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LARGE IN SCALE FEATURES ON THE CENTRAL ORDER BOOK - OVERVIEW

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PREFACE

ABOUT THIS DOCUMENT

This document describes the functional and technical requirements related to the implementation of the Large in Scale features on the Central Order Book.

RELATED DOCUMENTS

The following is a list of the associated documents, which should be read in conjunction with this document or which provide other relevant information to the user:

■ General:
  – Euronext Cash and Derivatives Markets - Optiq File Specifications
  – Euronext File Services User Guide

■ Order entry:
  – Euronext Cash Markets - Optiq OEG Client Specifications - SBE Binary Interface
  – Euronext Cash Markets - Optiq OEG Client Specifications - FIX 5.0 Interface
  – Euronext Cash Markets - Optiq Kinematics Specifications
  – Euronext Cash Markets - Optiq Drop Copy Service
  – Euronext Cash Markets - Optiq & TCS Error List
  – Euronext Cash Markets - Optiq OEG SBE Template

■ Market data:
  – Euronext Cash Markets - Optiq MDG Client Specifications
  – Euronext Cash Markets - Optiq MDG SBE Template

DOCUMENT HISTORY

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CONTENTS

1.   INTRODUCTION

1.1   OVERVIEW

Euronext is introducing new Large-in-Scale (LiS) features on the Central Order Book.

The service will create more opportunities to execute LIS orders, leveraging existing liquidity in the central order book.

As soon as market participants implement the necessary modifications required to use the model, including conformance tests, they will immediately be able to benefit from the existing invisible liquidity.

The new service is now available for testing on the External User Acceptance (P-EUA) test platform.

The launch in Production is planned for the first quarter of 2019.

1.2   KEY FEATURES OF THE MODEL

The key features are the following:

■ **Service within Central Order Book:** the functionality will be developed within Euronext's Central Order Book, bringing together over 125 participant firms trading over 800 equities[1]. The service will be available through the current Optiq architecture, without the need for extra connectivity or new messages, as it is fully embedded in the current Optiq messages.

■ **Introduction of new order type:** Hidden orders, also called Large-in-Scale orders, will help minimise information leakage and control market impact:

–   Only Large-in-Scale orders will be eligible to participate in the new source of Liquidity Discovery.
–   Orders will be able to interact with the lit liquidity in Euronext's Central Order Book, including the undisclosed part of iceberg orders.
–   Hidden orders that are either limit orders or peg orders pegged to the BBO (with possible offset) are executed against each other. If requested by market participants, they will also interact with the lit liquidity in Euronext's Central Order Book.
–   Hidden orders that are Midpoint peg orders can only be executed against each other.

■ **Deferred publication:**

–   Deferred publication will apply to all eligible trades, as specified by MiFID II. However, the deferred period will be limited to the current trading day.

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[1] All stocks in continuous trading mode will be eligible for the service.

2.   FUNCTIONAL DESCRIPTION

This document provides the functional description of this new service. It covers the functionalities implemented within the Optiq Trading Solution to manage Large-in-Scale Orders, also called hidden orders.

Note that in the Functional Messages documentation related to the Order Entry Gateway (OEG) and Market Data Gateway (MDG), hidden orders are called *Dark orders*.

2.1   LARGE-IN-SCALE ORDER

The term Large-In-Scale refers to a pre-trade transparency waiver set by the European regulation MiFID II. It permits large orders to benefit from an exemption from the pre-trade transparency requirements. Orders that do not benefit from this waiver are referred to as lit orders (as opposed to hidden orders).

2.1.1   Large-in-Scale order entry

This service will be implemented and available for all stocks in continuous trading mode, traded on Euronext regulated markets or Euronext MTFs.

All members that have developed the Large-in-Scale (LiS) feature will be able to use it without having to go through a specific registration process.

In order to enter an order as a LiS order, the Member needs to identify it as such in the **NewOrder** (01) / (FIX **New Order Single** (D)) message.
  - The dedicated *Dark Indicator* value must be set to **1** in the field *Dark Execution Instruction*.
  - Note that in the same field, members will also be able to indicate if this order will interact with the lit orders and, if they wish, may include quantity conditions as described in sections 2.5 and 2.6.

When accepted as a LiS order, pending the result of the checks described below, the acknowledgement message, Ack (03) / (FIX , will contain in the *Ack Qualifiers /* field the Dark Indicator set to "**1**".

When matched, the execution message, **fill** (04) / (FIX **ExecutionReport** (8)) will contain in the *Trade Type* field / Trade Type tag 21010, the value "**33**" for "Dark Trade".

2.1.2   Large-in-Scale orders amount check

Upon order entry, hidden orders must have a total amount that is greater to or equal to the Pre-Trade Large-In-Scale threshold in order to benefit from the LiS waiver as defined in the Commission Delegated Regulation (EU) 2017/587 of 14 July 2016.

Orders that do not comply with this threshold are immediately rejected upon order entry.

Each incoming order identified as a LiS order is therefore checked against the ESMA Pre-Trade LiS Threshold, as defined below:

ESMA PRE-TRADE LIS THRESHOLD

Average daily turnover (ADT) in EUR	ADT< 50,000	50,000 ≤ADT< 100,000	100,000 ≤ADT< 500,000	500,000 ≤ADT< 1,000,000	1,000,000 ≤ADT< 5,000,000	5,000,000 ≤ADT< 25,000,000	25,000,000 ≤ADT< 50,000,000	50,000,000 ≤ADT< 100,000,000	ADT≥ 100,000,000
Minimum size of orders qualifying as LiS compared with NMS	15,000	30,000	60,000	100,000	200,000	300,000	400,000	500,000	650,000

Depending on the order type, the source of the price for the amount calculation will differ:

♦ For Limit orders, if *Order Quantity * Order Price*, as defined in the corresponding order entry or modification message, is greater to or equal to the Pre-Trade LiS Threshold of the instrument, the incoming order is considered as a hidden order; otherwise it is rejected.

♦ For non-Limit orders, if *Order Quantity * Reference Price* of the instrument is greater to or equal to the Pre-Trade LiS Threshold of the instrument, the incoming order is considered as a hidden order; otherwise it is rejected.

♦ In both cases, where the Price is not in Euro, conversion with the relevant currency rate will be applied.

As this threshold is checked only upon order entry, hidden orders remain 'hidden' even if after being partially matched their remaining amount is below the threshold.

Note that upon order modification:

♦ Only the *Order Quantity* as specified in the inbound message is taken into account. The *Leaves Quantity* of the corresponding order is ignored;

♦ For non-Limit orders, an order modification may be rejected because the Reference Price has changed since the order entry of this order, and thus it may no longer be compliant with the Pre-Trade LiS Threshold.

The regular behaviour applies for these rejections of order modification: the corresponding order remains unchanged in the order book.

2.1.3   Hidden Order Types and Time In Force

Hidden orders are not eligible for the same *Order Type / Time In Force* combinations as the regular lit orders.

The following *Order Type*s are authorised for hidden orders:

♦ Limit

♦ Market Peg

♦ Primary Peg

♦ Midpoint Peg

The following *Time In Force* are authorised for hidden orders:

- ◆ Day
- ◆ IOC / FOK

Note: *GTC and GTD are not permitted for hidden orders*

2.1.4   Features not available for LiS orders and Lit orders with interaction

Some current features available for regular lit orders are not permitted for LiS orders and lit orders with interaction.

Self-Trade Prevention (STP)

The STP feature is not applicable to hidden orders and lit orders with interaction.

If for these orders the STP is requested, the order will not be rejected but the STP will not apply. STP applies only when both orders are lit.

Minimum Quantity

The current Minimum Quantity is not allowed for hidden orders and lit orders with interaction. Hence if for these orders the Minimum Quantity is requested, the order will be rejected.

For hidden orders, dedicated Minimum Quantity is available as described in the section *2. 6 Minimum quantity for hidden orders.*

Internal Matching System (IMS)

Note that during the continuous phase, trades generated from two orders belonging to the same IMS group would be flagged as per normal. However the IMS Priority will not be applied between hidden orders.

2.2   HIDDEN PEG ORDERS

A Peg Order is an order to be processed in the order book at a limit price that will track a defined reference price. These orders are continuously re-priced as the reference price changes.

Hidden Peg orders are LiS orders and can be either Primary Peg, Market Peg or Midpoint Peg orders; thus all the rules described for LiS orders apply to hidden peg orders.

Hidden Peg orders follow the Best Bid and Offer prices defined by the lit orders.

2.2.1   Main Principles

The peg type defines which price is tracked by the order and used for pricing. Aside from the reference price used, all peg orders follow the same rules for order entry, repricing and origin of reference price.

All Peg orders can have a floor/ceiling set to prevent the order from following the BBO past a certain price. This is done using the standard *Order Price* field. The order continues pegging until its price meets the limit price specified. If the Best Bid (resp. Best Offer) plus offset falls below (resp. climbs above) the limit price, the buy (sell) order resumes pegging.

If the floor/ceiling price of a Peg order is immediately reached upon order entry, the Peg order is then priced at its floor/ceiling price. The floor/ceiling price for a Peg is ignored if it is not set.

Some Peg orders can also have an offset specified from the reference price, i.e Bid, Offer or Mid-Point It allows the order to track the reference price with a few ticks of offset[2]. The offset is always specified as a number of ticks of difference from the reference price. As a consequence, even if the tick size changes as the reference price changes, the peg will still have the same number of ticks of difference from the reference price.

Peg orders cannot be managed if there is no valid BBO and are thus parked in the following cases:

- if the book is in Continuous Trading mode, but there is no limit order on the Peg reference side (or on both sides for the Midpoint Peg);
- when the book is in Call mode (Call, Reserved, Suspended or Halted);
- when the book is in Continuous Trading-at-Last phase;

When a peg order is parked, it is neither priced nor repriced and cannot match with any other order.

Peg orders are repriced only in the case of a potential matching. Peg repricing does not lead to the assignment of a new Order Priority.

2.2.2 Primary Peg

A Primary Peg order is a type of order that follows the best bid (offer) from the market of reference when buying (selling) a security. Offset characteristics are mandatory in the case of a Primary Peg order.

This offset – *Peg Offset field* – should be:

- **Negative** or **0** in case of a Buy Order (<=0)
- **Positive** or **0** in case of a Sell Order (>=0)

Example:

PEG Difference <= 0 as the order price should be <= to the best Bid price

PEG Difference >= 0 as the order price should be >= to the best Ask price
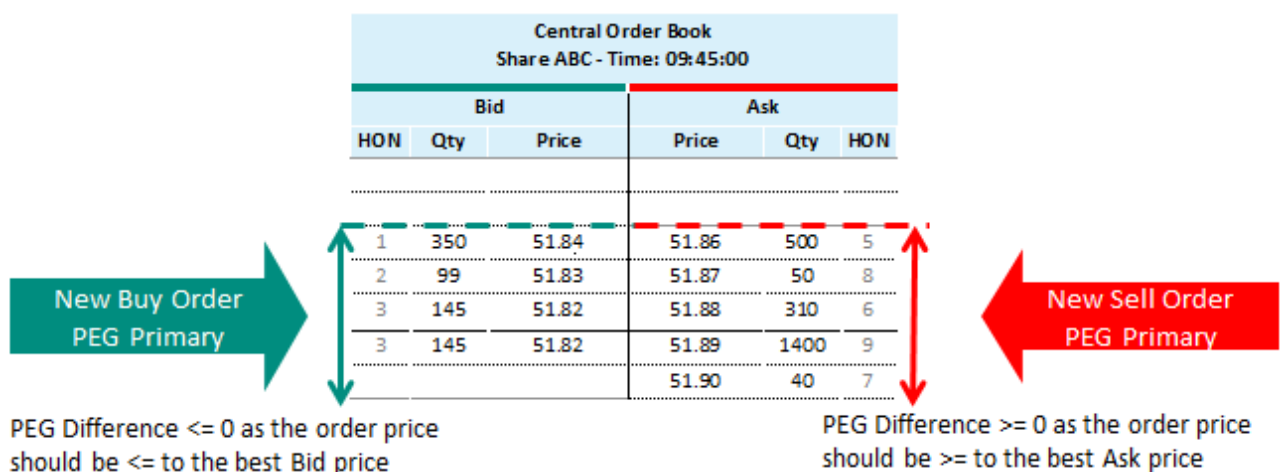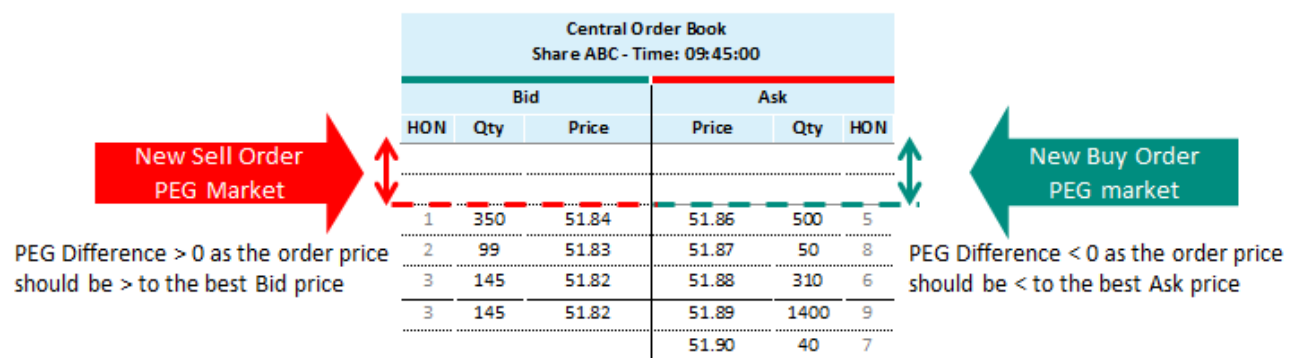
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[2] Up to 20 (twenty) ticks.

2.2.3   Market Peg

A Market Peg order is a type of order that follows the best bid (offer) from the market of reference when selling (buying) a security. Offset characteristics are mandatory in the case of a Market Peg order.

This offset should be:

■   **Negative** in case of a Buy Order (<0)

■   **Positive** in case of a Sell Order (>0)

Example:

2.2.4   Midpoint Peg

A Midpoint Peg order is a type of order that follows the best bid and best offer from the market of reference.

Offset characteristics are forbidden for Midpoint Peg orders and if used, the order will be rejected.

Note that as the Midpoint Peg price is calculated as a mid-price of the Bid and Offer price, it is possible that the calculated price does not follow the Tick Table and is priced at a sub-tick.

2.3   LIS ORDERS AND MARKET DATA

As the LiS waiver allows orders to be exempted from being published, when hidden orders are booked, amended or cancelled, nothing is sent in the market data feed.

As well, as hidden orders do not participate to the auction process, no IMP / IMV

Only trades generated by hidden orders are disseminated to the market data.

2.4   NEW POOLS OF LIQUIDITY

To better understand the potential link between the different orders the notion of "pools" of liquidity have been introduced:

■   Lit orders: this pool of liquidity is the existing "regular" one and is composed of all the lit orders.
■   Hidden orders: this pool of liquidity is composed of all the LiS orders, without hidden Midpoint Peg orders.
■   LiS Midpoint: this pool is composed of all the hidden Midpoint peg orders.

2.4.1   Hidden Order management

This pool of liquidity is exclusively composed of LiS orders of the following order types: Limit, Primary Peg and Market Peg.

To take into consideration the peg orders specificities, the regular FIFO algorithm used to sort lit orders has been amended. As such orders in the LiS pool are ranked with the following criteria, from the most important to the least important:

1. **Price**
2. **Order Type**:
   a. **Limit** orders have the higher priority
   b. **Market Peg** orders have the second higher priority
   c. **Primary Peg** order have the least priority
3. **Timestamps**

When an aggressive hidden order (without interaction) enters the book, it matches with opposite hidden orders sorted as described here above. All the lit orders are ignored during this process.

Please note that the aforementioned hidden orders will be eligible for execution during continuous trading only. They will not interact with other orders at auctions.

2.4.2   LiS Midpoint management

This pool of liquidity is exclusively composed of hidden Midpoint Peg orders ranked as below:

1. **Order Quantity**: from the higher quantity to the lower quantity
2. **Timestamps**.

Note that the *Order Quantity* used in the above ranking is the one set by the client in his order entry message or in the last modification message.

2.5   LIS / LIT INTERACTION

Orders belonging to a pool will mostly interact with orders belonging to the same pool. Hence:

■   LiS Midpoint Pegs cannot interact with orders belonging to another pool.
■   Lit orders and LiS orders can interact with each other under certain conditions and on client request. These orders are known as orders with interaction or Sweep orders.

2.5.1   Sweep Orders

Members can request their orders to interact with the other pools of liquidity.

To do so, in the **NewOrder** (01) / (FIX D) message and in the current *Dark Execution Instruction /* DarkExecutionInstruction (tag 20052) field, the *Sweep Order Indicator* must be set to **1** (Yes).

Note that Fill Or Kill (FOK) is not allowed for sweep orders.

For Lit Orders

Sweep option is applicable to lit orders with the following characteristics:

– *Order Type*: Limit, Iceberg.
– *Time In Force*: Day, GTC, GTD.

Lit orders with Sweep option will be able to match with hidden orders upon order entry.

For Hidden Orders

Sweep option is applicable to every valid hidden order.

Hidden orders with Sweep option will be able to match with lit orders upon order entry and order modification.

Note that Sweep option is "not modifiable", hence if this option was enabled / disabled upon order entry it will stay the same after modification.

2.5.2   Order Ranking and Interaction

The introduction of LiS orders along with new order types does not impact the regular lit orders ranking by Price/Priority. But as some order can try to match with both lit and LiS orders, the regular FIFO ranking has been amended to take the LiS orders into account.

As such orders are now ranked with the following criteria, from the most important to the least important:

1. **Price**
2. **Transparency**: lit orders have an higher ranking than LiS orders
3. **Order Type**:
   a. **Non-Peg** orders have the higher priority
   b. **Market Peg** orders have the second higher priority
   c. **Primary Peg** order have the least priority
4. **Timestamps**.

2.6   MINIMUM QUANTITY FOR HIDDEN ORDERS

Minimum Quantity refers here either to MAQ or MES, and is not related to the Minimum Quantity used for lit orders upon order entry. Note that both MAQ and MES are not allowed for lit orders.

Each valid hidden order can support one of the two quantity constraints defined below:

■ MAQ (Minimum Acceptable Quantity): The Minimum Quantity threshold can be met by aggregating multiple orders on the opposite of the book. The algorithm will go through the order book to find a cumulated quantity superior or equal to the Minimum Quantity.

■ MES (Minimum Execution Size): The Minimum Quantity threshold can only be met by orders with size equal or larger than the minimum. Multiple orders cannot be aggregated to meet the threshold. The algorithm will go through the order book to find orders with Minimum Quantity superior or equal to the aggressing MES Minimum Quantity.

To define in the order this minimum quantity, members need to fill in the *Dark Execution Instruction / DarkExecutionInstruction* (tag 20052) field the *Minimum Quantity* indicator set to **0** (MAQ) or **1** (MES).

An order cannot have both the MAQ and the MES.

2.7   TRADING SAFEGUARDS AND LIS

Dedicated Collars have been introduced within Optiq to allow clients that benefit from the LiS waiver to trade at a price that may be outside of the lit collars.

This allows LiS orders to trade at a wider spread from the Last Traded Price; because these orders are very large orders they may have shifted prices regarding lit prices and BBO.

Collars for LiS trading have the following characteristics:

♦ They are calculated at the beginning of the trading day and are not updated at each trade,

♦ They are calculated around a *Reference Price* that can be updated with the first trade,

♦ They are calculated with a dedicated value in percentage.

2.8   TRADE PUBLICATION AND DEFERRED PUBLICATION PERIODS

Based on some conditions, trades can benefit from deferred publication as defined in the Commission Delegated Regulation (EU) 2017/587 of 14 July 2016, previously known as RTS 1.

Deferred trade publication is applied to each trade if:

♦ it is resulting from two LiS orders,

♦ it has a total traded amount greater than or equal to at least one of the Post Trade LiS Thresholds.

♦ it is made between two orders with at least one Account Type different to Client /RO.

These Dark Trades will not be disseminated to the market when the trade occurs, but only after a certain period. However, following matching, the execution message is sent immediately to the counterparties.

The period of deferral that will be applied for trades on Optiq will be:

- 60 minutes
- 120 minutes
- End of day.

Note that in cases where the Average Daily Turnover of the share is < 50,000 and amount ≥ 25,000 Euros, the trade will be published at the end of day and not the following day.

After this deferral period, the trade is published in market data with a public message for both Short Trades and Long Trades.

- FullTradeInformation message
- MarketUpdate message

Note also that hidden trades will not be part of the market data statistics. Only the volume will be taken into consideration.

3.   MESSAGE DESCRIPTION SUMMARY

A number of messages have been enhanced, as detailed below, in order to support this service related to Large-In-Scale orders.

3.1   ORDER ENTRY MESSAGES

3.1.1   SBE

■   **New Order (01)** message

Order Type = Limit (2) or Primary Peg (5) or Market Peg (7) or Midpoint Peg (8)

Time In Force = Day (0) or IOC (3) or FOK (4)

EMM = 1

Dark Execution Instruction with Dark Indicator = 1 is mandatory

Dark Execution Instruction with sweep order indicator = 1 and Minimum Quantity Type=1 are optional

Peg Offset mandatory for Order Type ={5;7}, otherwise forbidden

Order Price mandatory if Order Type = 2, otherwise optional

Upon successful submission by the member, hidden orders are acknowledged through an acknowledgement message:

■   **Ack (03)** message

Ack Type = New Order Ack (0)

Ack Qualifiers = DarkIndicator [1,0] or [1,1]

EMM = 1

■   **Cancel Replace (06)** message

Order Type = Limit (2) or Primary Peg (5) or Market Peg (7) or Midpoint Peg (8)

Time In Force = Day (0) or IOC (3) or FOK (4)

EMM = 1

Dark Execution Instruction with Dark Indicator = 1 is mandatory

Dark Execution Instruction with sweep order indicator = 1 and Minimum Quantity Type=1 are optional

Peg Offset mandatory for Order Type ={5;7}, otherwise forbidden

Order Price mandatory if Order Type = 2, otherwise optional

If any fields other than Order Price, Order Quantity and Peg Offset do not match with the fields in the targeted order, the request will be rejected with the error code 2101 "Unknown Order".

■   **Fill (04)** message

Trade Qualifier with Deferred Publication = 1

EMM = 1

TradeType= Dark_Trade(33)

3.1.2   FIX

■ **NewOrderSingle (D)** message

OrdType = Limit (2) or Peg (P)

PegPriceType = Mid-price peg (2) or Market peg (4) or Primary peg (5) mandatory in case OrdType =P

Time In Force = Day (0) or IOC (3) or FOK (4)

EMM = 1

PegOffsetValue mandatory for PegPriceType ={4;5}, otherwise forbidden

Dark Execution Instruction with Dark Indicator = 1 is mandatory

Dark Execution Instruction with sweep order indicator = 1 and Minimum Quantity Type=1 are optional

Price mandatory if OrdType = 2, otherwise optional

Upon successful submission by the member, hidden orders are acknowledged through an acknowledgement message:

■ **Execution Report (8)** message for Ack

OrdStatus = New (0)

Dark Execution Instruction with Dark Indicator = 1 is mandatory

Dark Execution Instruction with sweep order indicator = 1 and Minimum Quantity Type=1 are optional

AckQualifiers_21014"= "Dark Indicator (1 0)

EMM = 1

■ **Execution Report (8)** message for Fill

TradeType_21010" = "Dark Trade (33)

Trade Qualifier with Deferred Publication = 1

EMM = 1

■ **OrderCancelReplaceRequest (G)** message

OrdType = Limit (2) or Peg (P)
PegPriceType = Mid-price peg (2) or Market peg (4) or Primary peg (5) mandatory in case OrdType =P
Time In Force = Day (0) or IOC (3) or FOK (4)
EMM = 1
PegOffsetValue mandatory for PegPriceType ={4;5}, otherwise forbidden
Dark Execution Instruction with Dark Indicator = 1 is mandatory
Dark Execution Instruction with sweep order indicator = 1 and Minimum Quantity Type=1 are optional
Price mandatory if OrdType = 2, otherwise optional

In case other fields than Price, OrderQty and PegOffsetValue do not match with the ones of the targeted order it will lead to the rejection of the request with the error code 2101 "Unknown Order".

3.2   MARKET DATA MESSAGES

3.2.1   Referential messages

■   **Standing Data (1007)** is updated to display the new information below:

Dark Eligibility: Indicates eligibility for dark. 0 is not eligible, 1 is eligible.

Dark LiS Threshold: Defines the minimum amount required for an order to benefit from the LiS (Large-In-Scale) pre-trade transparency waiver (to be calculated with the Amount Decimals).

Dark Minimum Quantity: Defines the minimum quantity required for an order to be filled with Dark liquidity. 0 indicates that no minimum amount is required.

Threshold LiS Post Trade 60mn, EOD and 120 mn: Defines the minimum amount of an order required to benefit from the LiS Trade Deferred publication to 60 minutes, end of Day or 120 minutes (to be calculated with Amount Decimals).

■   **Cash Standing Data File (9007)** is updated to display the below new information

Dark Eligibility: Indicates eligibility for dark. 0 is not eligible, 1 is eligible.

Dark LiS Threshold: Defines the minimum amount required for an order to benefit from the LiS (Large-in-Scale) pre-transparency waiver (to be calculated with the Amount Decimals).

Dark Minimum Quantity: Defines the minimum quantity required for an order to be filled in the Dark liquidity. 0 indicates that no minimum amount is required.

Threshold LiS Post Trade 60mn, EOD and 120 mn: Defines the minimum amount of an order required to benefit from the LiS Trade Deferred publication to 60 minutes, end of Day or 120 minutes (to be calculated with Amount Decimals).

3.2.2   Trade message

Upon reception of hidden orders by the Matching Engine, no message is broadcast to market participants.

Dark trades are published in the Market Data Gateway with the associated message broadcasting:

■   FullTradeInformation message
Trade Type = Dark Trade (33)

      MMT Market Mechanism = Dark Order Book (3)

      MMT Transaction Category = Dark Trade ('D')

      Transaction Type = Dark Trade (2)

      Transparency Indicator = Dark Trade and Immediate Publication (1) or Dark Trade and Deferred Publication (2)

■   MarketUpdate message
Market Data Update Type = Dark Trade (35)