (3)
■ Technical Reject (108) ⁵	<i>Handled by Reject (3) in FIX</i>
■ Logout (103)	■ Logout (5)
■ HeartBeat (106)	■ HeartBeat (0)
■ TestRequest (107)	■ TestRequest (1)
N/A	■ ResendRequest (2)
N/A	■ SequenceReset (4)

3.4 OEG APPLICATION MESSAGES

3.4.1 Specifications Update & SBE Template

This delivery starts use of the SBE templates with schema version number 101 that is made available on the website and on the EFS, and were published on 13 February 2018.

If not ready to incorporate changes introduced in SBE template 101 client may continue previously published OEG and MDG templates with schema version number 100, as they remain backward compatible.

APA message have been included into the Step 2 MDG SBE templates without changes. Client may use the templates provided, or continue using dedicated APA SBE template originally issued for Step 1.

A future release will use SBE templates with schema version number 102, which remains backward compatible with the template 100 and 101.

- For OEG the template will be in line with the coming update of SBE specifications.
- For MDG this version doesn't bring any changes, except the schema version number, which is in line with the OEG SBE template

3.4.2 Generally Available Messages & Services

Find below the list of application messages that are part of this software release in V-EUA on all available Optiq segments.

SBE Messages	FIX Messages
■ New Order (01)	■ NewOrderSingle (D)
■ Ack (03)	■ ExecutionReport (8)
■ Fill (04)	<i>Handled by ExecutionReport (8) in FIX</i>
■ Kill (05)	<i>Handled by ExecutionReport (8) in FIX</i>
■ Trade Bust Notification (19)	<i>Handled by ExecutionReport (8) in FIX</i>
■ Cancel Replace (06)	■ OrderCancelReplaceRequest (G)
■ Collar Breach Confirmation (20)	<i>Handled by OrderCancelReplaceRequest (G) in FIX</i>
■ Reject (07)	■ OrderCancelReject (9)
<i>Handled by SBE via Reject (07)</i>	■ RequestAckMessage (Uy) ²
■ Cancel Request (12)	■ OrderCancelRequest (F)
■ Mass Cancel (13)	■ OrderMassCancelRequest (q)
■ Mass Cancel Ack (14)	■ OrderMassCancelReport (r)
■ Price Input (28)	■ PriceInput (UI)
■ InstrumentSynchronizationList (50)	■ InstrumentSynchronizationList (U50)
■ SynchronizationTime (51)	■ SynchronizationTime (U51)
■ User Notification (39)	■ UserNotification (CB)
■ Open Order Request (15)	■ OrderMassStatusRequest (AF)
■ Ownership Request (18)	■ OwnershipRequest (U18)
■ Ownership Request Ack (17)	■ OwnershipRequestAck (U29)

The functionalities below are available:

1. Order types: Limit, Market, Market To Limit, Cross, Iceberg, Stop (all types)
2. Validity types: Day, IOC, FOK, GTC, GTD, VFU (VFA) / VFC³

Please note: Validity Type of Good Till Time (GTT) will not be delivered in Optiq day 1 implementation, and the associated fields will be set to Future Use in the specifications

3. Client order id field - check for duplicates
4. Cancel on Disconnect
5. Self-Trade Prevention
6. Internal Matching Service
7. OEG Throttling
8. Best of Book service
9. Non Clearable (or alike) instruments (e.g. Euronext Expert Market)
 - With availability of this functionality messages for the instruments managed under the Euronext Expert Market and those flagged as non-Clearable, will be populated with the counterparty ID.
10. MIFID II Kill switch functionality, supported by Market operations & User notification messages
11. Member recovery through Sequence Number synchronization (in non-HA situations)
12. Start of Day & Order Elimination - of orders by Corporate Actions will not be available until delivery of the next software release
13. Client order id with Service Bureau connections, checked for the correct pre-fix being populated ⁴
14. **Drop Copy**
15. **Double Cap Management (COB & TCS)**

² RequestAckMessage (Uy) [FIX] is also sent in response to Warrants & Certificates specific message LiquidityProviderCommand (UZ)

³ In FIX protocol reference for VFU (VFA) / Valid for Uncrossing is "Good for Auction", and for VFC / Valid for Closing is "At the Close"

⁴ Clients wishing to test Service Bureau functionality should contact the Customer Access Services (CAS) team to obtain their pre-fix

Please note: Pre-trade safeguard, e.g. Bonds with minimum denomination, order maximum quantity, etc., are applicable in v-EUA.

3.4.3 Warrants and Certificates Segment Specific Messages & Services

Find below the list of application messages that are part of this software release in V-EUA that are available for the Warrants and Certificates segment:

SBE Messages	FIX Messages
■ Quotes (08)	■ MassQuote (i)
■ Quote Ack (09)	■ MassQuoteAck (b)
<i>In case of issues with quotes, in SBE the response is provided within QuoteAck (09) message</i>	■ QuoteRequestReject (AG)
<i>In case of issues with mandatory fields, in SBE the response is provided by Reject (07) message</i>	
■ Liquidity Provider Command (32)	■ LiquidityProviderCommand (UZ)
	■ RequestAckMessage (Uy) ⁵
■ Ask For Quote (33)	■ AskForQuote (UL)
■ Request For Execution (34)	■ RequestForExecution (UM)

The following list of Warrants and Certificates segment specific functionalities is available:

- Submission and management of functionalities under the Request For Execution market model (formerly known as LP Quote Driven), and its interaction with Orders. This includes the functionalities dedicated for Liquidity providers:
 - ◆ One-sided presence of instruments
 - ◆ Knock-In by Issuer (KIBI)

3.4.4 Trade Confirmation System (TCS) Specific Messages & Functionalities

Find below the list of application messages, which are part of this software release in V-EUA that are made available for sending order entry messages to Trade Confirmation System (TCS).

To use newly available TCS messages via OEG service, client should contact CAS team to adjust their logical access to be enable use of this service, or should specify this when requesting new logical accesses.

SBE Messages	FIX Messages
■ Declaration Entry (40)	■ TradeCaptureReport (AE)
■ Declaration Entry Ack (41)	■ TradeCaptureReportAck (AR)
■ Declaration Notice (42)	<i>Handled by TradeCaptureReportAck (AR) in FIX</i>
■ Declaration Cancel and Refusal (43)	<i>Handled by TradeCaptureReport (AE) in FIX</i>
■ Fund Price Input (44)	■ FundPriceInput (U44)
■ Fund Price Input Ack (45)	■ FundPriceInputAck (U45)
■ Declaration Entry Reject (46)	<i>Handled by TradeCaptureReportAck (AR) in FIX</i>

The following lists TCS specific functionalities that are available:

- Submission and management of declarations to TCS via an OEG

⁵ RequestAckMessage (Uy) [FIX] is also sent in response to “all segment” messages OwnershipRequest (U18) and OrderMassStatusRequest (AF)

3.5 TRADING PATTERNS

All instruments available for testing purposes will be following the trading pattern assigned to them. The details of each trading pattern can be found in the Timetable file made available on EFS.

NOTE: The time for each phase is indicated in UTC.

3.6 MARKET DATA GATEWAY (MDG)

For all the functionalities and messages associated to functionalities made available with this release identified for Order entry, all existing MDG real-time messages will be provided as specified in the Optiq MDG client Specifications – **v2.0.0**, including the previously unavailable messages **Standing data** (1007) and **Full Trade information** (1004).

3.7 EURONEXT FILE SERVICES (EFS)

Files available on the V-EUA Euronext Files Services are the following:

- OEG SBE template File
- MDG SBE template File
- Cash Standing Data File [Equities, Fixed Income, Funds, Index, Luxembourg Stock Exchange, Warrants & Certificates]
- Cash Tick Size Referential File
- Repo Settlement Price File
- Timetable File

3.8 POSSIBLE ACTIONS BY THE OPTIQ SUPPORT DESK

Below is the list of actions the Optiq Support Desk can perform upon the client's request:

- Re-open/Suspend an Instrument
- Halt/Resume Trading Group
- Update Group Timetable
- Create and Cancel Orders
- Create and Cancel LP Quotes (*In case no LPs are present on the market*)

4. KNOWN DEFECTS

4.1 LIST OF KNOWN DEFECTS

4.1.1 Impacting all Segments made available with this delivery:

- In FIX, sending of **OrderCancelRequest** (F) message with combinations for Execution within Firm Short Code and Client Identification Short Code is rejected. Until resolved clients are advised not to populate Client Identification Short Code combination in the order cancellation
- No Ack sent when Market to Limit order is converted into a Limit order
- No Ack sent for IOC orders
- Trade Type in the Fill (04) messages is set to "null"
- On sending of the Ownership Request, for each order in scope of this request, clients receive a first Ack of the Ownership request then the Order message, followed by the second Ack of the Ownership request
- Iceberg orders during TAL phase are rejected, even at the Last trading price
- In case of Rejection of order modification or cancellation, due to incorrectly provided identifying values in fields Order Id / Original Client Order Id, Order Side, Order Type, Firm ID – OEG is not always providing error code 2101 = Unknown Order, and assigns a new order id. After the correction is implemented, such orders will always be rejected without an order id, with the correct error code.
- Field *BookInTime* is not provided in the unsolicited messages
- Orders with validity of Good Till Date are killed one day ahead of their expiration
- In FIX, Logon with a MsgSeqNum too low is being ignored and it should be rejected with a Logout
- In FIX, CumQty (14) and LeavesQty (151) are not correctly populated in outbound messages
- Fields *Trade Type* in **Fill**(04) for indication of Cross waivers are always populated with value 41 = Large in Scale (LIS) Trade (Cash) in place of values 39 = Guaranteed Cross – Negotiated deal NLIQ (Liquid) and 40 = Guaranteed Cross – Negotiated deal OILQ (illiquid)
- In MDG, incorrect values provided in field *PreviousPriority* in **OrderUpdate** (1002) messages sent back in case of modification of an existing Iceberg order with loss of priority
- In MDG upon cancellation of an Iceberg order Best Offer update with zero quantity and price null may be missing
- In MDG, in case of cancellation of trades, field *TradingDateTime* in the **Full Trade Information** (1004) messages does not reflect the trade / time of the trade being cancelled
- In MDG, **End Of Day** (1102) messages are not sent out
- In MDG, No message **Technical Notification** (1106) being broadcast
- In MDG, fields Trade Type in message **Full Trade Information** (1004) & *Market Data Update Type* in message **MarketUpdate** (1001) for indication of Cross waivers are always populated with value 41 = Large in Scale (LIS) Trade (Cash) in place of values 39 = Guaranteed Cross – Negotiated deal NLIQ (Liquid) and 40 = Guaranteed Cross – Negotiated deal OILQ (illiquid)

4.1.2 Impacting Warrants & Certificates segment:

- Rejection messages not always sent for Quotes in case of missing fields in repeating section, or when an incorrect value is provided in *RFEAnswer / RFEAnswer* (20022) field

4.1.3 Impacting TCS specific messages and functionalities:

- Submission of Declaration on Secondary place of listing is rejected
- For TCS, pre-matched declarations on funds are not Filled and eliminated at Fixing
- In OEG, TCS is responding with error codes that are different than those up to now provided in the Optiq & TCS Error list document. TCS messages will continue using the error code previously provided by the CCG. Optiq & TCS Error List document will be updated to include the list of error codes being used by TCS and are also provided below in the section “4.3 TCS Error Codes”.
- In TCS **TradeCaptureReportAck** (AR) messages, clients receive an unexpected and empty field *MICofSecondaryListing* (21065)
- In **TradeCaptureReport** (AE) messages, field *TradeReportID* (571) is limited in to max values of 99999999

4.1.4 Impacting Drop Copy service:

- Drop Copy is not disseminating trades, only orders
- Inconsistencies in behavior of the Resend Request functionality in Drop Copy

4.1.5 FIX Specifications Correction:

- In FIX specifications, identification of values provided in case of **MassOrderStatusRequest** (AF) and **OwnershipRequestAck (U29)** in *ExecType* (150) were incorrectly provided. Correct combination of values are as follows:

Cases when ExecutionReport (8) is sent	Details of the Case	ExecType (Tag 150)	OrdStatus (Tag 39)
Order Status & Ownership Request			
Order Status	<i>Message 8 sent:</i> in response to an OrderMassStatusRequest (AF) message	m	R
Ownership Request	<i>Message 8 sent:</i> in response to an OwnershipRequest (U18) message	k	I

- In FIX, in some cases fields *BookInTime* (21002), *SecurityID* (48) and *SecurityIDSource* (22) are not provided in message **RequestAckMessage** (Uy) - a clarification of specifications would be provided to address this item, as these fields are to be changed from Mandatory to conditional, and conditions are to be clarified.
- In FIX specifications clarification are added on use and sending of fields *DeliverToCompID* (128) and *OnBehalfOfCompID* (115)
- In FIX specifications, section 2.4 Order ID provides incorrect directions of obtaining the value of the Order ID sent to the CCPs in case clients would like to use it for reconciliation purposes. Description below provides the correct details, and this will be included in the next update of FIX specifications
FIX receives encoded data, and to obtain the Order ID provided to the CCP it needs to be converted, using the steps identified below.
Please note: The value received in this field is a string of up to 20 characters long, but may be shorter
 - ◆ The value obtained from the field Order ID should be divided by 2¹⁶ (or 65536)
 - ◆ The resulting value should be truncated to obtain just the whole part of the result, without any rounding

The resulting value represents the Order ID that is communicated by the Exchange to the CCP

Example

- Obtain the value in field OrderID (tag 37): 33637557
 - Divide this value by 2^{16} : $33637557 / 2^{16} = 513.2683868$
 - Truncate the result to the whole value without rounding: 513
- 513 is the expected Order ID provided to the CCP

4.2 DEFECTS RESOLVED SINCE LAST DELIVERY

- In case price submitted for an order during TAL phase is different from the last traded price, OEG sends incorrect error code 2036 (Order Type forbidden in TAL phase), in place of error code 2035 (TAL phase: invalid price)
- In FIX, incorrect values provided in fields *CumQty* (14) and *LeavesQty* (151) following modification of an order
- Issues that prevented use of KOBI and PAKO functionalities for Warrants & Certificates segment
- In normal conditions bonds with minimum denomination checks apply, client must submit orders with the minimum amount equal to Nominal (par value). Currently, order amount checks are using the Nominal amount (Par value) and include the maximum number of decimals into the "whole" part of the value (e.g. For Nominal of 50,000 system is using the value of 500000000000)
- Remaining quantity of a partially filled order with validity of Immediate or Cancel (IOC) are not cancelled and remain in the book
- In FIX, it isn't possible to modify an order a second time using the field *OrigClOrdID* (41). Modification is still possible using *OrderID* (37)
- In FIX, field *ExecType* (150) is sent with value 1 and 2 for Trades (execution of orders), instead of value F
- In FIX, no acknowledgement message sent for the first order sent after Logon, without waiting to receive message **InstrumentSynchronizationList** (U50)
- In FIX, **Price Input** (UI) message is rejected for instruments on the RFE market model (previously referred to as Warrants on the new market model - quote driven)
- In MDG an unexpected **OrderUpdate** (1002) message is sent on update of quantity of an Iceberg order

4.3 TCS ERROR CODES

In OEG, TCS is responding with error codes that are different than those up to now provided in the Optiq & TCS Error list document. TCS messages will continue using the error code previously provided by the CCG. Optiq & TCS Error List document will be updated to include the list of error codes being used by TCS and are also provided below.

Error Code	Text
100	THE TCS APPLICATION IS UNAVAILABLE
101	THE FUNCTION IS FORBIDDEN
102	PROVIDE A TCS TRADE NUMBER
103	THE TCS TRADE NUMBER DOES NOT EXIST
104	THE FUNCTION CODE IS INCORRECT
105	THE DECLARATION IS FORBIDDEN DURING THE SESSION
106	THE TCS TRADE NUMBER IS NOT CURRENT
107	DECLARATION CANCELLATION REQUESTED FOR DECLARATION THAT HAS ALREADY BEEN CANCELED
108	DECLARATION REJECTION REQUESTED FOR DECLARATION THAT HAS ALREADY BEEN CANCELED
109	DECLARATION CANCELLATION REQUESTED FOR DECLARATION THAT HAS ALREADY MATCHED

Error Code	Text
110	DECLARATION REJECTION REQUESTED FOR DECLARATION THAT HAS ALREADY BEEN MATCHED
120	THE INSTRUMENT IS INVALID
121	THE INSTRUMENT IS FORBIDDEN
122	THE TRADING MODE IS NOT VALID
123	THE INSTRUMENT IS NOT ELIGIBLE FOR DEFERRED SETTLEMENT
124	THE BROAD INSTRUMENT CATEGORY ID IS NOT VALID
125	THE INSTRUMENT IS RESERVED OR SUSPENDED
126	THE INSTRUMENT TYPE ID IS NOT VALID
127	THE INSTRUMENT TYPE VWAP IS FORBIDDEN
128	DERIVATED VALUE TYPE FORBIDDEN
129	THE INSTRUMENT IS NOT A FUND
130	THE SIDE IS INVALID
131	THE SIDE IS NOT AUTHORISED
132	THE SIDE IS NOT A CROSS TRADE FOR THIS TRANSACTION TYPE CODE
133	INVALID INITIATOR SIDE
140	THE BUYING MEMBER IS NOT VALID
141	THE DECLARING MEMBER IS FORBIDDEN
142	THE DECLARING MEMBER IS NOT A MEMBER
143	THE SELLING MEMBER IS NOT VALID
144	THE SELLING MEMBER IS FORBIDDEN
145	THE DECLARING MEMBER IS THE <i>UNKNOWN</i> TRADING MEMBER
146	PROVIDE TRADING MEMBER ID IN THE MESSAGE HEADER
147	THE DECLARING MEMBER IS NOT VALID
148	THE TRADING MEMBER IS DIFFERENT FROM THE ORIGINAL TRADING MEMBER
149	PROVIDE SELLING MEMBER ID
150	PROVIDE BUYING MEMBER ID
151	THE TRADING MEMBER IS NOT DEFINED FOR THIS GROUP
152	THE DECLARING MEMBER IS FORBIDDEN FOR THIS GROUP
153	BUYER IS EQUAL TO SELLER
154	BUYER AND SELLER ARE DIFFERENT
155	INVALID BUYER
156	INVALID SELLER
157	INVALID BUYER PRINCIPAL
158	INVALID SELLER PRINCIPAL
159	“SELLER” AND “BUYER” PRINCIPAL ARE EQUAL
160	THE COUNTERPARTY IS NOT VALID.
161	THE COUNTERPARTY IS FORBIDDEN
162	THE COUNTERPARTY IS NOT <i>UNKNOWN</i>
163	THE COUNTERPARTY ON THE BUY SIDE IS DIFFERENT FROM ORIGINAL COUNTERPARTY
164	THE COUNTERPARTY ON THE SELL SIDE IS DIFFERENT FROM ORIGINAL COUNTERPARTY
165	THE BUYING MEMBER AND SELLING MEMBER MUST BE IDENTICAL
166	THE BUYING MEMBER AND SELLING MEMBER MUST BE DIFFERENT
167	THE COUNTERPARTY IS FORBIDDEN FOR THIS GROUP

Error Code	Text
170	THE PRINCIPAL ON BUY SIDE IS NOT VALID
171	THERE IS NO LINK BETWEEN DECLARING MEMBER AND PRINCIPAL ON BUY SIDE
172	THE PRINCIPAL ON BUY SIDE IS FORBIDDEN
173	THE PRINCIPAL ON SELL SIDE IS NOT VALID
174	THERE IS NO LINK BETWEEN DECLARING MEMBER AND PRINCIPAL ON SELL SIDE
175	THE PRINCIPAL ON SELL SIDE IS FORBIDDEN
180	NOT ONE OF THE PERMITTED VALUES FOR THE ORIGIN
190	NOT ONE OF THE PERMITTED VALUES FOR CLEARING MODE
200	NOT ONE OF THE PERMITTED VALUES FOR THE SETTLEMENT
201	THE SETTLEMENT IS FORBIDDEN FOR THIS TRANSACTION TYPE
202	THE SETTLEMENT IS NOT VALID
203	THE SETTLEMENT PERIOD IS NOT NUMERIC
210	THE TRANSACTION TYPE CODE IS NOT VALID FOR THIS MARKET
212	THE CODE FOR TRANSACTION TYPE IS FORBIDDEN FOR BONDS
213	THE CODE FOR TRANSACTION TYPE IS NOT VALID
214	THE CODE FOR TRANSACTION TYPE IS FORBIDDEN
215	THIS INSTRUMENT IS NOT ELIGIBLE FOR VWAP MARKET TRANSACTIONS
216	THE CODE FOR TRANSACTION TYPE IS NOT VALID FOR VWAP INSTRUMENT
217	THE REFERENCE PRICE OF VWAP EGAL ZERO
218	THE CODE FOR TRANSACTION TYPE IS NOT ALLOWED WITH THE INSTRUMENT STATE
219	INVALID NATURE FOR THE TRADING VENUE
220	QUANTITY x PRICE < MINIMUM AUTHORISED AMOUNT FOR BONDS
221	QUANTITY x PRICE < PERCENTAGE OF CAPITAL AMOUNT
222	QUANTITY x PRICE < MINIMUM PERMITTED AMOUNT FOR SHARES
223	QUANTITE*PRIX < AU POURCENTAGE CAPITAUX ET MONTANT MINIMUM ACTION
224	QUANTITY x PRICE < WEB LIMIT
225	THE QUANTITY IS NOT VALID
226	INVALID QUANTITY
227	INVALID LOT SIZE QUANTITY
230	THE PRICE IS NOT NUMERIC
231	THE PRICE IS NOT ZERO
232	PRICE > DAY'S HIGH
233	PRICE < DAY'S LOW
234	PRICE EXCEEDS SPREAD
235	THE IFT PRICE CODE IS NOT VALID
236	PRICE > AUTHORISED MAXIMUM
237	PRICE EQUAL TO ZERO
238	INCORRECT VWAP PRICE – REFERENCE PRICE FOR THIS PERIOD IS -----,---
239	THE MARKET VWAP REFERENCE PRICE IS NOT AVAILABLE
240	THE GROUP IS FORBIDDEN
241	PROVIDE THE FINANCIAL MARKET ID FOR THE GROUP
242	PROVIDE THE TRADING MODE FOR THE GROUP
250	THE FINANCIAL MARKET IS NOT VALID

Error Code	Text
251	THE FINANCIAL MARKET IS FORBIDDEN
252	THE FINANCIAL MARKET IS CLOSED
260	THE PERCENTAGE IS NOT NUMERIC
261	NOT ONE OF THE PERMITTED VALUES FOR THE PERCENTAGE
262	THE IFT CODE FOR THE PERCENTAGE IS NOT VALID
263	THE PERCENTAGE IS NOT VALID
264	THE PERCENTAGE FORBIDDEN FOR THIS SIDE OF THE DECLARATION
265	FORBIDDEN PERCENTAGE
270	INCORRECT GUARANTEE TYPE
280	THE FORMAT IS NOT VALID
281	THE FUNCTION IS NOT VALID FOR THE DECLARATION STATUS
282	THE FUNCTION IS NOT VALID FOR THE TRADE STATUS
283	THE FORMAT OF THE DECLARATION MESSAGE IS NOT VALID
284	THE ENTRY IS NOT VALID
290	NOT ONE OF THE PERMITTED VALUES FOR THE ORIGIN
291	NOT ONE OF THE PERMITTED VALUES FOR THE ORIGIN THAT WAS ENTERED
292	THE ACCOUNT NUMBER IS NOT VALID
310	TIME SPECIFIED AS START BOUNDARY FOR VWAP COMPUTATION IS NOT VALID
311	TIME SPECIFIED AS END BOUNDARY FOR VWAP COMPUTATION IS NOT VALID
312	INVALID TIME RANGE FOR VWAP COMPUTATION (START > END)
313	TIME SPECIFIED FOR VWAP COMPUTATION SHORTER THAN MINIMUM REQUESTED
315	INVALID TIME FORMAT
400	NO LTP ON THE CENTRAL MARKET
801	NAV+/- ENTRY IS SUPERIOR TO FIXING TIME
802	NO LINK BETWEEN THE MEMBER AND THE FUND
803	THE COUNTERPARTY IS NOT A FUND AGENT
804	THE TYPE OF MEMBER IS INVALID FOR THIS TYPE OF OPERATION
805	INVALID CASH AMOUNT
806	TRADE REJECTED DUE TO INVALID QUANTITY
807	FUNCTION IS NOT VALID FOR THIS PRODUCT
808	INVALID COUNTERPART ORIGIN
809	NAV FORBIDDEN DURING THE FIXING
810	INVALID PRICE FOR TRADE PUBLICATION
811	INVALID QUANTITY FOR TRADE PUBLICATION
812	INVALID TRADING DAY FOR TRADE PUBLICATION
813	TRADE ID ALREADY EXISTS
814	THE TRADE ID IS MANDATORY
815	TRADING VENUE IS INVALID
816	PRICE NOTATION IS INVALID
853	ESES CODE IS EMPTY
855	FUNDSETTLE PARTICIPANT CODE IS EMPTY
858	SETTLEMENT AGENT CODE IS EMPTY
900	INVALID NATURE OF OPERATION FOR A FOREIGN VALUE

Error Code	Text
901	INVALID QUANTITY NOTATION
902	INVALID PRICE NOTATION
950	INVALID PRICE MULTIPLIER
951	INVALID OTHER FACTORS INDICATOR
952	THE BY-PASS INDICATOR FOR THE CONTROLS IS INVALID
953	THE DEFERRED INDICATOR IS INVALID
954	THE TRADING DATE IS INVALID
955	THE TRADING TIME IS INVALID
956	THE PRINCIPAL IS INVALID
957	THE PRINCIPAL COUNTERPART IS INVALID
958	THE SIDE IS INVALID
959	FMP INCOMPATIBLE MIFID (>0)
960	MEMBER CANNOT CANCEL DECLARATION DURING CONFIRMATION PERIOD
961	NATURE OPERATION IS UNAVAILABLE
962	THE SETTLEMENT IS FORBIDDEN FOR THIS GROUP
963	VALUE IS FORBIDDEN FOR REPORTING
964	ID CLIENT INVALID FOR DECLARANT
965	TYPE ID CLIENT INVALID FOR DECLARANT
966	ID CLIENT INVALID FOR COUNTERPART
967	TYPE ID CLIENT INVALID FOR COUNTERPART
968	INVALID DATE FORMAT
969	SIGN FOR SETTLEMENT CONTROL INCORRECT
970	NO SETTLEMENT SYSTEM FOR THIS MEMBER
999	UNKNOWN ERROR CODE

APPENDIX A: REVISION HISTORY

SUMMARY OF CHANGES

Version	Change Description
1.7.0	<p>Update for the software release, including:</p> <ol style="list-style-type: none"> 1) Updated section “3.2 Referential Data” for management of TCS specific messages / EMM 2) Updated section “3.4.1 “Specifications Update & SBE templates” for the start of use of template 101, clarification of APA messages included in MDG template, and an upcoming version of template 3) Updated section “3.4.2 Generally Available Messages & Services” with the following added services <ol style="list-style-type: none"> a. Added a note that Validity type Good Till Time (GTT) will not be delivered in the Optiq b. Drop Copy c. Double Cap Management (COB) 4) Added section “3.4.4 Trade Confirmation System (TCS) Specific Messages & Functionalities” 5) Updated list of known defects, <ol style="list-style-type: none"> a. Added sub-section “Impacting TCS specific messages and functionalities” b. Updated section “FIX Specifications Correction” c. Added sections <ol style="list-style-type: none"> i. 4.2 Defects Resolved Since Last Delivery ii. 4.3 TCS Error Codes
1.6.0	<p>Update for the sixth software release, including:</p> <ol style="list-style-type: none"> 1) Updated section “3.1 OEG Logical Access: Equities, Funds, Fixed Income, Warrants and Certificate Segments” 2) Update section “3.4.1 Specifications Update & SBE Template” 3) Updated section “3.4.2 Generally Available Messages & Services” with new services <ol style="list-style-type: none"> a. Non Clearable (or alike) instruments (e.g. Euronext Expert Market) b. Added note on Trading Safeguards 4) Updated list of known defects
1.5.0	<p>Update for the fifth software release, including:</p> <ol style="list-style-type: none"> 1) Updated Glossary, with terms Central Order Book (COB) and Trade Confirmation System (TCS) 2) Updated available segments to include Luxembourg Stock Exchange 3) Updated section on SBE template 4) Updated Euronext File Services, with CashStandingData file being provided for Index services and Luxembourg Stock Exchange 5) Temporarily removed services of Payment After Knock Out (PAKO) and Knock-Out By Issuer (KOBI) 6) Updated list of known defects
1.4.0	<p>Update for the forth software release, including:</p> <ol style="list-style-type: none"> 1) Added the increased scope of available partitions to be in target configuration as well as the target scope of instruments available for trading, and provided in the referential data 2) Added new available services & OEG messages with forth release <ol style="list-style-type: none"> a. Cancel on Disconnect b. Internal Matching Service (IMS) c. Self-Trade Prevention (STP) d. MIFID II Kill switch functionality, supported by Market operations & User notification messages e. Member recovery through Sequence Number synchronization (in non-HA situations) f. OEG Messages: <ol style="list-style-type: none"> i. Trade Bust Notification (19) ii. Mass Cancel (13) / (FIX q) iii. Mass Cancel Ack (14) / (FIX r) iv. Collar Breach Confirmation (20) v. QuoteRequestReject (FIX AG) vi. Price Input (28) / (UI) vii. SynchronizationTime (50) / (FIX U50) viii. SynchronizationTime (51) / (FIX U51) ix. Technical Reject (108) x. FIX reference for Ownership Request Ack corrected to be (U29) g. OEG Throttling 3) Added section “3.4.1 Specifications Update & SBE Template” 4) Removed section “3.4.2 Important Notes on FIX Protocol” as these functionalities are now available in vEUA 5) Updated List of Known Defects: <ol style="list-style-type: none"> a. Added new known defects b. Removed the defects previously listed that were Resolved
1.3.0	<p>Update for the third software release, including:</p> <ol style="list-style-type: none"> 1) Added the increased scope of Optiq Segments (Fixed Income), available partitions and referential data 2) Added management Client order management for Service Bureau connections pre-fix 3) Updated list of available functionalities 4) Added new OEG messages:

Version	Change Description
	<ul style="list-style-type: none"> a. Open Order Request (15) / (FIX AF) b. Ownership Request (18) / (FIX U18) c. Ownership Request Ack (17) / (FIX Uy) <p>5) The following items were removed from list of limitations:</p> <ul style="list-style-type: none"> a. Defects specific to the Warrants & Certificates markets for the Iceberg orders and Stop on Quote <p>6) Updated list of known defects</p> <p>7) Removed Trading patterns section Appendix A</p> <p>8) Section Appendix B “Revision History” renumbered to Appendix A</p>
1.2.0	<p>Update for the second software release of Optiq trading chain for the Cash markets includes:</p> <ul style="list-style-type: none"> 1) Updated most sections with references to the Second software delivery 2) Added the increased scope of Optiq Segments, available partitions and referential data made available with second software delivery. Referential data scope provided as list of trading groups 3) Added the messages and functionalities specific to Warrants and Certificates segment 4) Updated section of the assigned / available Trading Patterns 5) Updated section “OEG Application messages” to identify added functionalities, and those that no longer have conditions associated to them, and updated list of remaining conditions 6) Update of MGD messages section. To identify that all messages are now available, including previously unavailable Standing data (1007) and Full Trade information (1004) 7) Added sections for “Euronext File Services (EFS)” and “Possible Actions By Optiq Support Desk” 8) Updated list of known defects 9) The following items were removed from list of limitations. <ul style="list-style-type: none"> a. ResendRequest(2) and SequenceResend(4) for FIX: <ul style="list-style-type: none"> i. If OEG receives ResendRequest message, during the first delivery, it will be replied with the SequenceResend for the purposes of “GapFill” but will not resent any admin or application messages ii. If client receives ResendRequest message, during the first delivery, they should not reply to it, and ignore it b. Any orders submitted during the active trading sessions will not be present in the start of day, nor during the trading sessions following the current one c. Any orders triggered during the closing of the session will not be present in the start of day, nor during the trading sessions following the current one d. Elimination of orders with validity GTD / GTC will not be available until delivery of the next software release e. For FIX – Removed the field ClordID (11) from the list of limitations due to the incorrect population of values 10) Added an Appendix “A” for the details of the available Trading patterns / time tables
1.1.0	<ul style="list-style-type: none"> 1) Added FIX messages supported, associated conditions and known defects 2) Removed known defects that were resolved
1.0.0	First release, for the first software delivery of Optiq trading chain for the Cash markets

DOCUMENT HISTORY

REVISION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
1.7.0	March 2018	Euronext	Update for the software release of Optiq trading chain for the Cash markets
1.6.0	February 2018	Euronext	Update for the sixth software release of Optiq trading chain for the Cash markets
1.5.0	February 2018	Euronext	Update for the fifth software release of Optiq trading chain for the Cash markets
1.4.0	January 2018	Euronext	Update for the fourth software release of Optiq trading chain for the Cash markets
1.3.0	January 2018	Euronext	Update for the third software release of Optiq trading chain for the Cash markets
1.2.0	December 2017	Euronext	Update for the second software release of Optiq trading chain for the Cash markets
1.1.0	October 2017	Euronext	Clarification & bug fix delivery for the first software release
1.0.0	September 2017	Euronext (Optiq Analyst)	First release, for the first software delivery of Optiq trading chain for the Cash markets