



China Stock Connect Northbound Trading Investor ID Model System File Interface Specification

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Prepared by:	HKEX
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Modification History

Version	Date	Modified By	Synopsis
1.0	8 Jan 2018	HKEX	First Issue
1.1	18 Apr 2018	HKEX	Further updates
1.2	11 July 2018	HKEX	- Added maximum allowed errors in Mapping File and delivery time of files
1.3	7 September 2018	HKEX	- Updated Section 2.1 BCAN-CID Mapping File
1.4	24 June 2022	HKEX	- Updated Section 2.1 BCAN-CID Mapping File and Section 3.2 Result codes used in BCAN-CID Validation Result File
<u>1.5</u>	<u>18 Jan 2023</u>	<u>HKEX</u>	<u>- Migration to ECP 2.0 for the file submission and distribution.</u>

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1 Overview

This document serves as a reference guide for China Connect Exchange Participants' (CCEPs') and Trade-Through Exchange Participants' (TTEPs') preparation, submission, and processing of Broker-to-Client Assigned Number (BCAN) and Client Identification Data (CID) that are needed to support trading under the Northbound Investor ID Model.

1.1 Summary of Interface Files and Operation Flow

List of BCAN interface files that are involved in the preparation and submission process of BCANs for the Northbound trading are as follows:

No	Time	Party	File Exchanged
1	7:00am	CCEP/TTEP	Start time to allow CCEP/TTEP to submit BCAN-CID Mapping File (BCANMAPP) and Authorised TTEP Firm List (BCANAUFM)
2	7:00am - 3:00pm	CCEP/TTEP	Submission of BCAN-CID Mapping File (BCANMAPP)
3	7:00am - 3:00pm	CCEP	Submission of Authorised TTEP Firm List (BCANAUFM)
4	7:00am - 3:00pm	HKEX	Distribution of BCAN-CID Response File (BCANRESP)
5	7:00am - 3:00pm	HKEX	Distribution of Authorised TTEP Firm List Response File (BCANAUFP)
6	6:00pm - 10:00pm	HKEX	Distribution of BCAN Validation Result File (BCANRSLT) from ChinaClear
7	6:00pm - 10:00pm	HKEX	Distribution of BCAN Full Image File as registered in ChinaClear (BCANFIMG) from ChinaClear
8	After 10:00pm 12:00am the next calendar day.	HKEX	System cleanup – all files submitted will be removed from the system.

1.2 File Collection and Distribution Channel

Files are exchanged through ~~the secure file transfer protocol (SFTP) facility provided by HKEX, via Securities and Derivatives Network/2 (SDNet/2) or HKEX Service Network (HSN) lines.~~ Electronic Communication Platform 2.0 (ECP 2.0) by following channels:

- ~~Please refer to “Cash Market Secure File Transfer Technical Guide” for details on the SFTP facility.~~ ECP Web interface via Internet; or
- ~~ECP (SFTP) interface via Securities and Derivatives Network/2 (SDNet/2) or HKEX Service Network (HSN).~~

Please refer to “ECP 2.0 User Guide” for details of submission.

1.3 Data Format Definition

Data format commonly used in this document are as follows:

Format	Synopsis
X(n)	Alphanumeric data of n bytes. Left-justified with trailing spaces unless otherwise stated.
9(n)	Numeric field with n digits. No leading zeroes. Right-justified with leading spaces unless otherwise stated.
YYYYMMDD	Date field, where YYYY stands for the year, MM stands for the month, and DD stands for the day, e.g. 20171202.
<u>HHMMSS</u>	<u>Time field, where HH stands for hour, MM stands for minute, and SS stands for second, e.g. 152304.</u>
<u>FILESEQ</u>	<u>Numeric field.</u> <u>Applicable to ECP (SFTP) interface only.</u> <u>File running sequence when there exists duplication of file name on Acknowledgement File or Reject File. Sequence value starts from 1 and increment by 1 and reset daily at start of day.</u>

2 File Specification

2.1 BCAN-CID Mapping File

2.1.1 Description

The BCAN-CID Mapping File is used for submitting BCAN-to-CID mapping data (on T-1 day) to Mainland exchanges/ChinaClear for investors who wish to conduct Northbound trading through Stock Connect on T-day.

CCEPs and TTEPs are allowed to submit the Mapping File on every Northbound trading day¹ within submission hour, i.e. from 7am to 3pm. For each CCEP/TTEP, only one file shall be provided by HKEX to ChinaClear for validation on each Northbound trading day. If there are multiple submissions by the same EP, the files submitted earlier on that day will be overwritten by the file received later before the cutoff time (i.e. 3pm). Late submission will not be accepted.

TTEPs who intend to submit BCAN-CID Mapping Files for submitting orders via another executing CCEP must be authorised and use the BCAN ranges assigned by the executing CCEPs.

CCEPs and TTEPs only need to submit this Mapping File when there are changes on the BCAN-CID mapping data. However, a full list of all mappings is always required to be submitted even if only part of those have been changed.

The BCAN-CID Mapping File uploaded by CCEPs and TTEPs will be ~~handled in batches. Uploaded~~ processed by HKEX. For ECP (SFTP) Interface, uploaded files with correct file name format and within submission hour will be ~~moved~~ removed from the ~~OUTBOX to INBOX~~ submission folder of the SFTP user account, and ~~renamed to "<Original-filename>.HHMMSS.rev"~~ e.g. BCANMAPP_20171204.zip.115023.rev an Acknowledgement File containing the submission file checksum will be generated in the submission folder. Please refer to Appendix 4.1 for details. If the mapping file is submitted via ECP Web Interface, the checksum detail will be displayed at the submission page or can be enquired from the Activity Enquiry page.

Successfully submitted BCAN-CID Mapping Files are handled in batches. Upon completion of format validation of the Mapping File by HKEX, a Response File will be returned to the CCEP or TTEP for reference. Brief validation result will be given in the Response File for mapping records that have failed the validation. CCEPs/TTEPs may correct the failed mapping records and submit the full mapping file again.

Mapping files will be rejected by ~~the system~~ ECP if:

- File name was not specified correctly: e.g. BCNMADP 09999 20171204.zip is in wrong

¹ In the case where trading on a scheduled Northbound trading day is suspended due to severe weather conditions, CCEPs and TTEPs are still allowed to submit the BCAN-CID Mapping File as scheduled.

format (see section 2.1.2 for correct file name format); or

- Date in file name was invalid or past-/post-dated, or beyond submission hour.

~~Mapping files rejected by the system will be moved from the OUTBOX to the INBOX folder of the SFTP user account, and renamed to "<Original-filename>.HHMMSS.rej", e.g. BCNMADP_20171204.zip.112520.rej, or BCANMAPP_20171204.zip.150001.rej. If the submitted mapping file is rejected by ECP, a Rejection File will be generated in the submission folder if the file was submitted through SFTP. Please refer to Appendix 4.2 for details. If the mapping file is submitted via ECP Web Interface, the rejection detail will be displayed at the submission page or can be enquired from the Activity Enquiry page. No~~
Response File will be given in this case.

In case of file level errors found, mapping records will not be further validated and the entire Mapping File will be discarded. Please refer to Appendix 3.1 for details.

The system will stop validating the Mapping file if it was found to have more than 10,000 records with errors, and the file will be rejected with error code "S0102".

Only mapping records that have passed the validation will be submitted to Mainland exchanges and/or ChinaClear. If BCAN records that exist in previous BCAN Full Image File but could not be found in the newly submitted mapping file, those BCAN records will be considered as Deletion.

If no BCAN-CID Mapping File was submitted to HKEX by 3 pm, mapping records that are previously accepted by Mainland exchanges and/or ChinaClear will remain effective. No Response File will be given in this case.

All files will be removed from folders after system cleanup.

If a CCEP or TTEP ceases Northbound trading, or if a TTEP discontinues using an executing CCEP for submitting Northbound orders, it should remove the relevant BCAN-CID mapping data from its BCAN-CID Mapping File the day before the effective date.

2.1.2 File Layout

Summary

File ID	BCANMAPP
File Name	<p>BCANMAPP_<FIRM ID>_<YYYYMMDD>.txt, and is zipped into: BCANMAPP_<FIRM ID>_<YYYYMMDD>.zip</p> <p>where: <u>FIRM ID = Firm ID of CCEP/TTEP in the format of 5-digit number with leading zero.</u> <u>_YYYYMMDD = Date of submission.</u></p>
File Type	<p>Text file delimited by DOS newline characters (CR+LF).</p> <p>Record data fields are in fixed length.</p> <p>UTF-8 without BOM encoded.</p>
Submission Hours	7am to 3pm on scheduled Northbound trading days.
Submission Path <u>(ECP (SFTP) Interface only)</u>	<p><u>/submission/BCANMAPP</u></p> <p><u>Once the file is processed by HKEX, the file will be removed from the submission folder, and an Acknowledgement File or a Rejection File will be returned (Refer to Appendix 4.1 and 4.2).</u>/OUTBOX</p> <p>All submitted files will be collected and removed from /OUTBOX by HKEX's system.</p> <p>Once the submitted file is processed by HKEX's system, it will be moved to the /INBOX, and renamed to: BCANMAPP_YYYYMMDD.zip.HHMMSS.rcvd.</p>
Submission Page <u>(ECP Web Interface only)</u>	<p><u>To submit files:</u></p> <p><u>Login ECP Web Interface and click "Submission" hyperlink in the navigation bar. Click "BCAN-CID Mapping File and Authorised TTEP Firm List for Northbound Trading" hyperlink for submission.</u></p> <p><u>On submission received:</u></p> <p><u>A SHA-256 checksum of the file submitted will be displayed on screen upon submission.</u></p> <p><u>On submission rejected:</u></p> <p><u>Rejection Code and Rejection Reason will be displayed on screen upon submission (Refer to Appendix 4.3).</u></p> <p><u>Submission result could also be enquired from the Activity Enquiry page.</u></p>
File Encryption <u>(Optional)</u>	<p><u>Optionally, the zip file can also be encrypted with a password.</u></p> <p><u>Please note the following on encryption:</u></p> <ul style="list-style-type: none"> <u>Encryption algorithm: AES256. There are a number of utilities that support AES256 encryption, e.g. WinZip and 7-Zip.</u> <u>CCEP and TTEP are required to register the password with HKEX for decryption via ECP Web Interface.</u> <u>File Encryption is setup per account. If file encryption is enabled, BCAN-CID Mapping File under HKIDR, BCAN-CID Mapping File and</u>

	<p><u>Authorised TTEP Firm List under Northbound Investor ID Model must be submitted in password-encrypted format using the same password registered.</u></p> <p><u>Please also note the following rules on choosing the encryption password:</u></p> <ul style="list-style-type: none"> • <u>Minimum password length: 10 characters</u> • <u>Maximum password length: 128 characters</u> • <u>Password complexity: The password must contain a minimum of 1 upper letter, 1 lower letter, 1 number, and 1 symbol. All printable characters, except space, are accepted (ASCII code 0x21 to 0x7E). That include upper & lower case letters, numbers (0-9), and symbols (@#\$%^&* etc.).</u> • <u>Password history: 5 generations</u> <p><u>CCEP and TTEP are also advised to change the encryption password on a regular basis (e.g. every 3 months).</u></p> <p><u>Please refer to ECP 2.0 User Guide for details.</u></p>
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Header Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "H" (header record)
2	File ID	X(20)	= "BCANMAPP".
3	File Format Version	9(2)	= 1
4	Firm ID	9(5)	ID of the firm which submits this file.
5	Submission Date	YYYYMMDD	Same as the date in file name.
6	Submission Sequence Number	9(2)	Sequence number of file submissions starting from 1 for this file on the submission date.

Data Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "D" (data record)
2	Record Sequence Number	9(11)	A running sequence number starting from 1 used for uniquely identifying individual mapping data within the file. 0 is reserved.
3	Client Type	9(2)	Domain values: - 1 = Individual - 2 = Joint Account - 3 = Legal Entity – Funds - 4 = Legal Entity – Fund managers and others - 5 = Proprietary or Principal Trading See also Note 1 and 2.
4	Executing CCEP Firm	9(5)	CCEP who submit orders directly to HKEX: Their

	ID		own Firm ID. TTEP who trade through an executing CCEP: Firm ID of the executing CCEP which submits orders with the assigned BCAN on behalf of the submitting TTEP to HKEX.
5	BCAN	9(10)	Reserved range: 0 - 99. See Note 1.
6	Number of Account Holders	9(2)	Always equals to 1 for client types (field no. 3) of 1, 3, 4, and 5. If Client Type is 2 (Joint Account), the number of accounts holders has to be between 2 and 99 inclusively, and the total number of account holder records with this BCAN must equal to this number.
7	English First Name and Middle Name	X(40)	For client types (field no. 3) of 1 and 2. Fill in spaces if this field is not available. See Note 3.
8	English Last Name	X(40)	For client types (field no. 3) of 1 and 2. Fill in spaces if this field is not available. See Note 3.
9	English Legal Entity Name	X(100)	For client types (field no. 3) of 3, 4, and 5. Fill in spaces if this field is not available. See Note 4.
10	Chinese Name	X(40)	For client types (field no. 3) of 1 and 2. Fixed length in bytes (i.e. 40 bytes). UTF-8 encoded. Fill in spaces if this field is not available. See Note 3 and Note 5.
11	Chinese Legal Entity Name	X(120)	For client types (field no. 3) of 3, 4, and 5. Fixed length in bytes (i.e. 120 bytes). UTF-8 encoded. Fill in spaces if this field is not available. See Note 4 and Note 5.
12	Country of Issuance	X(3)	Follows ISO standard 3166 Alpha-3 code: https://www.iso.org/obp/ui/#search/code/ If ID Type (field no. 13) is LEI, then input place of incorporation if available, otherwise input "OTH".
13	ID Type	9(2)	Identity document type, where: - 1 = Identity Card (e.g. HKID, ID issued by the relevant government authority) - 2 = Passport - 3 = Certificate of Incorporation / other official incorporation documents ² - 4 = LEI

² If Certificate of Incorporation is unavailable in the jurisdiction where the entity is incorporated or established, the identification number as appeared in the official incorporation document of the entity issued by the relevant official body in the place of incorporation or establishment of the entity should be provided. For branches or subsidiaries of Mainland incorporated institutions which are lawfully registered in Hong Kong or overseas, they may use their business registration certificate as an identification document (effective from 25 July 2022).

			- 5 = Other official identity document (only for Client Types 1 and 2)
14	ID Number	X(40)	Identity document number. See Note 6.

Control Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "F" (control record)
2	Total number of records	9(11)	Total number of records (i.e. number of type "D" records).

Note:

1. One BCAN-CID mapping record is required for each of the joint account members.
2. Change of "Client Type" (field no. 3) is not allowed.
3. For client types 1 and 2, "English First and Middle Name" (field no. 7), "English Last Name" (field no. 8), and "Chinese Name" (field no. 10) must be provided if available. Field no. 10 may be used for names that are non-alphabetic. These fields cannot be all blank.
4. For client types 3, 4, and 5, "English Legal Entity Name" (field no. 9) and "Chinese Legal Entity Name" (field no. 11) must be provided if available. Field no. 11 may be used for names that are non-alphabetic. These fields cannot be both blank.
5. The name in the BCAN-CID mapping data submitted must be exactly the same as in the official identity document. For example, if the name in the official identity document is in Simplified Chinese, then the name in the BCAN-CID mapping data must also be in Simplified Chinese.
6. Exact ID number should be provided - including characters, numbers, and symbols like brackets. For example, if the ID number shown in the official document is "A123456 (7)", then "A123456 (7)" (including brackets) should be provided in the BCAN-CID mapping data.
7. This document should be read in conjunction with the Information Paper, BCAN-CID Mapping File Data Record Examples, and the Rules of the Exchange.

2.2 BCAN-CID Response File

2.2.1 Description

The BCAN-CID Response File is used for returning result of format validation of submitted BCAN-CID Mapping File. It contains list of records that failed the validation.

Response code and text, together with the original record sequence number, will be given for each of the failed mapping records. Mapping records that passed the validation will not be put into the Response File. Thus if the submitted BCAN-CID Mapping File has passed the validation successfully and completely, the Response File will carry only 2 records – header and control record.

Normally Response File is given back to CCEPs/TTEPs within 10 minutes after submitting the Mapping File. However the actual processing time is also dependent on the size of the BCAN-CID Mapping File submitted (i.e. number of records) and position of CCEPs/TTEPs in the process queue.

~~Response File is not given for these situations:~~

- ~~— File name of the Mapping File was not specified correctly: e.g. BCNMADP_20171204.zip is in wrong format (see section 2.1.2 for correct file name format); or~~
- ~~— Date in file name was invalid or past /post dated, or beyond submission hour.~~

See Appendix 3.1 for list of response codes.

2.2.2 File Layout

Summary

File ID	BCANRESP
File Name	BCANRESP_<FIRM ID>_<YYYYMMDD>.txt, and is zipped into: BCANRESP_<FIRM ID>_<YYYYMMDD>.zip where: <u>FIRM ID = Firm ID of CCEP/TTEP in the format of 5-digit number with leading zero.</u> <u>_YYYYMMDD = Date of submission.</u>
File Type	Text file delimited by DOS newline characters (CR+LF). Record data fields are in fixed length. UTF-8 without BOM encoded.
Distribution Time	Within 10 minutes after submitting BCAN-CID Mapping File.
Distribution Path (ECP (SFTP) Interface only)	/INBOX/ download/BCANMAPP
Distribution Page (ECP Web Interface only)	<u>Download Corner of ECP Web Interface.</u>

Header Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "H" (header record)
2	File ID	X(20)	= "BCANRESP".
3	File Format Version	9(2)	= 1
4	Firm ID	9(5)	ID of the firm who submitted the BCAN-CID Mapping File.
5	Submission Date	YYYYMMDD	Date of the submitted BCAN-CID Mapping File.
6	Submission Sequence Number	9(2)	Submission sequence number of the original BCAN-CID Mapping File.

Data Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "D" (data record)
2	Original Record Sequence Number	9(11)	Sequence number of the record as in the submitted BCAN-CID Mapping File. 0 is reserved for general response.
3	Response Code	X(5)	Refer to Appendix 3.1
4	Response Text	X(200)	Refer to Appendix 3.1

5	Response Field No. ³	9(2)	Field number of the data field which failed the validation, 0 otherwise.
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³ For a record with multiple errors, only the first error detected will be included and CCEPs/TTEPs should review the whole record again.

Control Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "F" (control record)
2	Total number of Mapping records submitted	9(11)	Total number of Mapping records submitted (i.e. number of type "D" records in the original BCAN-CID Mapping File).
3	Total number of data records	9(11)	Number of data records that failed validation (i.e. number of type "D" records in this Response File).

2.3 Authorised TTEP Firm List

2.3.1 Description

The Authorised TTEP Firm List is used for CCEP to submit list of TTEP firms who are authorised to trade through this CCEP. This file is used for validation of BCANs that are submitted by TTEPs to ensure their submission is authorised by the corresponding CCEPs.

It is required to submit the Authorised TTEP Firm List to register corresponding authorised TTEP firms before TTEP submitting the BCAN-CID Mapping File.

Only CCEPs who have TTEPs submitting Northbound orders through them need to submit this file.

Similar to the BCAN-CID Mapping file, CCEPs only need to submit this file when there are changes on the Authorised TTEP Firm List. Full list is always required to be submitted even if only part of those have been changed.

CCEPs are allowed to submit this file on every scheduled Northbound trading day from 7am to 3pm. If there are multiple submissions by the same EP, files submitted earlier on that day will be overwritten by the file received later before the cutoff time (i.e. 3 pm). Late submission will not be accepted.

The Authorised TTEP Firm List uploaded by CCEPs will be ~~handled in batches. Uploaded~~processed by HKEX. For ECP (SFTP) Interface, uploaded files with correct file name format and within submission hour will be ~~moved~~removed from the ~~OUTBOX to INBOX~~submission folder of the SFTP user account, and ~~renamed to "<Original-filename>.HHMMSS.rev"~~, e.g. BCANAUFM_20171204.zip.115024.revan Acknowledgement File containing the submission file checksum will be generated in the submission folder. Please refer to Appendix 4.1 for details. If the mapping file is submitted via ECP Web Interface, the checksum detail will be displayed at the submission page or can be enquired from the Activity Enquiry page.

Successfully submitted Authorised TTEP Firm List are handled in batches. Upon completion of format validation of the file by HKEX, a Response File will be returned to the CCEP for reference. Brief validation result will be given in the Response File for firm records that have failed the validation. CCEPs may correct failed records and submit the file again.

Authorised TTEP Firm List files will be rejected by ~~the system~~ECP if:

- File name was not specified correctly: e.g. BCNAURZ_20171204.zip (see section 2.3.2 for correct file name format); or
- Date in file name was invalid or past-/post-dated, or beyond submission hour.

~~Authorised Firm List Files rejected by the system will be moved from the OUTBOX to the~~

~~INBOX folder of the SFTP user account, and renamed to "<Original-filename>.HHMMSS.rej" e.g. BCNAURZ_20171204.zip.111520.rej. If the submitted mapping file is rejected by ECP, a Rejection File will be generated in the submission folder if the file was submitted through SFTP. Please refer to Appendix 4.2 for details. If the mapping file is submitted via ECP Web Interface, the rejection detail will be displayed at the submission page or can be enquired from the Activity Enquiry page.~~ No Response File will be given in this case.

If no Authorised TTEP Firm List File was submitted to HKEX by 3 pm, authorized records that are previously accepted will remain effective. No Response File will be given in this case.

All files will be removed from folders after system cleanup.

If a TTEP discontinues using an executing CCEP for submitting Northbound orders, the CCEP should remove the relevant TTEP Firm ID record from the file after the TTEP ceased from trading through it.

2.3.2 File Layout

Summary

File ID	BCANAUFM
File Name	<p>BCANAUFM_<FIRM ID>_<YYYYMMDD>.txt, and is zipped into: BCANAUFM_<FIRM ID>_<YYYYMMDD>.zip</p> <p>where: <u>FIRM ID = Firm ID of CCEP/TTEP in the format of 5-digit number with leading zero.</u> <u>_YYYYMMDD = Date of submission.</u></p>
File Type	<p>Text file delimited by DOS newline characters (CR+LF).</p> <p>Record data fields are in fixed length.</p> <p>ASCII encoded.</p>
Submission Hours	7am to 3pm on scheduled Northbound trading days.
Submission Path <u>(ECP (SFTP) Interface only)</u>	<p><u>/submission/BCANMAPP</u></p> <p><u>Once the file is processed by HKEX, the file will be removed from the submission folder, and an Acknowledgement File or a Rejection File will be returned (Refer to Appendix 4.1 and 4.2).</u>/OUTBOX</p> <p>All submitted files will be collected and removed from /OUTBOX by HKEX's system.</p> <p>Once the submitted file is processed by HKEX's system, it will be moved to the /INBOX, and renamed to: BCANAUFM_YYYYMMDD.zip.HHMMSS.revdl.</p>
Submission Page <u>(ECP Web Interface only)</u>	<p><u>To submit files:</u></p> <p><u>Login ECP Web Interface and click "Submission" hyperlink in the navigation bar. Click "BCAN-CID Mapping File and Authorised TTEP Firm List for Northbound Trading" hyperlink for submission.</u></p> <p><u>On submission received:</u></p> <p><u>A SHA-256 checksum of the file submitted will be displayed on screen upon submission.</u></p> <p><u>On submission rejected:</u></p> <p><u>Rejection Code and Rejection Reason will be displayed on screen upon submission (Refer to Appendix 4.3).</u></p> <p><u>Submission result could also be enquired from the Activity Enquiry page.</u></p>
File Encryption <u>(Optional)</u>	<p><u>Optionally, the zip file can also be encrypted with a password.</u></p> <p><u>Please note the following on encryption:</u></p> <ul style="list-style-type: none"> <u>Encryption algorithm: AES256. There are a number of utilities that support AES256 encryption, e.g. WinZip and 7-Zip.</u> <u>CCEP and TTEP are required to register the password with HKEX for decryption via ECP Web Interface.</u> <u>File Encryption is setup per account. If file encryption is enabled, BCAN-CID Mapping File under HKIDR, BCAN-CID Mapping File and</u>

	<p><u>Authorised TTEP Firm List under Northbound Investor ID Model must be submitted in password-encrypted format using the same password registered</u></p> <p><u>Please also note the following rules on choosing the encryption password:</u></p> <ul style="list-style-type: none"> • <u>Minimum password length: 10 characters</u> • <u>Maximum password length: 128 characters</u> • <u>Password complexity: The password must contain a minimum of 1 upper letter, 1 lower letter, 1 number, and 1 symbol. All printable characters, except space, are accepted (ASCII code 0x21 to 0x7E). That include upper & lower case letters, numbers (0-9), and symbols (@#\$%^&* etc.).</u> • <u>Password history: 5 generations</u> <p><u>CCEP and TTEP are also advised to change the encryption password on a regular basis (e.g. every 3 months).</u></p> <p><u>Please refer to ECP 2.0 User Guide for details.</u></p>
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Header Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "H" (header record)
2	File ID	X(20)	= "BCANAUFM".
3	File Format Version	9(2)	= 1
4	Firm ID	9(5)	ID of the CCEP.
5	Submission Date	YYYYMMDD	Same as the date in file name.
6	Submission Sequence Number	9(2)	Sequence number of file submissions starting from 1 for this file on the submission date.

Data Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "D" (data record)
2	Record Sequence Number	9(5)	A running sequence number starting from 1 used for uniquely identifying individual firm records within the file. 0 is reserved.
3	Authorised TTEP Firm ID	9(5)	One record for each of the TTEPs.

Control Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= “F” (control record)
2	Total number of records	9(5)	Total number of records (i.e. number of type “D”).

2.4 Authorised TTEP Firm List Response File

2.4.1 Description

The Authorised TTEP Firm List Response File is used for returning result of format validation of submitted Authorised TTEP Firm List File. It contains list of records that failed the validation.

Response code and text, together with the original record sequence number, will be given for each of the failed TTEP firm records. Firm records that passed the validation will not be put into the Response File. Thus if the submitted Firm List File has passed the validation successfully and completely, the Response File will carry only 2 records – header and control record.

Normally Response File is given back to CCEPs within 10 minutes after submitting the Authorised TTEP Firm List file. However the actual processing time is also dependent on the position of CCEPs/TTEPs in the process queue.

~~Response File is not given for these situations:~~

- ~~— File name of the Authorised TTEP Firm List File was not specified correctly: e.g. BCNFM_20171204.zip (see section 2.3.2 for correct file name format); or~~
- ~~— Date in file name was invalid or past /post dated, or beyond submission hour.~~

See Appendix 3.1 for list of response codes.

2.4.2 File Layout

Summary

File ID	BCANAURP
File Name	BCANAURP_<FIRM ID>_YYYYMMDD.txt, and is zipped into: BCANAURP_<FIRM ID>_YYYYMMDD.zip where: <u>FIRM ID = Firm ID of CCEP/TTEP in the format of 5-digit number with leading zero.</u> <u>_YYYYMMDD = Date of submission.</u>
File Type	Text file delimited by DOS newline characters (CR+LF). Record data fields are in fixed length. ASCII encoded.
Distribution Time	Within 10 minutes after submitting Authorised TTEP Firm List File.
Distribution Path (ECP (SFTP) Interface only)	/INBOX/ download/BCANMAPP
Distribution Page (ECP Web Interface only)	<u>Download Corner of ECP Web Interface.</u>

Header Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "H" (header record)
2	File ID	X(20)	= "BCANAURP".
3	File Format Version	9(2)	= 1
4	Firm ID	9(5)	ID of the CCEP who submitted the Authorised TTEP Firm List File.
5	Submission Date	YYYYMMDD	Date of the submitted Authorised TTEP Firm List File.
6	Submission Sequence Number	9(2)	Submission sequence number of the original Authorised TTEP Firm List File.

Data Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "D" (data record)
2	Original Record Sequence Number	9(5)	Sequence number of the record as in the submitted Authorised TTEP Firm List File. 0 is reserved for general response.
3	Response Code	X(5)	Refer to Appendix 3.1
4	Response Text	X(200)	Refer to Appendix 3.1

5	Response Field No. ⁴	9(2)	Field number of the data field which failed the validation, 0 otherwise.
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⁴ For a record with multiple errors, only the first error detected will be included and CCEPs should review the whole record again.

Control Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "F" (control record)
2	Total number of Authorised TTEP Firm records submitted	9(5)	Total number of Authorised TTEP Firm records submitted (i.e. number of type "D" records in the original Authorised TTEP Firm List File).
3	Total number of data records	9(5)	Number of data records that failed validation (i.e. number of type "D" records in this Response File).

2.5 BCAN-CID Validation Result File

2.5.1 Description

The BCAN-CID Validation Result File contains the validation result prepared by the Mainland exchanges/ChinaClear after receiving and processing BCAN-CID Mapping Files submitted by CCEPs/TTEPs. It provides final process status of BCAN-CID mappings for that day.

Newly created BCANs that are not accepted by Mainland exchanges/ChinaClear on T-1 day cannot be used for Northbound trading on T-day.

Note that the Validation Result File contains only list of BCAN records that have been either added, deleted, or modified. BCAN records that remain unchanged (compared with master record as saved in Mainland exchanges'/ChinaClear's systems) are not reported in the Validation Result File.

Joint accounts are considered as an individual entity. All BCAN records belonging to a joint account will be submitted to the Mainland exchanges/ChinaClear for validation even if only part of the records has been changed, and all records of that joint account will be returned in the Validation Result File.

See Appendix 3.2 for list of result codes.

2.5.2 File Layout

Summary

File ID	BCANRSLT
File Name	BCANRSLT_<FIRM ID>_<YYYYMMDD>.txt, and is zipped into: BCANRSLT_<FIRM ID>_<YYYYMMDD>.zip where: <u>FIRM ID = Firm ID of CCEP/TTEP in the format of 5-digit number with leading zero.</u> <u>_YYYYMMDD = Date of submission.</u>
File Type	Text file delimited by DOS newline characters (CR+LF). Record data fields are in fixed length. ASCII encoded.
Distribution Time	After 6:00pm on scheduled Northbound trading days.
Distribution Path (ECP (SFTP) Interface only)	/INBOX/ download/BCANMAPP
Distribution Page (ECP Web Interface only)	<u>Download Corner of ECP Web Interface.</u>

Header Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "H" (header record)
2	File ID	X(20)	= "BCANRSLT".
3	File Format Version	9(2)	= 1
4	Firm ID	9(5)	ID of the firm who submitted the BCAN-CID Mapping file.
5	Submission Date	YYYYMMDD	Date of the submitted BCAN-CID Mapping File.

Data Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "D" (data record)
2	BCAN	9(10)	
3	Action Code	X(1)	Domain values: - "A" = Addition - "U" = Update - "S" = Deletion
4	Result Code	X(4)	Refer to Appendix 3.2
5	Record Sequence Number and	X(120)	Fixed length in bytes. Refer to Appendix 3.2

	Result Text		
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Control Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= “F” (control record)
2	Total number of data records	9(11)	Number of data records (i.e. number of type “D” records in this result file).

2.6 BCAN Full Image File

2.6.1 Description

The BCAN Full Image File contains the final list of BCANs of each CCEP and TTEP, which are accepted by the Mainland exchanges/ChinaClear and ready for Northbound trading on T-day.

The file is distributed to all CCEPs and TTEPs on Northbound trading days, regardless whether they submitted BCAN-CID Mapping File or not.

For CCEPs, this file contains list of BCANs that are submitted by CCEPs themselves and accepted by the Mainland exchanges/ChinaClear, as well as those that are submitted by their authorised TTEPs and accepted by the Mainland exchanges/ChinaClear.

For TTEPs, this file contains list of BCANs that are submitted by themselves and accepted by the Mainland exchanges/ChinaClear.

CCEPs and TTEPs are reminded to check the BCAN records in this file to ensure that they are accurate, including the fact that the TTEPs are using the correct reserved range assigned by their CCEPs.

2.6.2 File Layout

Summary

File ID	BCANFIMG
File Name	BCANFIMG_<FIRM ID>_<YYYYMMDD>.txt, and is zipped into: BCANFIMG_<FIRM ID>_<YYYYMMDD>.zip where: <u>FIRM ID = Firm ID of CCEP/TTEP in the format of 5-digit number with leading zero.</u> <u>_YYYYMMDD = Date of distribution.</u>
File Type	Text file delimited by DOS newline characters (CR+LF). Record data fields are in fixed length. ASCII encoded.
Distribution Time	After 6:00pm on scheduled Northbound trading days.
Distribution Path (ECP (SFTP) Interface only)	/INBOX/ download/BCANMAPP
Distribution Page (ECP Web Interface only)	<u>Download Corner of ECP Web Interface.</u>

Header Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "H" (header record)
2	File ID	X(20)	= "BCANFIMG".
3	File Format Version	9(2)	= 1
4	Firm ID	9(5)	ID of the CCEP/TTEP.
5	Distribution Date	YYYYMMDD	

Data Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= "D" (data record)
2	Record Status	X(1)	Domain values: - "N" = Normal - "S" = Cancelled
3	BCAN	9(10)	Refer to BCAN-CID Mapping File
4	Submitting Firm	9(5)	ID of the CCEP or TTEP firm which submitted this BCAN.

Control Record

Field No.	Data	Format	Synopsis
1	Record Type	X(1)	= “F” (control record)
2	Total number of data records	9(11)	Number of records (i.e. number of type “D” records in this Full Image File).

3 Appendix I

3.1 Response Codes used in Response Files

Response Code	File Level Error	Synopsis
D0101	Yes	Submitted file is corrupted.
D0102	Yes	Invalid (txt) file name.
D0103	Yes	Invalid file layout (e.g. format or missing of header/control records).
D0104	Yes	Invalid control counters (record count in control record).
D0105	Yes	Invalid encoding (file is not UTF-8 encoded).
D0106	No	Invalid data record layout (e.g. invalid record type, invalid record length).
D0201	Yes	Header record error: Invalid file ID.
D0202	Yes	Header record error: Invalid file format version.
D0203	Yes	Header record error: Invalid Firm ID.
D0204	Yes	Header record error: Invalid submission date.
D0205	Yes	Header record error: Invalid submission sequence number.
D0221	No	Data record error: Duplicated record sequence number.
D0222	No	Data record error: Invalid data format (e.g. putting in text for BCAN).
D0223	No	Data record error: Invalid data value (e.g. putting in 20 for Client Type).
D0224	No	Data record error: Failed validation rule (e.g. Client Type was 1 but English First Name and Middle Name, English Last Name and Chinese Name were all missing).
D0225	No	Data record error: Invalid Executing CCEP Firm ID. Submitting Firm is not authorised by the executing CCEP.
S0102	Yes	General system error. Contact HKEX.

3.2 Result Codes used in BCAN-CID Validation Result File

Process result codes returned by ChinaClear are listed in the table below.

Process result text has two parts: first part is the Record Sequence Number (enclosed in square brackets, [nnnnnnnnnn]) of the BCAN-CID record in the submitted mapping file; second part, which follows the Record Sequence Number and is optional, is the text description of the process result.

Process Result Code	Process Result Text
0000	[nnnnnnnnnn] Successfully processed and accepted.
9001	[nnnnnnnnnn] XXX (field name) cannot be blank
9002	[nnnnnnnnnn] The content in XXX (field name) is in wrong format
9003	[nnnnnnnnnn] When sending an ADD entry, "broker code + BCAN" already exists in system
9004	[nnnnnnnnnn] When sending a MODIFY entry, "broker code + BCAN" does not exist
9005	[nnnnnnnnnn] "Broker code + BCAN" is not unique
9006	[nnnnnnnnnn] The number of BCANs does not equal the number of clients in a joint account
9007	[nnnnnnnnnn] The identification card number does not conform with standards
9008	[nnnnnnnnnn] The status of BCANs in a joint account are inconsistent
9009	[nnnnnnnnnn] Client Type cannot be modified
9011	[nnnnnnnnnn] The client name does not match the identification card number
9012	[nnnnnnnnnn] The information of the closed BCAN cannot be modified
9015	[nnnnnnnnnn] The Action Codes for BCANs from the same joint account are different
9016	[nnnnnnnnnn] The Numbers of Account Holders for BCANs from the same joint account are different.
9017	[nnnnnnnnnn] The other BCAN of Account Holders is in wrong format
0999	[nnnnnnnnnn] Other error ⁵

⁵ BCAN registration of Mainland investors will be rejected with this result code (effective from 25 July 2022).

4 Appendix II

4.1 Acknowledgment File

4.1.1 Description

The Acknowledgment File is applicable to ECP (SFTP) Interface submission only. It contains a SHA-256 checksum of the submitted file to verify the file integrity. It acknowledged the submitted file is received by HKEX and is accepted to further process.

For example, BCAN-CID Mapping File uploaded and accepted by the system will be removed from the submission folder of the SFTP user account, and an Acknowledgment File "<Original-filename>.<HHMMSS>.rcvd",

e.g. BCANMAPP 09999 20210401.zip.093000.rcvd will be generated in the submission folder. When there appears an Acknowledgment File of duplicate file name, e.g. multiple files of same file name are received by HKEX at the same time and accepted, a file running sequence number will be assigned to the Acknowledgment File "<Original-filename>.<HHMMSS>.<FILESEQ>.rcvd",

e.g. BCANMAPP 09999 20210401.zip.093000.1.rcvd

If the file is submitted via ECP Web Interface, the checksum detail will be displayed at the submission page or can be enquired from the Activity Enquiry page.

4.1.2 File Layout

Summary

<u>File Extension</u>	<u>.rcvd</u>
<u>File Name</u>	<u><Original-filename>.<HHMMSS>[.FILESEQ].rcvd</u> <u>where:</u> <u>[.FILESEQ] = File running sequence exists only when appears</u> <u>duplication of file name</u> <u>Example:</u> <u>When three files of same file name are uploaded at 09:30:00 and are</u> <u>accepted</u> <u>1st file: <Original-filename>.093000.rcvd</u> <u>2nd file: <Original-filename>.093000.1.rcvd</u> <u>3rd file: <Original-filename>.093000.2.rcvd</u>
<u>File Type</u>	<u>Text file delimited by DOS newline characters (CR+LF).</u> <u>Record data fields are in fixed length.</u> <u>ASCII encoded.</u>
<u>Distribution Time</u>	<u>Within 5 minutes after submitting File.</u>

<u>Distribution Path</u> <u>(ECP (SFTP) Interface only)</u>	<u>At the submission folder of submitted file</u>
<u>Distribution Page</u> <u>(ECP Web Interface only)</u>	<u>Not Applicable</u>

Data Record

<u>Field No.</u>	<u>Data</u>	<u>Format</u>	<u>Synopsis</u>
<u>1</u>	<u>SHA-256 checksum</u>	<u>X(66)</u>	<u>SHA-256 checksum of submission file</u>
<u>2</u>	<u>File name</u>	<u>X(255)</u>	<u>Submission file name</u>

4.2 Rejection File

4.2.1 Description

The Rejection File is applicable to ECP (SFTP) Interface submission only. It acknowledged the submission file is received by HKEX and is rejected. For a file with multiple errors, only the first error detected will be included and CCEP/TTEP should review the whole file again.

For example, BCAN-CID Mapping File. BCAN-CID Mapping files rejected by the system will be removed from the submission folder of the SFTP user account, and a Rejection File “<Original-filename>.<HHMMSS>.rej”,

e.g. BCNMADP_09999_20210401.zip.093000.rej will be generated at the submission folder. When there appears a Rejection File of duplicate file name, e.g. multiple files of same file name are submitted to HKEX at the same time and are rejected, a file running sequence number will be assigned to the Rejection File “<Original-filename>.<HHMMSS>.<FILESEQ>.rej”,

e.g. BCNMADP_09999_20210401.zip.093000.1.rej.

A submitted file will be rejected for example:

- File name of submitted file is not specified correctly: e.g. BCAN-CID Mapping File BCNMADP_09999_20210401.zip is in wrong format (see section 2.1.2 for correct file name format); or
- Date in the file name is invalid or past-/post-dated; or
- The file submission is made beyond submission hour.

Please refer to Appendix 4.3 for full list of Rejection Code.

If the file is submitted via ECP Web Interface, the rejection code and reason will be displayed at submission page or can be enquired from the Activity Enquiry page.

No Response File will be given when the submitted file is rejected.

4.2.2 File Layout

Summary

File Extension	.rej
File Name	<p><Original-filename>.<HHMMSS>[.FILESEQ].rej</p> <p><u>where:</u></p> <p>[.FILESEQ] = File running sequence exists only when appears duplication of file name</p> <p><u>Example:</u></p> <p>When three files of same file name are uploaded at 09:30:00 and are rejected</p>

	<u>1st file: <Original-filename>.093000.rej</u> <u>2nd file: <Original-filename>.093000.1.rej</u> <u>3rd file: <Original-filename>.093000.2.rej</u>
<u>File Type</u>	<u>Text file delimited by DOS newline characters (CR+LF).</u> <u>Record data fields are in fixed length.</u> <u>ASCII encoded.</u>
<u>Distribution Time</u>	<u>Within 5 minutes after submitting File.</u>
<u>Distribution Path</u> <u>(ECP (SFTP) Interface only)</u>	<u>At submission folder of submitted file</u>
<u>Distribution Page</u> <u>(ECP Web Interface only)</u>	<u>Not Applicable</u>

Data Record

<u>Field No.</u>	<u>Data</u>	<u>Format</u>	<u>Synopsis</u>
<u>1</u>	<u>Rejection Code</u>	<u>X(5)</u>	<u>Refer to Appendix 4.3</u>
<u>2</u>	<u>Rejection Reason</u>	<u>X(255)</u>	<u>Refer to Appendix 4.3</u>

4.3 Rejection Codes used when submitted file is rejected

<u>Rejection Code</u>	<u>Synopsis</u>
<u>2007</u>	<u>Fail to decrypt uploaded file</u>
<u>4003</u>	<u>Rejected by virus scan</u>
<u>4004</u>	<u>Exceed file size limit</u>
<u>4005</u>	<u>Zero file size</u>
<u>4006</u>	<u>File name too long</u>
<u>4007</u>	<u>File name contains invalid characters</u>
<u>4008</u>	<u>File Submission without client consensus is not accepted</u>
<u>4505</u>	<u>Invalid file name</u>
<u>4506</u>	<u>Invalid file name extension</u>
<u>4507</u>	<u>Beyond submission hour</u>