

LSEG

Post-BREXIT Transaction Reporting Service Description

For Third Country Member Firms of:

- London Stock Exchange
- Curve Global Markets
- Turquoise Global Holdings Limited (TGHL)
- Turquoise Global Holdings Europe B.V. (TGHE)

Issue 1.5

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London
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1 Introduction

1.1 Purpose

The purpose of this document is to provide Third Country Member Firms (“TC Member Firms”) with information on how to submit their Transaction Reports (TRs) under:

- UK MiFIR for trades executed on London Stock Exchange (LSE), Curve Global Markets and Turquoise Global Holdings Limited (Turquoise UK) (collectively referred to in this document as “the UK Trading Venues” or “UK TVs”)
- EU MiFIR for trades executed on Turquoise Global Holdings Europe B.V (Turquoise Europe) (referred to in this document as “EU TV”)

TC Member Firms should submit TRs for all on-book and off-book trades executed on the TVs. The UK and EU trading venues will be collectively referred to as “the Trading Venues” or “TVs.”

1.2 Readership

This document is relevant to trading, operations, compliance and technical staff within TC Member Firms.

This document is applicable for all TC Member Firms irrespective of whether the firm is already registered on and using UnaVista MiFIR ARM. This is the proposed current model and could be subject to change. Further versions if necessary will be issued in due course.

1.3 Contacts

Transaction Reporting Team

For client functional queries:

- Telephone: +44 (0) 207 334 8982
- e-mail: TransactionReporting@lseg.com

Market Access Team

For SFTP Set up:

- Telephone: +44 (0) 20 7797 3939
- e-mail: marketaccess@lseg.com

1.4 Documentation

- [1] The Markets in Financial Instruments (Amendment) (EU Exit) Regulations 2018
<http://www.legislation.gov.uk/ukdsi/2018/9780111173480/contents>
- [2] MiFIR Detailed Requirements in Delegated Regulation 2017/590 (formerly known as RTS 22)
<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0590&rid=1>
- [3] ESMA Guidelines on Transaction Reporting
https://www.esma.europa.eu/sites/default/files/library/2016-1452_guidelines_mifid_ii_transaction_reporting.pdf
- [4] ESMA MiFIR ISO20022 message specification
<https://www.esma.europa.eu/document/annex-iii-draft-iso-20022-message-specification>
- [5] UnaVista MiFIR ARM Documentation
<http://www2.londonstockexchange.com/UnaVista-MiFIR-ARM-Document-Pack>
- [6] Non-MiFID II Member Transaction Reporting Guide
<https://www.lseg.com/documents/lseg-member-transaction-reporting-guide-non-mifid-firms-v1-2-pdf>
- [7] The Financial Regulators' Powers (Technical Standards etc.) (Amendment etc.) (EU Exit) Regulations 2018
<https://www.legislation.gov.uk/ukdsi/2018/9780111171394>

1.5 Abbreviations

Abbreviation	Description
ARM	Approved Reporting Mechanism
ESMA	European Securities and Markets Authority
EU MiFIR	Markets in Financial Instruments (MiFIR) - Regulation (EU) No 600/2014
FCA	Financial Conduct Authority
LEI	Legal Entity Identifier
NCA	National Competent Authority
TC	Third Country
TR	Transaction Report
TV	Trading Venue
UK MiFIR	Markets in Financial Instruments (Amendment) (EU Exit) Regulations 2018

2 Operational Process

2.1 Overview

TC Member Firms must supply their transaction reports to the Trading Venues for submission to the National Competent Authority (NCA).

UK TVs have partnered with UnaVista ARM to expedite and automate the transaction reporting process for trades executed through its systems

TC Member Firms who have signed up with UnaVista for venue reporting to UK TVs will submit their transaction reports using UnaVista's MiFIR ARM configuration for TV reporting, subject to the provisions laid out in Section 3.1. Please refer to the [Registration](#) section for more details on venue reporting. These firms will be further referred to as "UV members" in this document.

TC Member Firms that do not wish to use UnaVista venue reporting service will be required to submit their transaction reports to the Trading Venues via SFTP and will be subject to the same provisions laid out in Section 3.1. These firms will be further referred to as "non-UV members" in this document.

TC Member Firms files are collected by UnaVista Approved Reporting Mechanism (ARM) in UK/EU and validated against ESMA's Transaction Reporting Validation Rules before automatic onward submission to the relevant NCA. TC Member Firms will be notified of ESMA validation errors or NCA rejection errors via response files generated by the ARM. Any ARM validation errors must be corrected by 9am London local time, one working day after Trade Day (T+1).

Trading Venues will in addition reconcile TC Member Firms' report submissions in the ARM against its own internal records and provide feedback to the member if discrepancies exist. TC Member Firms are required to provide any corrections indicated by the Trading Venue by 5pm London local time, one working day after Trade Day (T+1).



2.2 Operational steps

The following diagram outlines the timeline for the TR process:

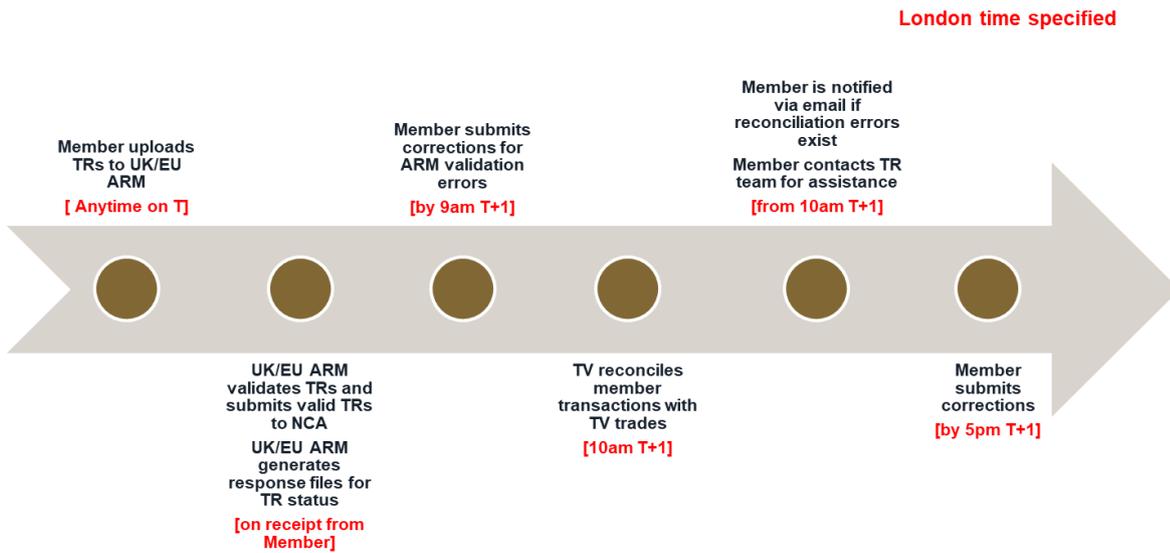


Figure 1

Description of the timeline:

Step	Description	Cut-off deadline for the Third Country Member Firms London time specified
#1	<p>TC Member Firm submits transaction reports to Trading Venue for all trades executed under its member codes on Day T.</p> <p>Non-UV members must use the TV SFTP server and UV users must follow the UnaVista ARM submission process.</p>	<p>From anytime on T</p> <p>By 9am (T+1)</p>
#2	<p>Validation of transaction reports submitted by the TC Member Firm. Transaction reports that pass validation are submitted directly to the NCA.</p> <p>Non-UV members can view transaction reports that failed ESMA validation in an ARM response file in the member firm's SFTP folder.</p> <p>UV members must follow the UnaVista ARM validation process.</p>	<p>On receipt from the TC Member</p>
#3	<p>TC Member Firm submits corrections for ARM validation errors using the TV SFTP server if a non-UV member and UV users must follow the UnaVista ARM process for submitting corrections.</p>	<p>By 9am (T+1)</p>
#4	<p>TV reconciles member activities from the last 24 hours.</p>	<p>10am (T+1)</p>
#5	<p>TC Member Firm is notified via email if reconciliation errors have occurred and response files in the member's SFTP folder. Applicable to both UV and non-UV members.</p> <p>TC Member Firm contacts the Transaction Reporting team for any assistance.</p>	<p>From 10am (T+1)</p>

**Cut-off deadline
for the Third
Country Member
Firms**

**London time
specified**

Step Description

#6	TC Member Firm submits corrections for reconciliation errors using the TV SFTP server if a non-UV member, and current UV users can maintain their existing process for submitting corrections.	By 5pm (T+1)
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Note

If the UV TC member does not have SFTP access, the Member must contact the TV to register for access. If the member will NOT be able to receive response files if they do not have SFTP access.

3 Transaction Reporting Guidelines

All submission files must be supplied in ISO20022 XML format described in ESMA MiFIR ISO20022 message specification [5]. The schema to be used is described in the MiFIR ARM Technical Specification for XML files found in the UnaVista documentation pack [6].

All relevant transaction reporting fields must be completed, and the fields must satisfy ESMA Validation rules. The list of transaction report attributes is described in Table 2 of Annex I in the 2017/590 Regulation [2]. Further information can be found in the ESMA guidelines on Transaction Reporting [3] and the fields are also summarised in the MiFIR ARM Specification found within the UnaVista documentation pack [5].

Notes

Non-UV members are not required to populate any fields (InternalClientId, DataCategory, SubmittingEntityID) in the UnaVista header entity <UVHeader> in the XML file. These fields may be left blank.

UV members must follow the UnaVista MiFIR ARM requirement for submitting data in these fields.

3.1 Key fields for consideration

In addition to complying the ESMA Validation rules and ESMA Guidelines on transaction reporting, Member firms must populate the fields below as outlined:

- **Investment Firm**

Set to 'false.'

- **Submitting Entity ID**

Members may be required to fill this field with the relevant TV LEI:

- Populate the ISO20022 tag *SubmittingParty* <SubmitgPty>
- For trades executed on Turquoise UK set the value to:
2138006SKBMJJUE2HV03
- For trades executed on Turquoise Europe set the value to:
213800ZA8TWTNVG43376
- For trades executed on all other LSE London venues, set the value to:
213800D1EI4B9WTWWD28

- **Executing Entity Identification Code**

Members must fill this field with the TC Member Firm's LEI.

- **Trading Venue Transaction Identification Code (TVTIC)**

Members must use the transaction identifier supplied by the venue:

- Populate the ISO20022 tag *TradePlaceMatchingIdentification* <TradPlcMtchgId>

The TVTIC field must be populated in every transaction report submitted by the Third Country Member Firm. The TVTIC is a critical field used by the trading venue to reconcile the transaction reports submitted by the Third Country Member Firm. In the event this field does not reconcile with the trading venue's records, the Member Firm will be required to cancel and resubmit the report(s) according to TVTIC requirements stipulated by the trading venue.

Third Country Member Firms must use the transaction identifier supplied by the venue in the transaction report for specific trade.

Technical Information

1. LSE on book and Turquoise UK/EU

The TVTIC is made available to Market Participants for Millennium Exchange trading protocols via the following fields:

“TradeMatchID” in Native Trading Gateway

Tag 880 (TradeMatchID) in FIX Trading Gateway

Available in Execution Report messages and is the same code for both the buyer and seller.

2. CurveGlobal Markets

TVTIC is provided in the End of Day Reconciliation Files as follows:

SOLA Trade ID concatenate *SICO (Instrument ID + Group ID) + Trade Number*

Note:

No padding of the Trade Number with zeroes is required. See examples in table below.

3. LSE off book via TRADEcho

TVTIC is made available to members reporting trades on TRADEcho via FIX or through the TRADEcho website via the field:

“Trade Report ID”

Available on the fix message (TCR-S) from TRADEcho or on the TRADEcho website

TVTIC format

The TVTIC submitted in the transaction report must be in Base 10 numbering system i.e. the universe of permitted characters is 0123456789;

If the Third Country Member Firm receives the TVTIC supplied by the venue in a format which is not Base 10, a conversion must be made to create a Base 10 TVTIC, details are found below.

Depending on the member firms type of connection to the venue (FIX or Native), the transaction identifier may be received in alphanumeric or numeric form. In all cases, the transaction identifier must be supplied to the TV in numeric form and the necessary conversion performed as follows:

Venue	Format Received	Conversion
LSE on book	Native numeric Base 10	No conversion required

Venue	Format Received	Conversion
LSE on book	FIX Base 36	Convert from Base 36 to Base 10 <u>Example:</u> Base 36 Base 10 00SV62B5UB 2088595963773031 00SV65T2SJ 2088595967968083
CurveGlobal Markets	Base 62	Convert from Base 62 to Base 10 <u>Example:</u> Base 62 Base 10 R3A0A51 1536502561375 R410A21 1537285706997
LSE off book via TRADEcho	Base 64	Convert from Base 64 to Base 10 <u>Example:</u> Base 64 Base 10 A0TL-54aBA 14721085129990208 Cgyr1tYaBA 45258911206449216 _Qur1tYaBA 1139616028471435328
Turquoise UK/EU	Native numeric Base 10	No conversion required
Turquoise UK/EU	FIX Base 36	Convert from Base 36 to Base 10 <u>Example:</u> Base 36 Base 10 00ST83OK1P 2088591731720253 00ST9CMRHQ 2088591807218014

Refer to the Appendix for Base 36, Base 62 and Base 64 decoding alphabets. Please note that the Base 36 conversion table begins with the ASCII character “G” not “A”.

- **Transaction Reference Number (TRN)**

Members may choose to enter the TRN in their own existing format OR the member may use the format of the TV as follows:

- [YYYYMMDDHHMMSSxxxx][Segment MIC][TVTIC][B or S for buy or sell]

-
- Populate the ISO20022 tag *TransactionIdentification* <TxId> with the result

Notes

The TVTIC conversion must have occurred before generating the TRN with the TVTIC.

- **Trading Date Time**

Members must enter the exact time sent in the execution notice from the TV. This time is sent in UTC and must be kept as is:

- Populate the ISO20022 tag *TradeDate* <TradDt>

- **Price**

Where price is reported in monetary terms, it shall be provided in the major currency unit. Members must convert the price from pence to pounds for instruments denominated in Sterling:

- Populate the ISO20022 tag *Price* <Pric>

- **Venue**

Members must enter the segment MIC and not the operating MIC of the TV:

- Populate the ISO20022 tag *TradeVenue* <TradVn>

3.2 Data quality & Reconciliation fields

TVs will reconcile members transactions reports as follows:

- The total number of transactions reported to the ARM corresponding to on-venue executions must match the total number of trades recorded in the TV's records for the trading date (there are additional validations on certain fields that TV's may reconcile)
- In the case of under reporting members will be required to submit any outstanding transaction reports
- In the case of over reporting, members may be required to cancel any erroneously reported transactions

TVs will check the quality of the transaction reports through the following fields on the execution notice:

- Reports will be matched on TVTIC
- Quantity must be equal
- Price must be equal
- Instrument Identification Code must be the same

-
- Venue must be reported correctly including the LEI

TVs will also look to verify the Buyer and Seller sides are set correctly.

Notes

In case of “client” reports in the INTC scenario, members will be expected to report the market leg and all clients legs (Venue set to ‘XOFF’). The sum of the volume on the client legs must equal the volume on market leg of transaction. The client legs will not be counted when reconciling the total number of transactions sent by the member. TC Member Firms must confirm to the Transaction Reporting team how the “XOFF” reports corresponding to an “INTC” report will be identified.

3.3 Transaction Amendments

All amendment files from members must be supplied in ISO20022 format. Members are expected to submit two files in the event of amendments:

- CANC file for cancellations to original submitted transactions
- NEW file for the amended trades

Notes

1. Transactions that are cancelled on the same day must not be reported.
2. In case of T+n cancellations without amendments, only one file (CANC) must be generated for the cancellations.
3. In the event an amendment of a trade occurs on T, only the most recent amendment should be reported.
4. The TRN for CANC reports must exactly match the TRN of the original NEWT.

3.4 Exceptions

Exceptions may be generated from file errors, content validation by the MiFIR ARM, reconciliation by the UK/EU TV, or from NCA processing. The following table describes the management of each type:

Error Type	Description	Handling	Action Required
File Errors	High-level errors including file naming errors and schema validation.	These will be caught prior to submission to the NCA and members will be notified via the response file generated by the TV or MiFIR ARM.	The whole file must be re-submitted.
Content Errors	Validation errors reported by the MiFIR ARM, for example required fields not populated or content of field does not pass ESMA validation.	The MiFIR ARM will not submit transaction reports with errors to the NCA. The Member will be notified of validation errors via the MiFIR ARM response file.	The Member must generate a corrections file to replace the reported transactions with exceptions and submit via the SFTP portal or follow their usual corrections procedure in the case of UV members.
Reconciliation Errors	UK/EU TV will reconcile transaction reports sent to the MiFIR ARM post submission. Errors will be reported if the number of submitted transaction reports does not match UK/EU TV trades and if there are discrepancies in reconciling key transaction fields.	These will be assessed before the end of T+1 and if errors exist, both UV and non-UV Member will be notified via email and response files in the Member's SFTP folder. The Transaction Reporting team can be contacted for assistance.	The Member must generate a corrections file and submit via the SFTP portal for non-UV members and via the UV member's current process. In the event of a submitted report with content mismatch, a CANC submission, followed by NEWT will be required for the corrected report. In the event of a missing report, a NEWT submission will be required. In the event of an unrecognised submitted report, a CANC

Error Type	Description	Handling	Action Required
			submission will be required.
NCA Rejections	Validation errors reported by the NCA for example an invalid instrument in the reference data for a particular transaction date.	<p>These will be detected post submission and may occur on any day after T+1. Both UV and non-UV Member will be notified via email and response files in the SFTP area.</p> <p>The Transaction Reporting team can be contacted for assistance.</p>	The LSEG Transaction Reporting team will liaise with the Member for any corrections required.

3.4.1 File errors

In the case of SFTP file naming errors, the whole file will be rejected by the TV and the non-UV TC member will be notified via response file by the TV. UV TC members submitting via file will be notified by the UnaVista ARM process. The member will be expected to re-submit the whole file with the necessary corrections via SFTP or their UnaVista ARM for UV members.

Please refer to the UnaVista MiFIR Technical specification for more details [5].

3.4.2 Content errors

In the case of transactions loaded by the ARM failing validation within the ARM, a response file from the ARM containing any failed transaction reports will be sent to the non-UV member in their SFTP folder for each submitted file. The UV member will receive responses from UnaVista's ARM as per their ARM configuration. The member will be supplied with the details of each transaction with errors.

Please refer to the [UnaVista MiFIR ARM Response Files](#) section for more information on the file specification.

3.4.3 Reconciliation errors

In the case of reconciliation errors, members will be notified via email. For the non-UV member, the response file will be placed in the member SFTP folder, and for the UV members, the response file will be placed in the SFTP folder configured for the member by UnaVista. The format of the file is described in the Technical Details section.

The TC Member Firm will be expected to contact the Transaction Reporting team for more information and assistance, and to re-submit the necessary corrections in a file via the TV SFTP portal for non-UV members and for UV members, via their UnaVista process. To meet the regulatory requirement, corrections must be submitted before the end of T+1.

Please refer to the [TV Reconciliation Response Files](#) section for more information on the file specification.

3.4.4 NCA rejection

In this case transactions reports that have successfully been submitted by the MiFIR ARM to the NCA, have been rejected by the NCA. The UV / non-UV member will be supplied with a response file in their respective SFTP folders with details of the errors.

Please refer to the [UnaVista MiFIR NCA Response Files](#) section for more information on the file specification.

3.5 Back Reporting

If the TC Member firm needs to back report or provide corrections for historical transaction reports, please follow the guidelines below:

- If the member has a large number of transaction reports for back reporting from previous trading dates, the member must contact the Transaction Reporting team for guidance.
- If the member wishes to submit a small number of corrections for previous trading dates, the member may submit these in their daily process and notify the Transaction Reporting team by email so that their reconciliation status for previous trading dates can be updated.

Members must keep track of the numbers or their missing reports and work to eliminate any outstanding reports as quickly as possible.

4 Technical Details

4.1 File transfer service

File transfer between TVs and the TC Member Firm will be via the TVs SFTP portal. UV TC Members will be able to use their existing UnaVista SFTP portal to receive response files from the TV. If the UV TC member does not have SFTP access, the member must contact the TV to register for access in order to receive their TV response files. Non-UV TC Members must contact the TV Market Access team and supply the necessary details to set up their SFTP access for submitting their transaction report files and receiving response files from the TV.

Non-UV TC Members will be required to supply the following information to set up SFTP:

- First name
- Last name
- Organization
- LEI
- Email address
- Phone number
- Source IP address (Separate multiple IP's with ;)
- Public Key (Optional. Name the key Username_key)

Please see [Registration](#) section for further details.

The non-UV TC Member will be provided with an SFTP login and their public IP's will be configured on their accounts. When created, an automated email will be sent to the email address registered to the account with the username and password. The default password needs to be changed on HTTPS first before connecting via SFTP. The UK TV will supply Member with details of:

- SFTP address
- Port
- Member login ID
- Member SFTP folder

Notes

The Member login ID will contain the member LEI.

The member must only submit transaction report files to this SFTP login where the Executing Entity ID in the transaction reports matches the Member LEI used in this SFTP login ID. In the case of a Member trading as a different Legal Entity on different venues, an SFTP login must be created for each Legal Entity the Member trades as, and the Member must submit their transaction reports for the Executing Entity ID using the matching SFTP login for that LEI.

Non-UV TC Members will **send** transaction report files via SFTP and their submission files must be placed in the **incoming** SFTP folder on the TV:

To_LSEG

Non-UV TC Members will **receive** the following types of files via SFTP:

- UnaVista ARM response files from UK/EU ARM
- UnaVista NCA response files from UK/EU ARM
- TV Reconciliation response files from UK/EU TV

And their files must be collected from the **outgoing** SFTP folder on the TV:

From_LSEG

UV TC Members will only **receive** the following types of files from the TV via SFTP:

- UnaVista NCA response files from UK/EU ARM
- TV Reconciliation response files from UK/EU TV

And their files must be collected from the **outgoing** SFTP folder on their UnaVista SFTP portal:

From_LSEG

4.2 Submission Files (non-UV members)

UV members must submit their files following the configuration they have chosen in UnaVista's MiFIR ARM. Submission file guidelines for non-UV members:

1. As described in the Transaction Reporting guidelines, all submission files must be compliant with the XML ISO20022 schema supplied by the UnaVista UK/EU ARM and schemas defined within the XSD files included in the UnaVista MiFIR ARM documentation pack. The file structure and format are described within the MiFIR ARM Technical Specification [5]. Sample files are also provided.
2. A maximum limit of **100,000** transaction reports will be accepted in a single file. If the number of reports for the day is more than the limit, multiple files must be submitted populated up to the maximum row count for each file.

3. Separate files are required for each **operating MIC** traded on:
 - LSE plc file operating MIC XLON
 - Turquoise UK file operating MIC TRQX
 - Turquoise EU file operating MIC TQEX
4. Each corrections or amendments file must follow the same file naming convention described. Note, CANC files for cancellations to transaction reports must be loaded into the ARM before NEWT files for subsequent amendments to the cancelled transaction reports.
5. The order in which files are loaded by the MiFIR ARM is determined by the order in which the TC Member uploads their files into the SFTP folder. **Therefore, it is important if multiple files are being submitted to upload them in the required order of processing.**
6. Filename must be **unique**.
7. Filename length including the file extension must not exceed **40 characters**.
8. A member mnemonic (usually 4 characters long) must be used in the filename as specified below.
9. The file naming convention and contents the member must supply are as follows:

Venue	File name format	File contents
LSE plc	XLON_<Member mnemonic>_yyyyMMddHHmmss.xml Example: XLON_ABCD_20190401223000.xml XLON_ABCD_20190402010599.xml XLON_ABCD_20190402010600.xml	Transaction reports for all segment MICs: XLON, XLOM, AIMX, XLOD
Turquoise UK	TRQX_<Member mnemonic>_yyyyMMddHHmmss.xml Example: TRQX_ABCD_20190401230000.xml	Transaction reports for all segment MICs: TRQX, TRQA, TRQM, TRQB, TRQS, TRQC

Venue	File name format	File contents
Turquoise EU	TQEX_<Member mnemonic>_yyyyMMddHHmmss.xml Example: TQEX_ABCD_20190401201555.xml	Transaction reports for all segment MICs: TQEX, TQEM, TQEA, TQEB, TQES, TQEC

Notes

The timestamp in filename is the current system date and time for when the file was created. As indicated previously, each submitted filename must be unique.

The Member mnemonic in the filename must be the member identifier, **usually 4 characters** long and maximum 16 characters to comply with the 40 character limitation on the filename. The member mnemonic will **not be used for reconciliation** purposes.

The **member LEI** supplied in the Executing Entity ID field of the transaction report will be used for reconciliation purposes.

4.3 Feedback Files

4.3.1 File Error Response Files

In the event of a submission file rejection due to filename format error, the original file will be moved to the non-UV TC Member's outgoing folder and renamed with the following filename format:

```
VTR_INVALID_FILENAME_<original file name>
```

The Member will be required to re-submit the file with the correct naming format.

In the event of a submission file rejection from the MiFIR ARM due to file format errors, UV member will be notified by the MiFIR ARM process.

Please refer to the UnaVista MiFIR Technical specification for more details [5].

4.3.2 UnaVista MiFIR ARM Response Files

Non-UV TC Members will receive ARM response files in their SFTP folder in **csv** format. The filename will be the original file name **excluding** the original file extension in the name with *_UVRes* appended to it as described in the UnaVista Technical Specification, section *UnaVista MiFIR ARM Validation Response Files*.

Example:

```
TQEX_ABCD_20190401201555_UVRes.csv
```

UV TC Members will receive ARM responses via their UnaVista process.

4.3.3 UnaVista MiFIR NCA Response Files

Non-UV TC Members will receive NCA response files in their SFTP folder in **csv** format. The filename will be the original file name **excluding** the file extension in the name with **_NCARes** appended to it as described in the UnaVista Technical Specification, section *UnaVista MiFIR NCA Validation Response*.

Example:

```
TQEX_ABCD_20190401201555_NCAREs_GB_20190408103000999.csv
```

UV TC Members will also receive NCA response files in their SFTP folder in **csv** format. The filename will not be linked to the Member's original submission and will have a naming convention similar to the following:

```
<CLIENTPREFIX>_<UV filename>_NCAREs_GB_YYYYMMDDHHmmssSSS.csv
```

For detailed specification of the UnaVista MiFIR ARM validation and NCA response files, please see the MiFIR ARM Technical Specification [5]. Sample files are also available in the MiFIR ARM Sample Trades & Response Files zip file included in the UnaVista MiFIR ARM documentation pack.

All UnaVista MiFIR response files will be sent to the Member unzipped and in **CSV format**.

4.3.4 TV Reconciliation Response Files

UV and non-UV Members will receive reconciliation feedback files from the TV in their SFTP folder.

On a daily basis, the TV will generate 1 or 2 files for every operating MIC the member has traded on:

- Summary Report generated every day
- Exceptions Report only generated if reconciliation errors have been identified

All TV Reconciliation response files will be sent to the Member unzipped and in **CSV format**.

4.3.5 Summary Report

A single file will be generated per operating MIC the Member has traded on in CSV format with a header row of column names followed by rows of summary details for transaction reports received from the member for each segment MIC traded on, on **T**. The Member may also receive in the file summary entries for previous trading dates up to **T-30** if reconciliation breaks exist for those previous trading dates.

File naming convention and contents:

Venue	File name format	File contents
LSE plc	VTR_RECON_XLON_SUMMARY_<trading date>_<TV import date yyyyMMdd>.csv Example: VTR_RECON_XLON_SUMMARY_20190401_20190402.csv	Reconciliation summary for trades executed on segment MICs: XLON, XLOM, AIMX, XLOD
Turquoise UK	VTR_RECON_TRQX_SUMMARY_<trading date>_<TV import date yyyyMMdd>.csv Example: VTR_RECON_TRQX_SUMMARY_20190401_20190402.csv	Reconciliation summary for trades executed on segment MICs: TRQX, TRQA, TRQM, TRQB, TRQS, TRQC
Turquoise EU	VTR_RECON_TQEX_SUMMARY_<trading date>_<TV import date yyyyMMdd>.csv Example: VTR_RECON_TQEX_SUMMARY_20190401_20190402.csv	Reconciliation summary for trades executed on segment MICs: TQEX, TQEM, TQEA, TQEB, TQES, TQEC

File format:

Column name	Description	Comments
Segment MIC	The segment MIC traded on in the TV	
Report Date	Date reconciliation report generated Format: dd/MM/yyyy	

Column name	Description	Comments
Trading Date	Trading date for which report has been generated Format: dd/MM/yyyy	
Member Firm ID	Firm ID of Member in TV	
Reconciliation Status	Overall status of reconciliation Values: 'SUCCESS' if no exceptions occurred 'ERROR' if exceptions occurred	Status will be ERROR if any errors occurred in matching transaction report totals or field validation
Total Expected	The total number of execution notices in the TV on trading date and for the segment MIC for which transaction reports are expected	
Total Received	The total number of transaction reports received from the TC Member for trading date and segment MIC	
Total Missing	Total number of transaction reports that were found missing for the trading date and segment MIC	This is the difference between total expected and total received
Total Unknown	Total number of transaction reports that could not be matched to an execution notice in the TV for trading date and segment MIC	
Total Field Errors	Total number of transaction reports that had one or more errors in reconciling core transaction fields with the execution notice on the TV for the trading date and segment MIC	Includes total transaction reports that failed UnaVista ARM validation

4.3.6 Exceptions Report

For each operating MIC the TC Member has traded on, in the event the TC Member submissions on that operating MIC could not be reconciled successfully or if reconciliation breaks still exist for historical trading dates up to **T-30**, a single file will be generated for that operating MIC. The Member will receive an exception list for all transaction reports with errors.

A file will NOT be generated if reconciliation was completely successful for all dates up to T-30.

The exceptions file will contain a header row of column names followed by:

- A list of exceptions for each reconciliation error encountered for the submitted transaction reports including unrecognised transaction reports, transaction reports that failed key field content validation and transaction reports that have an ARM validation exception reported in the UnaVista MiFIR ARM. The list may be empty if there were no reconciliation errors for the reports received.
- A list of execution notices for which transaction reports are missing. The list may be empty if there were no transaction reports missing.

Notes:

- There may be multiple rows per transaction report if more than one reconciliation check failed on the report.
- Transaction reports that reconciled successfully will not be listed in the file.

File naming convention and contents:

Venue	File name format	File contents
LSE plc	VTR_RECON_XLON_EXCEPTI ONS_<trading date>_<TV import date yyyyMMdd>.csv Example: VTR_RECON_XLON_EXCEPTIONS_ 20190401_20190402.csv	Reconciliation exceptions for executions on segment MICs: XLON, XLOM, AIMX, XLOD
Turquoise UK	VTR_RECON_TRQX_ EXCEPTIONS_<trading date>_<TV import date yyyyMMdd>.csv Example: VTR_RECON_TRQX_EXCEPTIONS_ 20190401_20190402.csv	Reconciliation exceptions for executions on segment MICs: TRQX, TRQA, TRQM, TRQB, TRQS, TRQC

Venue	File name format	File contents
Turquoise EU	VTR_RECON_TQEX_EXCEPTIONS_<trading date>_<TV import date yyyyMMdd>.csv Example: VTR_RECON_TQEX_EXCEPTIONS_20190401_20190402.csv	Reconciliation exceptions for executions on segment MICs: TQEX, TQEM, TQEA, TQEB, TQES, TQEC

File format:

Column name	Description	Comments
Report Date	Date reconciliation report generated Format: dd/MM/yyyy	
Trading Date Time	Trading date for which report has been generated Format: yyyy-MM-dd hh:mm:ss.SSSSSS	
Member Firm ID	Firm ID of Member in TV	
Import Date	Date transaction report was imported into UnaVista's MiFIR ARM Format: dd/MM/yyyy HH:mm:ss	Received by the TV from the MiFIR ARM OR Blank in case of missing transaction report
Transaction Status	Status of transaction report in the UnaVista MiFIR ARM	Received by the TV from the MiFIR ARM Refer to UnaVista MiFIR User Guide for a full list of values OR Blank in case of missing transaction report

Column name	Description	Comments
Report Status	Indication if transaction report is new or a cancellation submitted by TC Member	Received by the TV from the MiFIR ARM OR Blank in case of missing transaction report
Transaction Reference Number	Unique identifier for transaction report submitted by TC member	Received by the TV from the MiFIR ARM OR Blank in case of missing transaction report
TVTIC	Trading Venue Transaction Identification Code on the transaction report submitted by TC member	Received by the TV from the MiFIR ARM OR TVTIC on execution notice in TV in case of missing transaction report
Venue	Segment MIC on the transaction report submitted by TC member	Received by the TV from the MiFIR ARM OR Segment MIC on execution notice in TV in case of missing transaction report
Instrument ID	Instrument identifier on the transaction report submitted by TC member	Received by the TV from the MiFIR ARM OR Instrument ID in case of missing transaction report
Error Code	TV Error code for the exception	Refer to the Error codes section for a description of values
Error Description	TV Error description for the exception	Refer to the Error codes section for a description of values
Error Field Name	Transaction report field name for which exception was raised	Refer to the Error codes section for a description of values
Received Value	Value received from TC Member for the field in which error occurred	

Column name	Description	Comments
Expected Value	Value TV expects to see as given in execution notice on TV	

Error Codes:

Code	Description	Example	Comments
R001	Unknown TR	<p>TVTIC = 292938 and Venue = XLON combination does not exist in the execution notice list for XLON</p> <p>OR</p> <p>Venue = XABC is an unknown MIC</p>	<p>Will occur if execution notice cannot be found for the TVTIC and segment MIC combination on the TR or the segment MIC supplied is not recognised by the venue.</p> <p>On the exception report:</p> <p>Error Field Name = 'TVTIC/Venue'</p> <p>OR</p> <p>'Venue' (unrecognised MIC)</p> <p>Received Value = TVTIC '/' Venue field values received in the TR</p> <p>OR</p> <p>Venue field value received in the TR (unrecognised MIC)</p> <p>Expected Value = blank</p>
R002	Field error	<p>Quantity = 345 when it should be 133 OR</p> <p>Price = 43.5 when it should be 48.5 OR</p> <p>ISIN is 'DBABCDEF' when it should be 'FRABCDEF'</p>	<p>On the exception report:</p> <p>Error Field Name = Name of field:</p> <p>'Quantity' / 'Price' / 'ISIN'</p> <p>Received Value = value received in corresponding TR field</p>

Code	Description	Example	Comments
			Expected Value = value received in corresponding TV execution notice field
R004	ARM error	ARM Valid field on TR is set to 'False' instead of 'True'	On the exception report: Error Field Name = blank Received Value = blank Expected Value = 'Check UnaVista ARM response file'
R005	Missing TR	Trade exists for which TR does not exist	On the exception report: Error Field Name = blank Received Value = blank Expected Value = blank

4.4 Member Notification

TC Members will **be notified** by email if reconciliation errors have occurred for transaction reports submitted for the previous trading date T (and up to T-30 trading dates). The TC Member will **not be notified** if reconciliation was completely successful for the dates. As described in the [TV Reconciliation Responses](#) section, summary and exceptions reports will be available for the TC Member to download from their SFTP area.

The TC Member is required to configure the correspondence email address in their Member Portal user permissions. A new privilege is being added that contract representatives can assign to one or more company users. Once the privilege is set up, the Member Portal users will receive the reconciliation email notifications and will be able to manage all new transaction reporting functionality. This includes the ability to download the daily summary report directly from the Member Portal. It does not include download of the exceptions report which is only available through SFTP download.

5 Registration and Testing

Members will be contacted in due course by the TV Membership team for their registration details.

Members who will be classified as Third Country firms in relation to their trading activity on either LSE PLC, Turquoise UK and/or Turquoise EU are asked to complete certain registration and testing steps prior to go-live.

All members are required to complete the Member Firm Declaration Form and return this to the Membership team at membership@lseg.com.

Members utilising the UnaVista Venue Reporting Service and therefore deemed UV customers, kindly contact your UnaVista account manager to agree on-boarding / set up requirements.

- UV Clients can download further information via the following URL:
<https://www2.londonstockexchange.com/UnaVista-Brexit-Documentation-Pack>
- The current version of the document pack includes a FAQ, a dedicated MiFIR presentations and a Client impact assessment document
- Any Brexit related update to the current ARM system will be reflected as part of the usual ARM Document Pack:
<https://www2.londonstockexchange.com/UnaVista-MiFIR-ARM-Document-Pack>
- This URL is static and will remain the same as we up-version document packs, earlier versions will be zipped as part of the latest downloadable document pack

For non-UV customers wishing to submit their transaction files via the SFTP process outlined above in section 2.1, kindly contact the Market Access Team at:

marketaccess@lseg.com

For UV customers who do not have SFTP access, kindly contact the Market Access Team at:

marketaccess@lseg.com

6 Appendix

6.1 Base 36, Base 62, Base 64 decoding alphabets

6.1.1 Base 36

HEX	ASCII	HEX	ASCII
0	G	18	Y
1	H	19	Z
2	I	20	0
3	J	21	1
4	K	22	2
5	L	23	3
6	M	24	4
7	N	25	5
8	O	26	6
9	P	27	7
10	Q	28	8
11	R	29	9
12	S	30	A
13	T	31	B
14	U	32	C
15	V	33	D
16	W	34	E
17	X	35	F

6.1.2 Base 62

HEX	ASCII	HEX	ASCII	HEX	ASCII	HEX	ASCII
0	0	18	I	36	a	54	s
1	1	19	J	37	b	55	t
2	2	20	K	38	c	56	u
3	3	21	L	39	d	57	v
4	4	22	M	40	e	58	w
5	5	23	N	41	f	59	x

6	6	24	O	42	g	60	y
7	7	25	P	43	h	61	z
8	8	26	Q	44	i		
9	9	27	R	45	j		
10	A	28	S	46	k		
11	B	29	T	47	l		
12	C	30	U	48	m		
13	D	31	V	49	n		
14	E	32	W	50	o		
15	F	33	X	51	p		
16	G	34	Y	52	q		
17	H	35	Z	53	r		

6.1.3 Base 64

HEX	ASCII	HEX	ASCII	HEX	ASCII	HEX	ASCII
0	A	18	S	36	k	54	2
1	B	19	T	37	l	55	3
2	C	20	U	38	m	56	4
3	D	21	V	39	n	57	5
4	E	22	W	40	o	58	6
5	F	23	X	41	p	59	7
6	G	24	Y	42	q	60	8
7	H	25	Z	43	r	61	9
8	I	26	a	44	s	62	-
9	J	27	b	45	t	63	_
10	K	28	c	46	u		
11	L	29	d	47	v		
12	M	30	e	48	w		
13	N	31	f	49	x		
14	O	32	g	50	y		
15	P	33	h	51	z		
16	Q	34	i	52	0		
17	R	35	j	53	1		

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