

SG.18 IMEI Database File Format Specification
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1 Introduction

The GSMA maintains a unique system known as the IMEI Database (IMEI DB), which is a global central database containing information on serial number (IMEI) ranges of millions of mobile devices (e.g. mobile phones, laptop data cards, etc.) that are in use across the world's mobile networks. Network operators can use the information in the IMEI DB white list to determine what types of devices are being used by their customers on their networks, and what features the devices support, so they can offer the latest services to their customers through their networks.

The IMEI DB also supports a black list that contains the IMEIs of mobile devices that should be denied service on mobile networks because they have been reported as lost, stolen, faulty or otherwise unsuitable for use. The IMEI DB acts as a central platform for network operators to share their individual black lists so that devices denied service (blacklisted) by one network will not work on other networks even if the SIM card in the device is changed.

The IMEI DB takes the black lists from operators connected to the system and it compiles the data into one global black list. When a network operator subsequently connects to the IMEI DB, it downloads the latest additions to the global black list (or a national or regional subset of the global list) for input to its own EIR. By loading the IMEI DB black list onto their local EIRs, all handsets reported as lost or stolen on other connected networks are capable of being blocked on their networks.

Although GSMA strongly encourages its member operators that wish to share stolen handset data internationally to directly connect to the IMEI DB, it is that the case that regulatory requirements in some jurisdictions require local national databases to be maintained separately from the IMEI DB rather than allow operators to establish direct connections to the IMEI DB. These Shared Equipment Identity Registers (SEIRs) are of limited effectiveness in combatting handset theft if they operate in isolation in individual countries. In recognition of the need to allow these databases to share data with operators from other jurisdictions, GSMA permits these SEIRs to also connect to the IME DB to maximize the sharing of stolen handset data and the benefits that follow from that.

1.1 Document Cross References

- CNO User Manual, latest version.

1.2 Definitions & Glossary of Terms

The following terms and abbreviations are used in this document:

Term	Explanation
Black List	Holds IMEI numbers of MEs that are prohibited from using GSM networks
Check digit	15th digit of an IMEI - a function of all other digits in the IMEI, calculated according to the Luhn formula (ISO/IEC 7812)
Coloured lists	Collective term for White, Grey and Black Lists
Coloured list record	Record passed between CNO/SEIR and the system indicating a change in status of an IMEI on a coloured list
CNO	Contributor Network Operator – a GSM Association member network operator that uploads IMEI records to the system directly or via an SEIR provider that has been approved for connection to the system by CTUG

CNO Upload	A file uploaded from or on behalf of a CNO to the system containing IMEI records and associated status changes that will be used to update the system coloured lists
Database record	Complete set of information relating to an IMEI on the system
EIR	Equipment Identity Register: PMN operator database holding common status of equipment, plus local status
Grey List	Holds IMEI numbers of MEs that must be monitored when they use the services of a GSM network operator
IMEI	International Mobile station Equipment Identity: electronic serial number of an ME
IMEI DB	IMEI Database
Infocentre	GSM Association private members extranet
Log file	A file generated by the system acknowledging successful/unsuccessful processing of an input file to the submitting operator
ME	Mobile Equipment. A GSM handset or terminal device.
MNO	Mobile Network Operator
PMN	Public Mobile Network
SEIR	Shared Equipment Identity Register or national database that is run and hosted on behalf of GSMA member network operators within individual jurisdictions that connects to the IMEI DB to upload and download data
TAC	Type Allocation Code. 8-digit part of IMEI that is assigned by a Reporting Body
White List	Holds IMEI numbers of MEs that have been accredited for use on GSM networks

1.3 Eligibility Criteria

Network operators that deploy Equipment Identity Registers (EIR) in their networks can connect to the GSMA IMEI DB to share their black lists.

The eligibility of SEIRs to connect to the IMEI DB is subject to the following conditions:

- Background as to why an SEIR connection, rather than allowing operators to connect directly to the IME DB, must be furnished to GSMA.
- The SEIR effectively acts as a proxy for operators that run EIRs on their individual networks.
- The SEIR uploads and downloads data for and on behalf of GSM Association member networks only.
- The SEIR must fully support and comply with the connection protocols and file and record formats defined by GSMA and detailed in this document.
- The users of the SEIR must have entered into a common agreement defining how, and in what circumstances, devices are black listed and how that data is shared. A copy of the agreement must be furnished to GSMA to ensure the IMEI DB can meet the operator requirements. If such an agreement does not already exist GSMA can provide a template agreement.
- Although the SEIR acts as a proxy for operators within the jurisdiction in which it operates, a separate and unique organization identifier must be allocated to and used for each operator to ensure records uploaded can be identified with, and traced, to specific

network operators and that upload and download files are placed in the appropriate private directories.

- User profiles must be created for each individual operator on behalf of which the SEIR uploads and downloads data. This allows each operator to obtain the full benefit of the suite of services and configuration options provided by the IMEI DB whilst ensuring the collective and individual needs of the operators can be satisfied.
- Individual operators remain responsible for ensuring that IMEI DB generated log files, particularly those containing fatal and non-fatal errors, are reviewed and actioned as appropriate. To facilitate this the SEIR host must make the log files available to its participating operators.
- Each operator must provide details of relevant contact personnel within their organization to which communications regarding their use of the IMEIDB can be directed.
- SEIRs wishing to connect to the IMEI DB must be approved by GSMA's CEIR Technical User Group (CTUG) and must confirm compliance with the requirements defined above.

GSMA member companies that wish to request access to the IMEI DB, directly or via an SEIR, should contact imeidb@gsma.com

The remainder of this document defines the file, record and field interface specification between the IMEI Database and a CNO/SEIR. It also provides information on the IMEI Database directory, file and organisation naming conventions.

2 File Structure

Files are passed between the IMEI Database and the CNO (or SEIR, if applicable) through various file types, all of which begin with a file header record, finish with a file trailer record and in between contain zero or more other records.

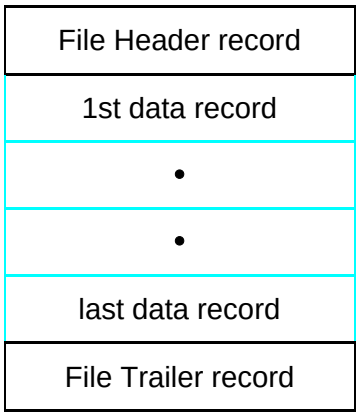

Figure 1: IMEI Database File Transfer – File Structure

The purpose of the file header is to give file related information in a format that is independent of a particular operating system. The receipt of the file trailer record guarantees that all the data records have been received.

3 File Types

3.1 CNO Coloured List file

This file is the fundamental file type by which information is uploaded to the system by CNOs or SEIR systems. The CNO coloured list file shall consist of coloured list records that describe what action is to be performed to a given IMEI.

This file is created by the CNO, or by the SEIR on behalf of a CNO, when it wishes to send a list of changes to the IMEI Database. The file will consist of a file header record, a number of coloured list records and a file trailer record.

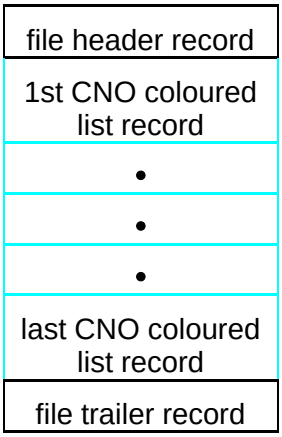

Figure 2: CNO Coloured List file structure

3.2 IMEI Database Coloured List Update file or Full Coloured List file

This file is created by the IMEI DB to pass information regarding changes made to the coloured lists (update files) or to pass the complete list of coloured records (full coloured list file).

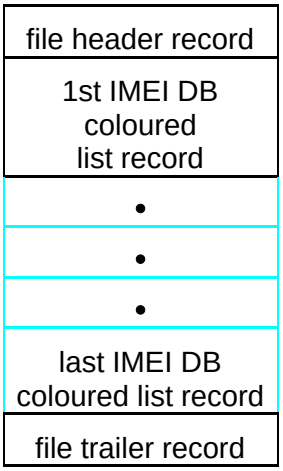

Figure 3: IMEI DB Coloured List file structure

3.3 IMEI Database Log file

This file is created by the IMEI DB to inform the CNO or SEIR about the result of processing a CNO Coloured List file.

A record is generated in a log file when the following events occur:

- The file contains a fatal error that prevents any records being processed
- A record in the submitted file contains a non-fatal error that prevent that individual record from being processed.

- A record in the submitted file successfully adds an IMEI to a black or grey list when that IMEI already exists on a black or grey list under a different CNO (duplicate notification). This log file record type serves as a notification to the CNO only; it is not an error record. Presence of this record in a log file confirms that the submitted IMEI was successfully added to the black or grey list as requested. This log file record type is new for the IMEI Database; it was not supported on CEIR.

If a file is processed without any of the events above generating a record in the log file, then the log file will contain a single File OK record. **Error! Reference source not found.** illustrates the possible structure of log files.

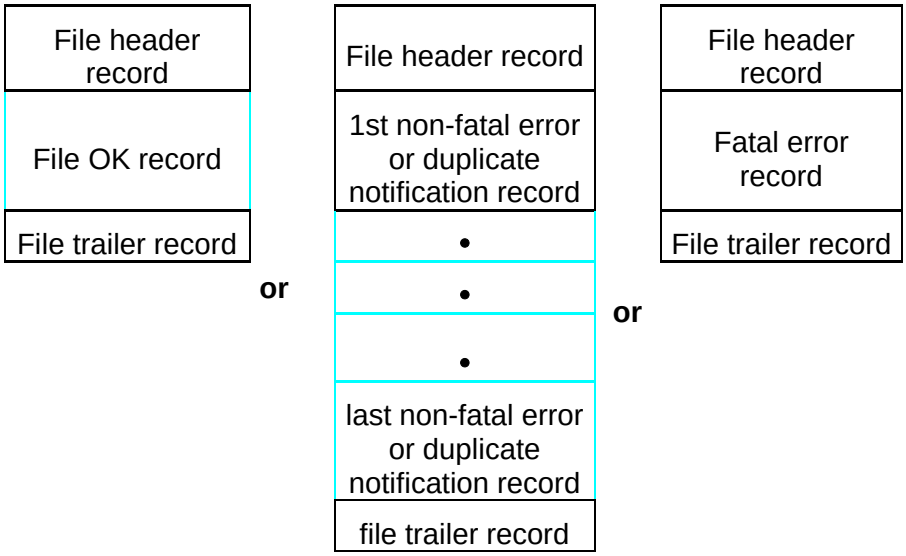

Figure 4: IMEI DB Log file structure

4 Record Definitions

In the record definitions M/C/O have the following meaning:

M = Mandatory

C = Conditional

O = Optional

4.1 File Header record

This record is mandatory as the first record in every file.

Field	M/C/O	Description
record identifier	M	File Header record
file name	M	File name used by originator
organisation ID	M	The CNO or the IMEI DB
Date	M	Date when the file was created
record specification version	M	States the record specification version used to create the records within the file

Table 1: File Header record

4.2 File Trailer record

This record is mandatory as the final record in every file, and the function is to confirm that the whole file has been received. The information from the file header is repeated and additionally, a field which gives the record count (excluding the file header record and file trailer record).

field	M/C/O	Description
record identifier	M	File Trailer record
file name	M	Copied from the File header record
organisation ID	M	Copied from the File header record
Date	M	Copied from the File header record
record specification version	M	Copied from the File header record
record count	M	Total number of records in the file less the file header record and the trailer record

Table 2: File Trailer record

4.3 CNO Coloured List record

This record is created by the CNO to introduce or make a change to an IMEI entry in a coloured list.

field	M/C/O	Description
record identifier	M	CNO Coloured List record
IMEI from	M	The first IMEI number in a range of IMEI numbers
IMEI to	O	The last IMEI number in a range of IMEI numbers, this field may be empty if only a single IMEI is required
coloured list	M	Select coloured list (Black or Grey)
list action	M	Operation (insert or delete) to perform
Reason	M	Value from reason code list (see Section **Error! Reference source not found.**)
clarify reason	O	Description of the reason for the list action
source of request	O	A third party which notified the CNO, typically police or service provider
comments	O	Additional comments

Table 3: CNO Coloured List record

4.4 IMEI DB Coloured List record

IMEI DB coloured list records are created by the IMEI DB to introduce or make a change to an IMEI entry in a coloured list (record present in coloured list update file), or to indicate the status of an IMEI in a full coloured list (record present in full coloured list). There are two formats available for this record type.

- Record format 1 (CEIR format) is identical to that produced by the CEIR that was replaced in 2005 (fully backwards compatible)

- Record format 2 (IMEI DB format) contains six additional fields that provide additional attributes of an IMEI to CNOs.

Each CNO can configure which record format they wish to receive IMEI DB coloured list records in via the system web interface.

4.4.1 IMEI DB Coloured List record (Record format 1)

field	M/C/O	Description
record identifier	M	IMEI DB Coloured List record
IMEI from	M	The first IMEI number in a range of IMEI numbers
IMEI to	M	The last IMEI number in a range of IMEI numbers. This field will be the same as IMEI from if only a single IMEI was provided in the CNO Coloured List Record. The maximum number of IMEIs that may be added to a black or grey list with a single record is configured by the administrator (initial setting at launch of IMEI DB is 500 records)
coloured list	M	Select coloured list
list action	M	Operation to be performed, insert or delete.
Reason	M	The reason code list as defined in Section **Error! Reference source not found.**
clarify reason	O	Descriptive explanation of reason
organisation ID	M	The authority which initiated the change
source of request	O	A third party which notified the CNO, typically police or service provider
comments	O	Additional comments

Table 4: IMEI DB Coloured List record (record format 1)

4.4.2 IMEI DB Coloured List record (record format 2)

field	M/C/O	Description
record identifier	M	IMEI DB Coloured List record
IMEI from	M	The first IMEI number in a range of IMEI numbers
IMEI to	M	The last IMEI number in a range of IMEI numbers. This field will be the same as IMEI from if only a single IMEI was provided in the CNO Coloured List Record. The maximum number of IMEIs that may be added to a black or grey list with a single record is configured by the administrator (initial setting at launch of IMEI DB is 500 records)
coloured list	M	Select coloured list
list action	M	Operation to be performed, insert or delete.
Reason	M	The reason code list as defined in Section **Error! Reference source not found.**
clarify reason	O	Descriptive explanation of reason
organisation ID	M	The authority which initiated the change

source of request	O	A third party which notified the CNO, typically police or service provider
comments	O	Additional comments
device manufacturer	M	Name of device manufacturer.
device marketing name/designation	M	Device marketing name, or device designation if marketing name does not exist on system.
processed date	M	Date the coloured list record was processed by the system, in format DDMMYYYY
processed time	M	Time the coloured list record was processed by the system, in format HH:MM
IMEI Instances	C	Current number of instances of the IMEI on the system. Field is present and mandatory for black and grey list records, not present for white list records
duplicates	C	Indication of whether the IMEI is believed to be unique, or is a known or suspected duplicate. Field is present and mandatory for black and grey list records, not present for white list records

Table 5: IMEI DB Coloured List record (record format 2)

4.5 File OK record

This record is found in a IMEI DB log file and confirms that the received CNO coloured list file has been processed and no errors were found. This record appears in log files only.

field	M/C/O	Description
record identifier	M	File OK record
file name	M	Name of the CNO coloured list file processed
organisation ID	M	The IMEI DB
date	M	Date when the file was processed
record specification version	M	Copied from the CNO coloured list file

Table 6: File OK Record

4.6 Non-fatal Error record

This record is created when a syntax error is found with a CNO coloured list record. This record appears in log files only.

field	M/C/O	Description
record identifier	M	Non-fatal error record
error number	M	Generated by the syntax validating program. Refer to Section **Error! Reference source not found.** for a list of error numbers.
IMEI from received	M	Taken from CNO Coloured List record
IMEI to received	M	Taken from CNO Coloured List record. This field will be the same as IMEI from received if only a single IMEI was provided in the CNO Coloured List Record.

comments	O	Explanation of error generated automatically by the IMEI Database

Table 7: Non-fatal Error record

4.7 Duplicate Notification record

This record is created when a CNO adds an IMEI to the black or grey list when that IMEI has already been added to the black or grey list by another CNO. It serves as a notification that the blacklisted IMEI is a known or a suspected duplicate; it is not an error record. Presence of this record in a log file confirms that the submitted IMEI was successfully added to the black or grey list as requested.

This is a new type of log file record generated by the IMEI DB that was not generated on the original CEIR. This record appears in log files only.

field	M/C/O	Description
record identifier	M	Duplicate notification record
duplicate notification code	M	Indicates if the IMEI is a known or suspected duplicate
IMEI from received	M	Taken from CNO Coloured List record
IMEI to received	M	Taken from CNO Coloured List record. . This field will be the same as IMEI from received if only a single IMEI was provided in the CNO Coloured List Record.
comments	O	Generated automatically by IMEI DB

Table 8: Duplicate Notification record

4.8 Fatal Error record

This record is created by the IMEI DB when reading a CNO Coloured List file and a fatal error condition is found. Further processing is not possible. This record appears in log files only.

field	M/C/O	Description
record identifier	M	Fatal Error record
error number	M	Generated by the syntax validating program. Refer to Section **Error! Reference source not found.** for a list of error numbers.
file name	M	Name of file in which the error was found.
comments	O	Explanation of error generated automatically by the IMEI Database

Table 9: Fatal Error record

5 Encoding Rules

Files sent between the IMEI DB and the CNO shall be character separated data, and shall conform to the following encoding rules:

1. The ISO 646 (US-ASCII) character set shall be used;
2. The first field in every record shall be the record identifier;

3. The field separator is > (HEX 3E);
4. A conditional field where the condition is not fulfilled shall be treated as an empty field.
5. Empty fields are represented by field separators, e.g. "123>>acd";
6. Trailing field separators do not have to be supplied e.g. "vb>zhk>>>>>" may be equally represented by "vb>zhk"
7. Records shall be terminated by a line feed (HEX 0A). Please note End-of-File is not a valid record terminator character.

6 IMEI Database Field definitions

This section contains a more detailed description of the record fields.

For the Type column the following abbreviations are used:

A - Alphabetic

N - Numeric

AN - Alphabetic, Numeric, and any characters from the ISO 646 (US-ASCII) character set

For the Length column the following abbreviations are used:-

0 to x - optional, variable length

to x - mandatory, variable length

x - fixed length

Field	Type	Length	Value / comment
clarify reason	AN	0 to 20	Descriptive explanation of reason for list action
coloured list	A	1	W = white B = black G = grey
comments	AN	0 to 100	additional comments
date	N	6	YYMMDD.
device manufacturer	AN	1 to 150	e.g. Samsung. If information does not exist on system, value shall be ‘Unknown’
device marketing name/ designation	AN	1 to 350	e.g. SGH-T100. If information does not exist on system, value shall be ‘Unknown’

duplicate notification code	N	4	This field informs the CNO in a log file that the IMEI in the submitted and successfully processed record is a known or suspected duplicate. 0100 – Suspected duplicate. The IMEI is already contained on the black or grey list, but was not added with reason code 16. 0101 – Known duplicate. The IMEI is already contained on the black or grey list, and was added with reason code 16 with at least one instance.
duplicates	A	1	U = IMEI considered unique M = IMEI has multiple instances on IMEI DB coloured lists. The IMEI has been blacklisted or greylisted by more than one operator, but not with reason code 16 (known duplicate). D = the IMEI is a known duplicate. The IMEI has been blacklisted or greylisted by at least one operator with reason code 16 (known duplicate). The value of this field will reflect the duplicates status of the IMEI on the IMEI DB following consideration of the record in which it is contained. For example, if the last instance of a black- or grey-listed IMEI is removed from the system, and it was originally added to the coloured list with reason code 16, the value for the duplicates field will be U, indicating that no known duplicates of that IMEI exist on the IMEI DB. This field is present and mandatory if coloured list is not 'W'.
error number	N	4	refer to Section **Error! Reference source not found.** for a full list of error numbers
file name	AN	1 to 12 (UPD & record format 1 LST files) 17 (record format 2 LST files)	file name including file extension e.g. AAAAAAAA.XXX CNO coloured list files submitted to the IMEI DB may be up to 8 characters in length with an additional four character (.UPD) extension. IMEI DB coloured list files in record format 1 will be 7 characters long with an additional 4 character (.LST) extension IMEI DB coloured list files in record format 2 will be 13 characters long with an additional 4 character (.LST) extension. See Section **Error! Reference source not found.** for further information on file naming conventions.
list action	A	1	I = Insert R = Remove

IMEI from	N	14 to 15	First IMEI in the range. The IMEI is a 15 digit number, but may also be received without the check digit The 15th digit of an IMEI is a check digit and is calculated based on the first 14 digits of the IMEI. A mobile device with a valid IMEI is uniquely identified by the first 14-digits only. Although the check digit is retained on the IMEI DB whenever submitted, IMEI DB processing and comparison of IMEIs is based on the first 14-digits only.
IMEI from received	N	15	"IMEI from" field taken from the CNO coloured list file. If 14-digit IMEI was received in CNO coloured list record, a zero check digit will be added.
IMEI instances	N	4	Number of instances of the IMEI on the system. This field can be used by EIRs that do not support multi-party black-listing to determine when an IMEI is to be re-provided with service. The value of this field will reflect the number of instances of the IMEI that exist on the IMEI DB following consideration of the record in which it is contained. For example, if the last instance of a black-listed IMEI is removed from the system, the relevant coloured list record attribute will be zero, indicating that no further instances of that IMEI exist on the IMEI DB. This field is present and mandatory if coloured list is not ‘W’.
IMEI to	N	14 to 15	Last IMEI in the range, this is a 15 digit number, but may also be received without the check digit The 15th digit of an IMEI is a check digit and is calculated based on the first 14 digits of the IMEI. A mobile device with a valid IMEI is uniquely identified by the first 14-digits only. Although the check digit is retained on the IMEI DB whenever submitted, IMEI DB processing and comparison of IMEIs is based on the first 14-digits only.
IMEI to received	N	15	"IMEI to" field taken from the CNO coloured list file. If 14-digit IMEI was received in CNO coloured list record, a zero check digit will be added.
record specification version	N	2	This field states which particular record format has been used to create the records within the file so the receiver is absolutely clear how to interpret the records. This field is used to distinguish between format 1 and format 2 IMEI DB Coloured List records. 01 – record format 1 (backwards compatible CEIR format) 02 – record format 2 (IMEI DB format with six extra fields) CNO coloured list update files should use ’01’.

organisation ID	AN	15	Unique ID assigned to each possible contributor to a coloured list. Includes CNOs, reporting bodies, and the system itself. See Section **Error! Reference source not found.** for guidelines of how Organisation IDs are assigned. Each organisation that has access to the IMEI DB must be assigned a unique identity number for use in all correspondence. The following guidelines are used by the GSM Association when assigning identity numbers. The identity number has the format below: ccc/tttt/nnnn00 where: ccc = country code already allocated according to CCITT E.212 Annex A tttt = type of organisation. For CNOs, this will be 'PLMN' nnnn = organisation number. This must be four digits so 1 will be held as '0001'.
processed date	N	8	DDMMYYYY
processed time	AN	5	HH:MM (24-hour format)
reason	N	4	This field gives an explicit statement why an IMEI is to be inserted or removed from a list such as stolen, found, passed (i.e. approved), etc. The complete reason code list is given in Section **Error! Reference source not found.**.
record count	N	at least 1 character; no defined maximum	Number of records in the file excluding header and trailer records.

record identifier	N	2	The first field in every record is the record identifier, this field explicitly states the record type which is the first step for syntax analysis. 10 = File Header 15 = IMEI DB Coloured list 30 = Fatal Error 40 = File OK 55 = CNO Coloured List 60 = Non-fatal error 70 = Duplicate notification 90 = File Trailer
source of request	AN	0 to 25	a third party which notified the CNO, typically police or service provider

7 Naming Conventions

7.1 Private Directory names

Each CNO will be provided with a private upload and a download directory, which will be created on the IMEI DB under the following paths:

Upload directory path

`/PRIVATE/<OPERATOR-ABBREVIATION>/UPLOAD/`

Download directory path

`/PRIVATE/<OPERATOR-ABBREVIATION>/DOWNLOAD/`

`<OPERATOR-ABBREVIATION>` shall consist of 4 uppercase characters and shall respect the TADIG naming conventions established in document PRD TD.13. The first two characters are taken from the 'Country/Area' column of the CEIR file identifier and identify the country in which the CNO is licensed. The other two characters are taken from the 'Network' column of the TADIG Source & Destination Codes and uniquely identify the network in that country.

For example:

GBOR	is the abbreviation for Orange PCS Ltd
GBVF	Is the abbreviation for Vodafone UK
IEDF	is the abbreviation for O2 Ireland
DED2	Is the abbreviation for Vodafone D2
SETR	is the abbreviation for TeliaSonera Sweden

Only a CNO, SEIR acting as proxy for a CNO and the IMEI DB have read or write access to its private directories.

The CNO or an SEIR acting as proxy for a CNO submits file containing CNO Coloured List records to the upload directory. The CNO-generated file is deleted from the directory once it is processed by the IMEI DB, and a log file is created in that same directory.

The IMEI DB creates files in the download directory according to the CNO's coloured list download file profile and generation schedule.

7.2 Public Directory names

A CNO connected to the IMEI Database, directly or via an SEIR, may at times wish to re-synchronise its entire black, grey or white list data due to downtime on local EIR, unexpected loss of EIR data, etc. Full white, grey and black coloured lists are available in both record format 1 (old CEIR format) and record format 2 (IMEI DB format) in the following directories:

`/PUBLIC/FULL/FORMAT1/` (record format 1)

`/PUBLIC/FULL/FORMAT2/` (record format 2)

Both uncompressed and compressed versions of these full coloured list files are available.

7.3 File names

7.3.1 CNO Coloured List files

Coloured list update files submitted to the IMEI DB by CNOs or by their proxy SEIRs may be up to 8 characters long with an additional 4-character (.UPD) extension. The filename should begin with 3 characters identifying the network as defined in the Country/Area and Network columns of TD.13 CEIR File Identifier.

Example: SEC00021.UPD, is a file sent from Tele2 AB Sweden to the IMEI DB.

7.3.2 IMEI DB Coloured List update files (Record Format 1)

The file name shall consist of 7 characters with an additional 4 character extension (IYYDDDS.LST) where:

I	=	data identification: L for live data, T for visual identification of files containing test data
YY	=	year (for example *05*),
DDD	=	number of the day within the year, 1st February is 032;
S	=	sequence number (1 is the first; maximum of 9 files per day);

Example: The second IMEI DB Coloured List file for each CNO receiving files in record format 1 on the first day of February, 2013 would be L130322.LST.

7.3.3 IMEI DB Coloured List update files (Record Format 2)

The file naming convention for record format 2 files is below. Because custom files are created for each CNO, the extended filename provides an indication of which CNO the file was created for.

The record format 2 file name shall consist of 13 characters with an additional 4 character extension (ICCNNYYMMDDSS.LST) where:

I	=	data identification: L for live data
CC	=	country code (taken from the 'Country/Area' column of the CEIR file identifier of TD.13
NN	=	network code (taken from the 'Network' column of the TADIG Source & Destination Codes of TD.13)
YY	=	year in two digit
MM	=	month
DD	=	day
SS	=	sequence number for that operator for that day, starting 01. (allows for multiple files per day per CNO)

Example: If receiving files in record format 2, the first IMEI DB coloured list file for TDC Mobil A/S Denmark on 28th January 2013 would be LDKTD13012801.LST

7.3.4 IMEI DB log files

The IMEI DB log file name shall be identical to the CNO Coloured List file name except the extension will be LOG instead of UPD.

Example: SEC00021.LOG.

7.3.5 IMEI DB Complete list -files

GREY.FUL for the uncompressed grey list,

BLACK.FUL for the uncompressed black list,

WHITE.FUL for the uncompressed white list,

GREY.FUL.gz for the compressed grey list,

BLACK.FUL.gz for the compressed black list,

WHITE.FUL.gz for the compressed white list,

7.3.6 CNO test files.

During testing with the IMEI Database, CNO test coloured list files should be prefixed by T for easy visual identification

Example: TSEC0021.UPD

8 Handling of ranges on the IMEI Database

A CNO can introduce or update a range of consecutive IMEIs on an IMEI DB coloured list using a single record. The maximum number of IMEIs that can be introduced or updated is controlled by an administrator-configured parameter, which is set to 500.

A non-fatal error associated with any IMEI within a range submitted by a CNO to the IMEI DB in a coloured list record will cause processing of that record to fail. No updates will be made to the IMEI DB. A single non-fatal error in the associated log file will be generated. The non-fatal error will refer to the IMEI range as submitted.

Similarly, a single duplicate notification record will be generated in a log file if any of the IMEIs submitted as part of a range would cause a duplicate notification record to be generated.

Once successfully added to the IMEI DB, each IMEI submitted as part of a range is stored as a separate database record, which allows each IMEI to be updated individually in the future. Each IMEI submitted as part of a range will be reproduced in IMEI DB coloured list files as a separate record. For example, a range of 10 IMEIs blacklisted by a CNO using a single record will appear as 10 separate records in a coloured list file generated by the IMEI DB.

9 Code Lists

9.1 Reason Code List

A list of reason codes supported on the IMEI Database at launch is below. New reason codes may be added to the system with the approval of the GSM Association CEIR Technical User Group (CTUG). Contact sg@gsma.com for more details.

Code	Value	List	Direction	Usage	Comments
0001	Passed	White	Insert	New TAC allocation	Used for all new TAC and serial number range allocations except for new Software version and model names.
0009	Withdrawn	White	Delete	TAC allocation withdrawn	Can be used to remove TAC & serial number range allocation added with codes 1, 91 & 92.
0010	Faulty or Broken	Black/ Grey	Insert	Use when inserting an IMEI on the black or grey-lists if the equipment is suspected to be faulty or broken.	Can only be removed with reason code 18 & 22.
0011	Stolen or Lost	Black	Insert	Use when inserting an IMEI on the black-list if the equipment has been identified as stolen or lost. This is NOT a Duplicated IMEI	Can only be removed with reason code 14 & 22.
0014	Found	Black	Delete	Use when removing an IMEI from the black-list if equipment previously designated as stolen has been found	Can be used to remove IMEIs added to black/grey-lists with reason code 11 (stolen or lost) only.
0016	Duplicated IMEI	Black/ Grey	Insert	Use when inserting an IMEI on the black or grey-lists when the IMEI has been copied into several different mobiles	Can only be removed with reason code 20 & 22.
0018	Repaired	Black/ Grey	Delete	Use when removing from the black or grey-list when the IMEI had been previously designated as Faulty or Broken (reason code 10) only	
0020	Unique IMEI	Black/ Grey	Delete	Use when removing from the black or grey-list when the IMEI had been previously designated as duplicated (reason code 16) only	
0022	Aged IMEI	Black/ Grey	Delete	Used when removing from the black or grey-list when the IMEI should no longer be black- or grey-listed due to the passage of time.	This code is used for automatic ageing of IMEIs by the system, but may also be used by CNOs. Can be used to remove IMEIs added to black/grey-lists with reason code 10, 11, 16, 23 or 25.
0023	Third party request to	Black	Insert	Used when adding an IMEI to the black or grey-	Can only be removed with reason

	add			list in response to a third party (e.g. law enforcement) request	code 22 & 24.
0024	Third party request to remove	Black	Delete	Used when removing an IMEI from the black or grey-list in response to a third party (e.g. law enforcement) request	Can be used to remove IMEIs added to black/grey-lists with reason code 23 (duplicated IMEI) only.
0025	Unspecified – migrated from CEIR	Black / Grey	Insert	Used for IMEIs on black & grey list migrated from CEIR when CEIR reason code for adding to black/greylist is not supported on IMEI DB (i.e. codes 12, 17, 99)	Reason code only valid for migration. This reason code cannot be used by CNOs. Can be removed with reason code 14, 18, 20, 22, 24.
0091	New SV	White	Insert	New Software Version	Used for allocations involving new software versions
0092	New Model Name	White	Insert	New Model Name	Used for allocations involving new model names.

Table 10: Reason codes supported on IMEI Database

Reason codes on the IMEI DB are generally paired. It is only possible to remove an IMEI with the pair of the reason code with which it was added, although there are exceptions. See **Error! Reference source not found.** below.

Blacklist

Add with code(s)	Remove with code(s)
10	18, 22
11	14, 22
16	20, 22
23	22, 24
25	14, 18, 20, 22, 24

Grey list

Add with code(s)	Remove with code(s)
10	18, 22
16	20, 22
25	18, 20, 22

White list

Add with code(s)	Remove with code(s)
1, 91, 92	9

Table 11: Permitted Reason Codes for adding & removing Coloured List entries

9.2 Error Code List

The IMEI Database generates error messages in log files to indicate to a CNO the reason why a coloured list record or an entire CNO upload file was rejected. The full set of error codes is listed below.

Error no.	Situation	Error log message (all non-fatal messages include line number of associated coloured list record)	Fatal
0001	Specific record sent more than once	Record already exists, line <n>	no

Error no.	Situation	Error log message (all non-fatal messages include line number of associated coloured list record)	Fatal
0002	Attempt to remove an entry which CNO has not created	Record owned by another CNO, remove request ignored, line <n>	no
0003	Attempt to remove an entry which does not exist	Record not found on database, line <n>	no
0004	Syntax or semantics error in file header record	Syntax error in file header record OR Information in header record is invalid	yes
0005	Syntax or semantics error in file trailer record	Syntax error in file trailer record OR Information in trailer record is invalid	yes
0006	File header record not found	File header record not found	yes
0007	File trailer record not found	File trailer record not found	yes
0008	Unable to open file	Unable to open file <filename>	yes
0009	For the IMEI range the 'To' value is less than the 'From' value, or the ‘From’ or ‘To’ value is less than 14 characters or non-numeric	Negative IMEI range defined, line <n> OR Field too short on field <fieldname>, line <n>	no
0010	Reason code is unknown	Invalid reason, line <n>	no
0011	Unreadable data in named field	Invalid characters on field <fieldname>, line <n>	no
0012	The value in the field is invalid or too long	Invalid <fieldname>, line <n> OR Field too long on field <fieldname>, line <n>	no
0013	No value in field	Field missing on field <fieldname>, line <n>	no
0014	Organisation ID in header record does not match organisation ID of submitting CNO	Organisation ID in header record is invalid	yes
0016	The value of the IMEI from field of the CNO coloured list file is not in the right format	Invalid <IMEI_from/IMEI_to>, line <n>	no
0017	Attempt to remove an IMEI from a coloured list with an illegal reason code	Reason code mismatch. Cannot remove IMEI from list with reason code <A>, line <B> <A> is illegal reason code that operator tried to use	no

Error no.	Situation	Error log message (all non-fatal messages include line number of associated coloured list record)	Fatal
0018	No coloured list records in CNO update file	No information in transfer file	yes
0020	Number of records in UPD file exceeds limit specified by IMEI DB administrator **Current Limit set is 30,000**	Too many records in UPD file	yes

Table 12: Log file error codes and text

The system also generates duplicate notifications in log files to indicate when a submitted IMEI record refers to a known or possible duplicate. This record type serves as a notification to the CNO only; it is not an error record. Presence of this record in a log file confirms that the submitted IMEI was successfully added to the black or grey list as requested. This log file record type is new for the IMEI Database; it was not supported on CEIR.

Duplicate Notification Code	Situation	Warning log message (all messages include line number of associated coloured list record)
0100	IMEI is already contained on IMEI DB black or grey lists with reasons other than reason code 16	Suspected duplicate, line <n>
0101	IMEI is already contained on IMEI DB black or grey lists with reason code 16	Known duplicate, line <n>

Table 13: Duplicate Notification codes and text

10 Guidelines for Assigning Organisation Identity Numbers

10.1 Organisation Identifier for CNOs

CNOs have a 15-character unique organisation identifier. Each CNO being given access to the IMEI Database is assigned a unique identity number. The following guidelines are used when assigning identity numbers. The CNO organisation identifier is allotted by the GSM Association. The identity number has the format below:

`ccc/tttt/nnnnff`

Where:

`ccc` = Mobile Country Code (MCC) (already allocated according to CCITT E.212 Annex A and available for reference in GSMA SE.13 Database);

`tttt` = type of organisation. This will be 'PLMN';

`nnnn` = organisation number, based on Mobile Network Code (MNC), also available for reference in GSMA SE.13 Database. This must be four digits so 01 will be held as '0001';

`ff` = '00'. This used to relate to the FAC number obsolete since 31/12/2002.

10.2 Organisation Identifier for Reporting Bodies

Reporting Bodies (RBs) are responsible for allocating TACs and number ranges for new mobile devices, and use the IMEI Database to manage these allocations. New allocations are made available to CNOs through white list records available in IMEI DB full coloured lists and coloured list updates. The organisation ID of the RB responsible for an allocation is contained in the associated white list record. RBs are assigned a 15-character unique organisation identifier in the following format:

`ccc/tttt/xxxxxx`

Where:

`ccc` = country code (see SE.13)

`tttt` = type of organisation. This will be 'TAAU' (Type Approval Authority);

`xxxxxx` = organisation number; An organisation number is allocated to each new RB by the GSMA as needed.

10.3 Organisation Identifier for IMEI Applicants

IMEI Applicants (device manufacturers) submit requests for TAC allocations to the GSM Association via the IMEI Database. These allocations are granted by Reporting Bodies on behalf of the GSM Association using the IMEI DB. New allocations are made available to CNOs through white list records available in IMEI DB full coloured lists and coloured list updates. The organisation ID of the IMEI Applicant to whom an allocation has been granted is contained in the ‘Source of Request’ field of the associated white list record. IMEI Applicants are assigned a 15-character unique organisation identifier in the following format:

`ccc/tttt/xyyyyy`

where:

`ccc` = country code (see SE.13)

`tttt` = type of organisation. This will be 'MANU' (Manufacturers);

`x` = first digit of RB no. i.e., BZT = 1, BABT = 2, DRG = 3, NTA = 4;

`yyyyy` = The remaining yyyyy is sequential

10.4 Organisation Identifier for GSM Association

The organisation identifier for the GSM Association is 272/GSMA/000000. Files and records created by the IMEI Database (IMEI coloured list files & log files & records) contain this organisation ID.

Document Management

Document History

Version	Date	Brief Description of Change	Approval Authority	Editor / Company
3.0.0	November 2003	Document ownership transferred from TADIG to Security Group.		
3.1.0	December 2003	Major update of document to reflect archiving of CEIR-related prds within other working groups		
N/A – IMEI DB numbering scheme	7 Mar 2005	First draft of IMEI Database file format specification		
	15 Mar 2005	Change to CNO test file naming convention and directory paths		
	7 Apr 2005	Minor correction to allowed reason codes. Inclusion of compressed full coloured list files.		
	27 Jul 2005	Clarification of allowed reason codes for black & grey lists		
	21 Sep 2005	Minor change in the full list files compression format to gz		
	26 Oct 2006	Addition of new fatal error code 20 to limit number of records in UPD file		
	11 July 2007	The maximum number of records that can be uploaded in a UPD file is set to 30,000		
	01 Oct 2008	IMEI Database specification replaces CEIR version of SG.18		
5.0	5th November 2013	Changes made to allow national databases connect to the IMEI Database to upload and download data on behalf of GSMA members within individual jurisdictions.	PSMC	J. Moran, GSMA
5.1	12 Dec 2014	Transferred PRD from SG to FASG as SG.18 v5.1	FASG	David Chong, GSMA

Other Information

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