SG.18 Device Registry Specification and Access Policy
Version 8.0
21 March 2024

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1 Introduction

GSMA issues the Type Allocation Code (TAC) on a global basis to device brand owners and manufacturers to create the first 8 digits of the International Mobile Equipment Identify (IMEI), the number that identifies each unique mobile device on all GSM networks. TACs and IMEs are required for all 3GPP-combatible equipment types worldwide including IoT devices, modems and wearables.

All TAC Records are maintained in the GSMA Device Registry, which also contains a Block List of devices flagged by authorised Contributors that should be blocked from sale and / or use on wireless networks. Such devices are flagged, typically due to being reported lost or stolen, but also for other reasons such as broken or faulty.

Authorised mobile network operators also routinely download information from the Device Registry to help make decisions about which devices to block on their own local networks. By sharing information, devices can be blocked on multiple networks even if the SIM card in the device is changed.

1.1 Document Cross References

- Device Registry User Manual
- Device Registry Acceptance Test Plans
- Mobile Device Crime Data Third Party Access Policy

1.2 Definitions & Glossary of Terms

The following terms and abbreviations are used in this document:

Term	Explanation
Authorised TAC List	A Device Status List that holds TAC numbers officially allocated by GSMA for use on GSM networks, represented by the letter ‘W’ in Device Status List Records, that is available for download by CNOs.
Block List	A Device Status List that holds IMEI numbers of MEs that cellular may be blocked from use on cellular networks, including the reason for being inserted or removed, that are represented by the letter ‘B’ in Device Status List Records. Access to this information is subject to GSMA’s Mobile Device Crime Data User Access Policy.
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).
Device Status List Record	Record passed between Contributors and the system to indicate a change in status of an IMEI.
CNO	Contributor Network Operator – a Contributor, either a mobile network operator or mobile virtual network operator, authorised by GSMA to retrieve Device Status List Records from the Device Registry for the purpose of blocking devices on its network. Eligibility defined in Section 1.3.
Contributor	An organisation authorised by GSMA to use the Device Registry to update the Block List. Eligibility defined in Section 1.3.
Database Record	Complete set of information relating to an IMEI on the system.

Term	Explanation
Device Registry	Database that maintains a list of authorised TAC and a list of TAC allocation records and Device Status List records of flagged devices.
Device Registry Platform	GSMA platform (or System) that supports the exchange of Device Status List Records by authorised users.
Device Status List	List in the Device Registry indicating the status of a ME: Block List ('B'), Authorised TAC List ('W').
Download File	System generated file prepared for CNOs based upon their individual Download Profile, configured using the Web Dashboard in accordance with the CNOs' preferences reflected in their Download Profiles.
Download Profile	The data preferences selected by CNOs for inclusion in their unique, regularly scheduled Download Files, prepared automatically by the System.
Equipment Identity Register (EIR)	Cellular network function featuring a database holding common status of MEs, plus local status.
Full Download File	Complete list of Device Status List Records prepared by GSMA for CNOs on request according to their individual Download Profiles.
IMEI	International Mobile station Equipment Identity: electronic serial number of an ME.
Infocentre2	GSMA private members extranet.
Log File	A system generated file in response to each Upload File acknowledging successful/unsuccessful processing of the file and records within.
ME	Mobile Equipment. A GSM handset or terminal device.
MNO	Mobile Network Operator.
MVNO	Mobile Virtual Network Operator. Organisation that provides wireless services using the radio access network of one or more MNOs.
PLMN	Public Land Mobile Network.
SEIR	Shared Equipment Identity Register (or national database) that connects to the Device Registry to exchange Device Status List Records by serving as a proxy for multiple CNOs within individual jurisdictions.
SEIR Provider	GSMA approved organisation appointed by multiple CNOs to deploy, operate and maintain a SEIR. Eligibility defined in Section 1.3.
TAC	Type Allocation Code. 8-digit part of IMEI that is assigned by a Reporting Body
Upload File	Contributor generated file with Device Status List Records uploaded to the System to update a Device Status List.
Web Dashboard	The web interface available to users of the Device Registry at https://imeidb.gsma.com/

1.3 Eligibility Criteria

1.3.1 Contributor

Contributors are commercial entities approved by GSMA to contribute Device Status List Records to update the Block List. Such commercial entities must directly own devices, provide inventory tracking and management solutions and/or operate mobile networks with

the ability to verify wireless device activity. Examples are device manufacturers, insurers, MNOs/MVNOs, asset/inventory managers and issuers of mobile devices.

1.3.2 Contributor Network Operator (CNO)

CNOs are a special type of Contributor, approved by GSMA, that operate a mobile network (MNO or MVNO) with the ability and commitment to programmatically and continually check and block devices flagged by Contributors from multiple countries. CNOs are uniquely permitted to download Device Status List Records from the Device Registry to facilitate on-going device checking and blocking.

1.3.3 SEIR Provider

An SEIR Provider is a GSMA approved organisation appointed by multiple CNOs to deploy, operate and maintain a SEIR that connects to the Device Registry to exchange Device Status List Records.

SEIR eligibility is subject to the following criteria:

- Explanation as to why an SEIR is necessary, rather than allowing CNOs to connect directly to the Device Registry.
- The SEIR effectively acts as a proxy for operators that run EIRs, or have alternative means to check and block devices, on their individual networks.
- The SEIR must operate only on behalf of CNOS who are GSMA members.
- The SEIR must fully support and comply with the connection protocols and file and record formats defined herein.
- The CNOs using the SEIR must have entered into a common agreement defining how, and in what circumstances, devices are reported, blocked and shared. A copy of the agreement must be furnished to GSMA to ensure the Device Registry can meet the operator requirements. GSMA can provide a template agreement if such an agreement does not already exist.
- Although the SEIR acts as a proxy for CNOs within the jurisdiction in which it operates, a separate and unique organization identifier must be allocated to and used for each CNO to ensure uploaded Device Status List Records are properly identified and placed in the appropriate private directory.
- Each CNO must have its own Download Profile. This allows each CNO to obtain the full benefit of the suite of services and configuration options provided by the Device Registry.
- The SEIR provider must make the Log Files available to participating CNOs who are responsible for reviewing and taking action as appropriate.
- Each CNO must maintain relevant contact details in the Device Registry to facilitate resolution of inquiries from other authorised users of the Device Registry.

Organisations that wish to use the Device Registry should contact mailto:imeihelpdesk@gsma.com

The remainder of this document defines the file, record and field interface specification between the Device Registry and authorised users. It also provides information on the Device Registry directory, file and organisation naming conventions.

2 File Structure

Files are passed between the Device Registry and authorised users 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.

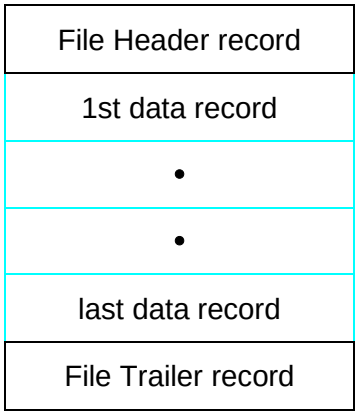

Figure 1: Device Registry File Transfer – File Structure

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

Three file types are exchanged between the system and Contributors.

Type	Prepared by	Purpose
Upload File	Contributor	Update the Block List.
Download File	System	CNO use only. Update device status in local database using the Block List and Authorised TAC List.
Log File	System	Update Contributor in response to processing of an Upload File

3.1 Contributor Upload File

The Upload File is the fundamental file type by which Contributors upload device status information to the Device Registry. The Upload File consists of records that describe what action is to be performed to a given IMEI.

The Upload File consists of a file header record, a number of Device Status List Records and a file trailer record.

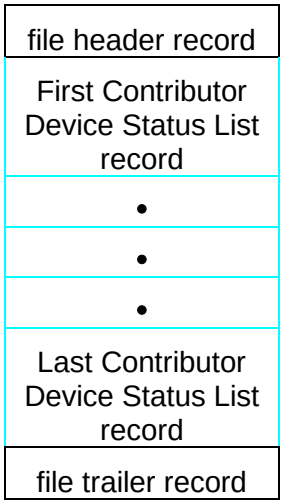

Figure 2: Contributor Upload File structure

3.2 System Download File

A custom Download File is created by the System for each CNO identifying changes made in the Device Registry to the Device Status List for use in their own local database.

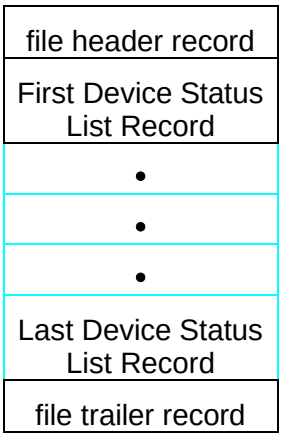

Figure 3: System Download File structure

3.3 System Log File

The system creates a Log File in response to each Upload File and places it in the corresponding Contributor private upload file folder.

A record is generated in the Log File in response to any of the following events:

- The Upload File contains a fatal error that prevents any records being processed
- A record in the Upload File contains a non-fatal error preventing that individual record from being processed.
- A record in the Upload File successfully adds an IMEI to a Device Status List when that IMEI already exists on a Device Status List under a different Contributor (duplicate notification). This Log File record type serves as a notification to the Contributor only; it is not an error record. Presence of this record in a Log File confirms the submitted IMEI was successfully added to the Device Status List as requested.

The Log File will contain a single File OK record an Upload 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. Figure 4 illustrates the possible structure of Log Files.

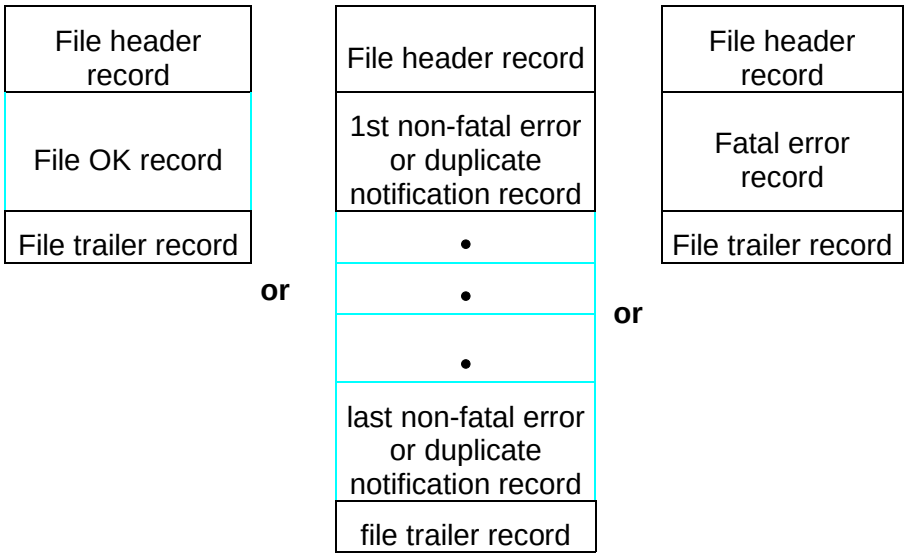

Figure 4: System Log File structure

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 Contributor or the Device Registry
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 Contributor Upload File Record

This record is created by the Contributor to introduce or make a change to an entry in a Device Status List.

Field	M/C/O	Description
Record identifier	M	Device Status 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
Device Status list	M	Block List (B)
List action	M	Operation to insert (I) or remove (R)
Reason	M	Value from reason code list (see Section 9.1)
Clarify reason	O	Description of the reason for the list action
Source of request	O	A third party which notified the Contributor (e.g. Police, reseller, etc.)
Comments	O	Additional comments

Table 3: Device Status List record

4.4 System Download File Record

Download File records are created by the System to introduce or make a change to the local Device Status List of a CNO's EIR. Two formats are available for this record type.

- Record Format 1
- Record Format 2

Each CNO can configure which record format it wishes to receive via the Web Dashboard.

4.4.1 System Device Status List Record (Record Format 1)

Field	M/C/O	Description
Record identifier	M	System generated record identifier
IMEI from	M	The first IMEI number in a range of IMEI numbers

Field	M/C/O	Description
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 Device Status List Record. The maximum number of IMEIs that may be added to a Device Status List with a single record is 500.
Device Status List	M	Block List (B) Authorised TAC List (W)
List action	M	Operation to be performed, insert (I) or remove (R).
Reason	M	The reason code list as defined in section 9.1
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 Contributor, (e.g. police notification to MNO)
Comments	O	Additional comments

Table 4: System Device Status List Record (Record Format 1)

4.4.2 System Device Status List Record (Record Format 2)

Field	M/C/O	Description
Record identifier	M	System generated record identifier
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 Device Status List Record. The maximum number of IMEIs that may be added to a Device Status List with a single record is 500)
Device Status List	M	Block List (B) Authorised TAC List (W)
List action	M	Operation to be performed, insert (I) or remove (R).
Reason	M	The reason code list as defined in Section 9.1
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 Contributor (e.g. police)
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 Device Status Record was processed by the system, in format DDMMYYYY
Processed time	M	Time the Device Status Record was processed by the system, in format HH:MM

Field	M/C/O	Description
IMEI Instances	C	Current number of instances of the IMEI on the system. Field is present and mandatory for Block list records, not present for Authorised TAC 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 Block List records, not present for Authorised TAC List records

Table 5: System Device Status Record (Record Format 2)

4.5 File OK record

This record, found only in a Log File, is created by the system and confirms that the received Contributor Upload File has been processed and no errors were found.

Field	M/C/O	Description
Record identifier	M	File OK record
File name	M	Name of the Upload File processed
Organisation ID	M	The Device Registry organisation ID
Date	M	Date when the file was processed
Record specification version	M	Copied from the Upload File

Table 6: File OK Record

4.6 Non-fatal Error record

This record, found only in a Log File, is created by the System when a syntax error is found with a Device Status Record.

Field	M/C/O	Description
Record identifier	M	Non-fatal error record
Error number	M	Generated by the syntax validating program. Refer to Section 9.2 for a list of error numbers.
IMEI from received	M	Taken from Device Status List Record
IMEI to received	M	Taken from Device Status List Record. This field will be the same as IMEI from received if only a single IMEI was provided in the Device Status List Record.
Comments	O	Explanation of error generated automatically by the System

Table 7: Non-fatal Error record

4.7 Duplicate Notification record

This record, found only in a Log File, is created by the System when a Contributor adds an IMEI to the Device Status List when that IMEI has already been added to the same Device Status List by another Contributor. It serves as a notification that the flagged 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 Device Status List as requested.

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 Upload File record
IMEI to received	M	Taken from Upload File record. . This field will be the same as IMEI from received if only a single IMEI was provided in the Upload File Record.
Comments	O	Generated automatically by the System

Table 8: Duplicate Notification record

4.8 Fatal Error record

This record, found only in a Log File, is created by the System when reading an Upload File and a fatal error condition is found. Further processing is not possible.

Field	M/C/O	Description
Record identifier	M	Fatal Error record
Error number	M	Generated by the syntax validating program. Refer to Section 9.2 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 System

Table 9: Fatal Error record

5 Encoding Rules

Files exchanged between the Device Registry and Contributors are character separated data, and 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 Device Registry 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
Device Status List	A	1	W = Authorised TAC List B = Block List
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 the System, value shall be ‘Unknown’
Device marketing name/ designation	AN	1 to 350	e.g. SGH-T100. If information does not exist on the System, value shall be ‘Unknown’

Field	Type	Length	Value / comment
Duplicate notification code	N	4	This field informs the Contributor 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 Block List, but was not added with reason code 16. 0101 – Known duplicate. The IMEI is already contained on the Block 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 a Device Status List. The IMEI has been flagged by more than one Contributor, but not with reason code 16 (known duplicate). D = the IMEI is a known duplicate. The IMEI has been flagged by at least one Contributor with reason code 16 (known duplicate). The value of this field will reflect the duplicate status of the IMEI on the Device Registry following consideration of the record in which it is contained. For example, if the last instance of an IMEI on a Device Status List is removed from the System, and it was originally added to the Device Status 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 Device Registry. This field is present and mandatory if Device Status List is not 'W'.
Error number	N	4	Refer to Section 9.2 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 Contributor Upload Files submitted to the Device Registry may be up to 8 characters in length with an additional four character (.UPD) extension. System Download Files in Record Format 1 will be 7 characters long with an additional 4 character (.LST) extension System Download Files in Record Format 2 will be 13 characters long with an additional 4 character (.LST) extension. See Section 7.3 for further information on file naming conventions.
List action	A	1	I = Insert R = Remove

Field	Type	Length	Value / comment
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 Device Registry whenever submitted, Device Registry processing and comparison of IMEIs is based on the first 14-digits only.
IMEI from received	N	15	"IMEI from" field taken from the Contributor Upload File. If 14-digit IMEI was received in a Device Status 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-Contributor flagging 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 Device Registry following consideration of the record in which it is contained. For example, if the last instance of an IMEI designated on a Device Status List is removed from the Device Registry, the relevant coloured list record attribute will be zero, indicating that no further instances of that IMEI exist in the Device Status List. This field is present and mandatory if Device Status 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 Device Registry whenever submitted, Device Registry processing and comparison of IMEIs is based on the first 14-digits only.
IMEI to received	N	15	"IMEI to" field taken from the Contributor Upload File. If 14-digit IMEI was received in Device Status 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 Record Format 1 and Record Format 2. 01 – Record Format 1 02 – Record Format 2 Contributor Upload Files should use ’01’.

Field	Type	Length	Value / comment
Organisation ID	AN	15	Unique ID assigned to each possible Contributor to a Device Status List. Also includes reporting bodies, and the System itself. See Section 10 for guidelines of how Organisation IDs are assigned. Each organisation that has access to the Device Registry must be assigned a unique identity number for use in all correspondence. The following guidelines are used by GSMA 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. 'PLMN' for all Contributors 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 Device Status List. Refer to Section 9.1 for a complete list of reason codes.
Record count	N	at least 1 character ; no defined maximum	Number of records in the file excluding header and trailer records.

Field	Type	Length	Value / comment
Record identifier	N	2	The first field in every record is the record identifier, which explicitly states the record type and is the first step for syntax analysis. 10 = File Header 15 = System Device Status List Record 30 = Fatal Error 40 = File OK 55 = Contributor Device Status List Record 60 = Non-fatal error 70 = Duplicate notification 90 = File Trailer
Source of request	AN	0 to 25	a third party which notified the Contributor

7 Naming Conventions

7.1 Private Directory names

Each Contributor is provided with a private upload director while each CNO is additionally provided with a download directory.

Upload directory path (all Contributors)

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

Download directory path (CNOs only)

`/PRIVATE/<OPERATOR-ABBREVIATION>/DOWNLOAD/`
`<CNO-ABBREVIATION>` consists of 4 uppercase characters. The first two characters identify the country in which the CNO is licensed and use the relevant ISO3166-1 alpha-2 codes. The other two characters are the last two characters taken from the TADIG Code as specified in TS.25 and as registered in GSMA Roaming Gateway to uniquely identify the network in that country.

For example:

BRCL	Is the abbreviation for Claro Brazil
CARW	Is the abbreviation for Rogers Canada
GBVF	Is the abbreviation for Vodafone UK
USVZ	Is the abbreviation for Verizon in the USA

Only an authorised Contributor may have access to its private directories.

The Contributor submits Upload Files containing Device Status List Records to the upload directory. The Contributor Upload File is deleted from the directory once it is processed and a System generated Log File is created in that same directory.

The System creates Download Files in the download directory according to the CNO's Download Profile.

7.2 Public Directory names

Reserved for future use.

7.3 File names

7.3.1 Contributor Upload Files

The Upload File name may be up to 8 characters long with an additional 4-character (.UPD) extension. The filename should begin with the first 3 characters of the Contributor abbreviation described in Section 7.1 above.

Example: GBV07371.UPD is an Upload File sent from Tele2 AB Sweden to the Device Registry.

7.3.2 System Download Files (Record Format 1)

The Download File name consists 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 *20*),
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 System Download File for each CNO receiving files in Record Format 1 on the first day of February, 2020 would be L200322.

7.3.3 System Download Files (Record Format 2)

The file naming convention for System Download Files in Record Format 2 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 ISO3166-1 alpha-2 codes)
NN	=	network code (taken from the last two characters of the TADIG Code as specified in TS.25 and as registered in GSMA Roaming Gateway)
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 System Download File for TDC Mobil A/S Denmark on 28th January 2020 would be LDKTD20012801.LST

7.3.4 System Log Files

The System Log File name is identical to the Contributor Upload File name except the extension will be LOG instead of UPD.

Example: SEC00021.LOG generated by the System after processing SEC00021.UPD.

7.3.5 Contributor test files

Contributor test Upload Files should be prefixed by T for easy visual identification.

Example: TSEC0021.UPD

8 Handling of Ranges on the Device Registry

Contributors can introduce or update a range of consecutive IMEIs in the Device Registry using a single record. The maximum number of IMEIs that can be introduced or updated is 500.

A non-fatal error associated with any IMEI within a range submitted in an Upload File will cause processing of that record to fail. No updates will be made to the Device Registry. 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 Device Registry, 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 System Download Files as a separate record. For example, a range of 10 IMEIs inserted to the Block List by a Contributor using a single record will appear as 10 separate records in System Download Files.

9 Code Lists

9.1 Reason Code List

A list of reason codes currently supported by the Device Registry is presented below.

Code	Value	List	Direction	Usage	Comments
0001	Passed	W	Insert	System use only. New TAC allocation	Used for all new TAC and serial number range allocations except for new Software version and model names.
0009	Withdrawn	W	Remove	System use only. TAC allocation withdrawn	Can be used to remove TAC & serial number range allocation added with codes 1, 91 & 92.
0010	Faulty or Broken	B	Insert	Use when inserting an IMEI on the Block List if the equipment is suspected to be faulty or broken.	Can only be removed with reason code 18.
0011	Stolen or Lost	B	Insert	Use when inserting an IMEI on the Block 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.
0014	Found	B	Remove	Use when removing an IMEI from the Block List if equipment previously designated as stolen has been found	Can be used to remove IMEIs added to the Block List with reason code 11 (stolen or lost) only.
0016	Duplicated IMEI	B	Insert	Use when inserting an IMEI on the Block List	Can only be removed with reason code 20.

				when the IMEI has been copied into several different mobiles	
0018	Repaired	B	Remove	Use when removing from the Block List when the IMEI had been previously designated as Faulty or Broken (reason code 10) only	
0020	Unique IMEI	B	Remove	Use when removing from the Block List when the IMEI had been previously designated as duplicated (reason code 16) only	
0023	Third party request to add	B	Insert	CNO use only when adding an IMEI to the Block List in response to a third party request (e.g. law enforcement)	Can only be removed with reason code 24.
0024	Third party request to remove	B	Remove	CNO use only when removing an IMEI from the Block List in response to a third party request (e.g. law enforcement)	Can be used to remove IMEIs previously added to Block Lists with reason code 23.
0026	Fraudulently obtained	B	Insert	CNO use only. Use when inserting an IMEI on the Block List if the equipment has been identified as having been fraudulently obtained from the operator. In order to use there must be (i) documentary and/or other evidence that prima facie supports the allegation of fraud, and (ii) sufficient evidence to file a police complaint, regardless of whether such a complaint is filed.	It is understood there may be variations in the definition of fraud. CNOs are encouraged to establish formal agreements on a regional or country basis on the conditions to be satisfied prior to using this code to allow for jurisdictional variances.[1]
0027	Validly obtained	B	Remove	CNO use only. Use when removing an IMEI from the Block List if equipment previously designated as fraudulently obtained has been reclassified as validly obtained.	Can be used to remove IMEIs added to the Block List with reason code 26 (fraudulently obtained) only.

[1] It is envisaged that this code will be used on a country by country basis where a formal agreement exists between the operators on the conditions to be satisfied before blocking a device using the code. It is not envisaged that operators from one country will download IMEIs from other countries that use this code to allow for jurisdictional variances.

0028	Court ordered block	B	Insert	CNO use only. Use when blocking a device in response to a Court Order.	An order issuing from a competent court that requires a CNO to block an IMEI e.g. court order to block a device used illegally in correctional facilities (aka “Contraband”).
0029	Court ordered unblock	B	Remove	CNO use only. Use when unblocking a device in response to a Court Order.	An order issuing from a competent court that compels or allows a CNO to unblock an IMEI that was previously compelled to block.
0091	New SV	W	Insert	System use only. New Software Version	Used for TAC allocations involving new software versions
0092	New Model Name	W	Insert	System use only. New Model Name	Used for TAC allocations involving new model names.

Table 10: Device Registry Reason codes

Reason codes on the Device Registry 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 pairing of reason codes below.

Block List (B)

Add with code(s)	Remove with code(s)
10	18
11	14
16	20
23	24
25	14, 18, 20, 24
26	27
28	29

Authorised TAC List (W)

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

Table 11: Permitted Reason Codes to Insert or Remove IMEIs from Device Status Lists

9.2 Error Code List

The System generates error messages in Log Files to indicate to a Contributor the reason why a Device Status Record or an entire 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 Device Status List Record)	Fatal
0001	Specific record sent more than once	Record already exists, line <n>	no
0002	Attempt to remove an entry which Contributor has not	Record owned by another Contributor, remove request ignored, line <n>	no

Error no.	Situation	Error log message (all non-fatal messages include line number of associated Device Status List Record)	Fatal
	created		
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 Contributor	Organisation ID in header record is invalid	yes
0016	The value of the IMEI from field of the Contributor Upload File is not in the right format	Invalid <IMEI_from/IMEI_to>, line <n>	no
0017	Attempt to remove an IMEI from a Device Status 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 Contributor tried to use	no

Error no.	Situation	Error log message (all non-fatal messages include line number of associated Device Status List Record)	Fatal
0018	No records in Contributor Upload File	No information in transfer file	yes
0020	Number of records in Contributor Upload File exceeds limit of 30,000 (set by System administrator)	Too many records in Upload 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 Contributor only; it is not an error record. Presence of this record in a Log File confirms the submitted IMEI was successfully added to the Device Status List as requested.

Duplicate Notification Code	Situation	Warning log message (all messages include line number of associated coloured list record)
0100	IMEI is already contained on the Block List with reasons other than reason code 16	Suspected duplicate, line <n>
0101	IMEI is already contained on the Block List 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 Contributors

Contributors have a 15-character unique organisation identifier. Each Contributor is assigned a unique identity number. The following guidelines are used when assigning identity numbers. The Contributor organisation identifier is allotted by the GSMA. 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 Roaming Gateway);

`tttt` = type of organisation. This will be 'PLMN', even where the organisation is not a mobile network operator;

`nnnn` = organisation number, based on Mobile Network Code (MNC), also available for reference in GSMA Roaming Gateway. This must be four digits so 01 will be held as '0001'; For Contributors that are not network operators the first two digits will be

'99' and the last two will be allocated sequentially e.g the first non-operator Contributor will be '9901', the second will be '9902', and so on.

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

10.2 Organisation Identifier for Reporting Bodies

GSMA works with Reporting Bodies (RBs) to allocate TACs for new mobile devices. New allocations and updates in the TAC Allocation List are optionally available to CNOs through Device Status List Records in System Download Files. The organisation ID of the RB responsible for an allocation is contained in the associated Device Status Record. RBs are assigned a 15-character unique organisation identifier in the following format:

`ccc/tttt/xxxxxx`

Where:

`ccc` = country code (see TS.25 and GSMA Roaming Gateway)

`tttt` = type of organisation = 'TAAU' (Type Approval Authority);

`xxxxxx` = organisation number allocated by the GSMA.

10.3 Organisation Identifier for IMEI Applicants

IMEI Applicants (device manufacturers) submit requests for TAC allocations through the GSMA TAC allocation platform via the Device Registry. These allocations are granted by Reporting Bodies on behalf of the GSMA using the Device Registry. New allocations and updates in the TAC Allocation List are optionally available to CNOs through Device Status List Records in System Download Files. 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 TAC Allocation List record. IMEI Applicants are assigned a 15-character unique organisation identifier in the following format:

`ccc/tttt/xyyyyy`

where:

`ccc` = country code (see TS.25 and GSMA Roaming Gateway)

`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 GSMA is 272/GSMA/000000. Files and records created by the Device Registry (System Download Files, Log Files and records) contain this organisation ID.

Annex A Document Management

A.1 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 – Device Registry 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
6.0	17 February 2020	Addition of reason codes to facilitate the blocking of fraudulently obtained devices, changes to allow network operators without EIRs to connect to the IMEI Database and to allow MVNO access to the IMEI Database	FASG	James Moran, GSMA

Version	Date	Brief Description of Change	Approval Authority	Editor / Company
7.0	10 Dec 2020	Replace use of Coloured List terminology. Discontinue the Grey List and Full Files. Modify Contributor and User definitions for clarity and to allow write-only access by commercial organisations who are not CNOs. Add new reason codes for Court Ordered CNO device blocking.	FASG	James Moran, GSMA
8.0	21 Mar 2024	Extension of Device Registry access to asset managers and removal of aged reason code (0022) in line with DSG approved proposals. Editorial updates to replace Infocentre with Member Gateway/Roaming Gateway as appropriate.	ISAG	James Moran, GSMA

A.2 Other Information

Type	Description
Document Owner	FASG
Editor / Company	James Moran, GSMA

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Your comments or suggestions & questions are always welcome.