



## IMEI Allocation and Approval Guidelines

**Version 5.0**

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# 1 INTRODUCTION

This document outlines the allocation principles applicable to the International Mobile Equipment Identity numbers (IMEI). The following areas are covered.

- Allocation principles for IMEI.
- Allocation principles for Reporting Bodies.
- The role of the GSM Association.
- Security requirements for the IMEI
- Software Version Numbers
- Single band , Multiband, Multimode and Multi RAT (Radio Access Technology) Mobile Equipment (ME)
- Test IMEI.

Refer to 3GPP2 SC.R4001-0 Global Wireless Equipment Numbering Administration Procedures document regarding Multi RAT (Radio Access Technology) 3GPP2/3GPP Mobile Equipment (ME) Global Administration coordination.

Refer also to the applicable GSM and 3GPP Standards such as 02.07, 02.09, 02.16, 02.30, 03.03, 04.08, 22.016 and 23.003

The overriding principles for IMEI allocation are preservation of the available number range, the prevention of duplication and the maintenance of security.

## 1.1 Definitions

The term **ME Type** shall be used to refer to GSM Mobile Equipment models and products that are differentiated in the market. GSM ME based on different hardware platforms shall always be identified as a different ME Type. It is possible an ME type may have more than one market name or identifier. GSM ME manufactured or assembled by different manufacturers shall not be referred to as the same ME Type. For the purpose of this document, the term GSM Mobile Equipment includes ME incorporating associated technologies.

The term **ME Build Level** shall refer to changes in ME hardware design. It is recognised that during the product life cycle of an ME Type, changes may be made to the hardware design to reflect improvements to the design or manufacturing process.

The term **Type Allocation** shall refer to the process by which Mobile Equipment (ME) has been allocated an IMEI. This may have been obtained via an organization appointed by the GSM Association, e.g. a Reporting Body

The term **Reporting Body** shall refer to a Body that is recognised by the GSM Association as having authority or competence to allocate IMEIs to ME Types. These Bodies may have also been given authority by their national governments or industry bodies to perform a regulatory conformity assessment procedure or otherwise permit the use of mobiles on networks. There may be more than one Reporting Body in a country.

The term **Type Allocation Holder** shall refer to the entity that has been allocated an IMEI for an ME Type. A Type Allocation Holder may not always be the original manufacturer of the ME. An ME Type may only be allocated to one Type Allocation holder.

It should be noted that, within this document, ME is used to define the equipment being identified with the IMEI. Where the term 'GSM ME' is used within this document it can be considered to be interchangeable with 3G UE solely for the purpose of issues connected to the IMEI.

## 2 INTERNATIONAL MOBILE EQUIPMENT IDENTITY (IMEI)

The International Mobile Equipment Identity number (IMEI) uniquely identifies an individual mobile station. The IMEI is unique to every ME and thereby provides a means for controlling access to GSM networks based on ME Types or individual units.

The "IMEI" consists of a number of fields totalling 15 digits. All digits have the range of 0 to 9 coded as binary coded decimal. Values outside this range are not permitted.

Some of the fields in the IMEI are under the control of the "Reporting Body". The remainder is under the control of the Type Allocation Holder.

For the IMEI format prior to 01/01/03 please refer to Appendix D of this document. The IMEI format valid from 01/01/03 is as shown below:

TAC	Serial No	Check Digit
NNXXXX YY	ZZZZZZ	A

The meaning of the acronyms for the IMEI format from 01/01/03 is:

TAC	Type Allocation Code, formerly known as Type Approval Code
NN	Reporting Body Identifier
XXXXYY	ME Type Identifier defined by the Reporting Body
ZZZZZZ	Allocated by the Reporting Body but assigned per ME by the manufacturer
A	Check digit, defined as a function of all other IMEI digits

### 2.1 IMEI Format valid from 01/01/03

#### 2.1.1 Type Allocation Code - 8 digits

The TAC identifies the Type Allocation Code, formerly known as the Type Approval Code, for the type of the ME. It consists of two parts. The first part (NN) defines the Reporting Body allocating the TAC and the second part (XXXXYY) defines the ME type.

The following allocation principles apply:

- Each ME Type shall have a unique TAC code or set of TAC codes.
- More than one TAC may be allocated to an ME Type. This may be done to permit the production of more than 1 million units or to distinguish between market variations.
- The TAC code shall uniquely identify an ME Type.
- Where there is more than one Type Allocation Holder for an ME Type then the TAC code shall be different.

### 2.1.2 Reporting Body Identifier (NN) – 2 digits

The first two digits of the TAC are the Reporting Body Identifier. These digits indicate which Reporting Body issued the IMEI. The GSM Association shall coordinate the allocation of the first 2 digits to Reporting Bodies. See Appendix A for IMEI Reporting Body Identifiers that have already been allocated.

Valid Range 00 – 99 in accordance with allocations in Appendix A

The following allocation principles apply:

- The GSM Association shall coordinate the allocation of the Reporting Body Identifier.
- The Reporting Body Identifier shall uniquely identify the Reporting Body.
- If for some reason the same Reporting Body Identifier must be used then the first digit of the ME Type Identifier will also be used to define the Reporting Body. The GSM Association shall coordinate the allocation to the Reporting Body of the range of values of the first digit of the ME Type Identifier. This range shall be contiguous. This approach is to be avoided if at all possible.

### 2.1.3 ME Type Identifier (XXXXYY) – 6 digits

The following 6 digits of the TAC are under the control of the Reporting Body. These 6 digits together with the Reporting Body 2 digit identifier uniquely identify each ME Type.

Valid Range 000000 – 999999

The following allocation principles apply:

- Every ME Type shall have a unique TAC or set of TACs. A TAC may not be associated with more than one ME Type. An ME Type may have more than one TAC.
- Major changes to the ME Build Level shall require a new ME Type Identifier (TAC). Major changes to ME Build Level would normally include the addition of new features or changes that modify the performance of the ME Type. Minor changes to the ME Build Level that do not change the performance of the ME require no new ME Type Identifier (TAC). The Reporting Body shall determine what constitutes a major or minor change to the ME Build Level.
- The ME Type Identifier should be allocated sequentially wherever possible. Gaps in the ME type range are to be avoided if possible.
  - During the interim changeover period of 01/01/03 – 31/3/04 the least significant two digits (YY) were set at 00.
  - During the interim changeover period of 01/01/03 – 31/3/04, the top four digits (XXXX) allocated by any reporting body were to be allocated sequentially, for example the TAC code allocated following NN123400 would be NN123500. From 1/4/04 the least significant two digits (YY) will be incremented sequentially.
- Multiband or Multimode ME shall only have one TAC and therefore one IMEI. Where more than one Reporting Body is involved in the allocation of the IMEI, coordination is required between the Reporting Bodies to ensure that all requirements have been met before the IMEI is allocated.
-

#### **2.1.4 Serial Number (ZZZZZZ) - 6 digits**

The Serial Number (SNR) is used to uniquely identify each individual ME of a particular ME Type. The number range is allocated by the Reporting Body but assigned to individual mobile stations by the manufacturer.

Valid Range 000000 – 999999

The following allocation principles apply.

- Each ME of each ME Type must have a unique Serial Number for a given TAC code.
- SNR shall be allocated sequentially wherever possible.
- In special circumstances (i.e. low volume product), the Reporting Body may allocate a partial range to be used for the SNR.

#### **2.1.5 Check Digit – 1 digit**

The Check Digit shall be calculated according to Luhn formula (ISO/IEC 7812). (See GSM 02.16 / 3GPP 22.016). The Check Digit is a function of all other digits in the IMEI. The Software Version Number (SVN) of a mobile is not included in the calculation.

The purpose of the Check Digit is to help guard against the possibility of incorrect entries to the CEIR and EIR equipment.

The presentation of the Check Digit both electronically (see Section 5) and in printed form on the label and packaging is very important. Logistics (using bar-code reader) and EIR/CEIR administration cannot use the Check Digit unless it is printed outside of the packaging, and on the ME IMEI/Type Accreditation label.

### **2.2 IMEI Software Version Numbers (SVN)**

The network can also request the IMEISV from Phase 2 (or later) ME. The SVN is described in 3GPP TS 22.016 and in TS GSM 02.16. A recommendation to terminal manufacturers is contained; informative Appendix C.

## **3 IMEI SECURITY AND INTEGRITY GUIDELINES**

The main purpose of the IMEI is to be able to take measures against the use of stolen equipment or against equipment of which the use in networks cannot or no longer be tolerated for technical reasons. Secondary purposes include special network handling of specific ME Types, the tracing and prevention of malicious call use, assistance in fraud investigation and configuration management of the customer equipment base.

The management of ME identities is achieved via the use black, white and grey lists on the Equipment Identity Register (EIR) and the Central Equipment Identity Register CEIR. The integrity of the IMEI is the critical factor in the viability of CEIR and EIR equipment and associated processes.

There are a number of guidelines that need to be adhered to if the IMEI is to be successfully implemented allowing the use of EIR and CEIR equipment. Failure to do so will in fact make it impossible to implement EIR and CEIR equipment effectively and remove the ability to identify equipment types and to take any appropriate action if required. It is in the interests of the whole GSM industry that the integrity of the IMEI is maintained.

The following guidelines are applicable.

- The IMEI shall uniquely identify each individual unit of ME
- As per GSM 03.03 / 3GPP 23.003, GSM 02.03 / 3GPP TS 22.016, the IMEI shall not be changed after the ME's final production process. It shall resist tampering, i.e. manipulation and change, by any means (e.g. physical, electrical and software). This requirement is valid for new GSM MEs released after 1st June 2002. However, this requirement is applicable to all UMTS UEs from start of production.
- Where repairs necessitate the need to replace the components that contain the IMEI a new IMEI shall be used. No means should be provided to replicate the IMEI in new hardware or components. Therefore spare parts with IMEI hardware should be allocated a unique IMEI. When the IMEI have been replaced in this manner the recycling of the now disused IMEI is not permitted.
- Where a ME has variants that operate in other bands/modes then the ME should be constructed in such a way so that it is not possible to interchange components to permit the IMEI being swapped between the variants.

GSMA has launched an initiative to fight mobile theft, and has worked on IMEI security best practice. GSMA and DIGITAL EUROPE members drafted and approved 2 common documents:

Technical Principles: intended to strengthen the security of the International Mobile Equipment Identity (IMEI)

- GSMA Doc Reference: Security Principles Related to Handset Theft 3.0.0
- DIGITAL EUROPE CCIG Doc Reference: DIGITAL EUROPE Doc: 04cc100

Process in place: GSMA and DIGITAL EUROPE have agreed on a process to report alleged breaches of IMEI integrity and on the introduction of counter-measures to correct and improve IMEI security.

- GSMA Doc Reference: IMEI Weakness and Correction Process 3.0.0
- DIGITAL EUROPE CCIG Doc Reference: DIGITAL EUROPE Doc: 04cc101

## 4 PRESENTATION OF IMEI

The following procedure shall instruct the ME to display its IMEI (See GSM 02.30).

\*#06#

The procedure shall be accepted and performed with and without an inserted SIM. The ME shall then display the 14 digits of the IMEI (not including the spare digit), the Check Digit and optionally the Software Version Number as defined in GSM 02.16 (as a single string, in that order).

It is recommended that the same procedure or a similar procedure be used to display the software version. This will greatly assist in the identification and resolution of interworking issues.



## **5 GUIDELINES FOR REPORTING BODIES ON TAC (IMEI) ALLOCATION**

The following guidelines may be required:

- a) The Reporting Bodies are restricted to defined areas of responsibilities in their IMEI allocations. These areas are defined by the bands carried by the product for which the application is being made. Please refer to Appendix A, Table 2 for guidance.
- b) Modular Equipment may use an exchangeable transceiver module to achieve the ability to operate in alternate GSM bands. Such equipment is to treat each transceiver module as a separate ME. This will mean that each transceiver equipment module would be subject to Type Accreditation and be allocated a separate IMEI/TAC. The IMEI shall not be duplicated in separate transceiver equipment.
- c) The GSM Association has the following policy regarding Dual (or Multi) SIM phones:
  - If each SIM is associated with its own transceiver, then each transceiver/SIM should have its own associated IMEI number. Therefore, a dual SIM phone should have 2 IMEI numbers; a three SIM phone should have 3 IMEI numbers etc.
  - If each transceiver is identical and they operate on the same bands, then they can share the same TAC number, but must have different IMEI numbers. If the transceivers are different e.g. they operate on different bands, then a different TAC number and a separate TAC application is required for each transceiver/SIM.
  - Where a product has more than one transceiver and one of the transceivers is outside the area of responsibility of a single Reporting Body, then two or more Reporting Bodies may be requested to each allocate a separate TAC number to the transceiver under their responsibility.
- d) All TAC (IMEI) numbers allocated by the Reporting Bodies are stored in the GSM Association IMEI database. The database is used to populate the Central Equipment Identity Register (CEIR) which is used by the GSM Network Operators. For confidentiality reasons, access to the IMEI database is restricted. A company registered in the IMEI database can request a list of those TAC (IMEI) numbers allocated to them. Network Operators can access the IMEI data for the purposes of monitoring IMEI numbers on their networks.
- e) Inform the GSM Association of new Type Allocations and IMEI allocations providing the following information:
  - TAC & Serial number range (if allocated)
  - Model type and Marketing name
  - Manufacturer/IMEI Holder
  - Software/Hardware Version Type Allocated
  - GSM phase/release of the product
  - Band/Mode information
  - Date of Type Allocation
  - Any additional information to the Type Allocation status

- f) Before applying for a TAC (IMEI) number, the applicant company must first be registered with a reporting body. Evidence must be provided with (or in addition to) the application to ensure the following:
- That the applicant is a legitimate organization. That the company is selling a product that is to connect to the Telecoms Network. This includes modular devices.
- g) That each application is made on a per model basis. The Brand Name and Model Name needs to be provided to identify the model.
- h) That the number of TAC numbers requested per application is enough to cover a three month production run. One TAC number (1 million IMEI numbers) is normally more than sufficient in most applications.
- i) Any amendment to an existing TAC record must be notified to the GSM Association by the Reporting Body concerned.
- j) The Software Version Number shall be allocated specifically to the GSM part if the alternate modes use separate software functionality. If the software is common then one software version shall apply to both modes. It is recommended that manufacturers use the allocation principles applicable to the SVN defined in informative Annex C.
- k) Some manufacturers produce special test mobile equipment for use by operators in network analysis. Some types of this equipment can harm network integrity if used in the wrong manner. Subsequently network operators need to be able to identify such equipment. The following guidelines apply.
- Where the equipment is based on an existing Mobile Equipment:
  - A separate TAC code should be assigned to the Operator Test ME to distinguish it from the Type Accredited mobile equipment.
  - Alternatively a Test IMEI could be allocated to this type of ME if it is supplied to operators for test purposes only and not available commercially.
  - Each Operator Test ME's IMEI shall conform to the IMEI Integrity and Security provisions in Section 3.
  - For Phase 2 (or later) Test ME a new SVN shall be allocated for each commercial release of software.
- l) Where GSM equipment is capable of operating in multiple modes the following guidelines apply.
- The Reporting Body shall inform the GSM Association of the Multimode capability for the ME and indicate the capable modes.
  - Where the standards permit the same IMEI shall be used for each mode of operation. Where the standards do not permit the use of IMEI then an IMEI shall be allocated specifically to the GSM part and any applicable identification to the non-GSM part/s.
  - Where physically detachable modular techniques are utilised to provide the transceiver capability then each transceiver module shall be treated as a separate ME. Therefore separate IMEI/TAC allocations are required if an IMEI is applicable to each module.

## 6 TEST IMEI

From time to time manufacturers may wish to test prototype ME on networks before applying the regulatory procedures for placing the equipment on the market. The Test IMEI principle has been developed to allow easy allocation of IMEI to Test ME in a controllable, secure and traceable manner. The use of IMEI from Type Allocated Equipment in Test ME is strictly prohibited.

The purpose of the Test IMEI is to allow manufacturers to test prototype mobiles on a live network without having placed mobiles on the market (i.e. the mobiles are fully under the control of the manufacturer). They may be single prototype units or a limited pre-production run (e.g. to demonstrate a mobile at an exhibition or do some field trials).

Test IMEIs are allocated as an 8 digit TAC code per manufacturer and uniquely identifies the manufacturer. The IMEI range implicated by the allocated Test-TAC is to be managed by the manufacturer (It is expected that the manufacturer can control the reuse of Test-IMEIs, e.g. by internal quality procedures.). It is prohibited to have identical IMEI in use in more than one piece of equipment at any given time. Test-IMEIs must not be used for samples given to operators for final product acceptance.

The total allocation of Test IMEI is one million per manufacturer. The total number of a particular model type of mobiles that can be used under this arrangement is a maximum of 1000. Old test products must be destroyed and the Test IMEI numbers must be reused.

The test IMEI allocation does not imply general permission to connect or imply approval for Test UEs. Operators are under no obligation to allow the use of test IMEI on their networks. One should normally need to seek permission from the network operator to use the Test IMEIs on their network. If a network operator queries the use of a Test IMEI issued by BABT, BABT will provide the operator with the details of the allocation, including the manufacturer's name and address. Only the Reporting Bodies listed in Appendix B may allocate a Test IMEI. This document does not grant general permission to place the equipment on the market.

The use of a Test ME is subject to any applicable national legislation and regulatory requirements. In general it is subject to the agreement of the network operator and, where applicable, of the Reporting Body. A Reporting Body or operator may allow the use of a limited number of Test ME and may impose regional restrictions.

The following guidelines apply to test mobile IMEIs.

- Operators are under no compulsion to allow the use of Test IMEI on their networks and may if they wish black list all or some Test IMEI.
- A Test IMEI is used for Mobile Equipment or software functionality that has not been through the (regulatory) procedures for placing commercial equipment on the market. ME with Test IMEI cannot be supplied to the market. A Test IMEI range is available initially for a block of 1000 mobiles per model type. If more than 1000 Test IMEIs are required then more than one Test ME Type shall be allocated so that there are sequential blocks of 1000. The total Test IMEI allocation shall be a multiple of 1000.
- Only one Test ME Type may use a Test IMEI range. Old test products must be destroyed and the Test IMEI numbers must be reused
- Test IMEI shall not be duplicated.
- The TAC component of the Test IMEI shall indicate the Allocating Body. There is no requirement to assign or coordinate a predetermined Final Assembly Code to indicate the manufacturer. The assignment of the Factory Allocation Code (FAC) to a particular

manufacturer is at the discretion of the Reporting Body or operator. Note that from 01/01/03 the FAC code is obsolete.

- If it accepts the mobile in its country/network, a Reporting Body or operator should accept the use of a range of Test IMEI numbers that have been allocated by another Allocating Body. The allocation of different Test IMEI ranges for the same type of ME should be avoided if at all possible.
- From 01/02/2005 a new format as described in table 6.2.1 will apply to test IMEIs for all countries except North America.

## 6.1 Format of the Test IMEI for all countries except North America

### 6.1.1 Format from 01/02/2005

TAC			SN
8 digits			6 digits
00	44	MMMM	ZZZZZZ
To identify Test ME	To Identify BABT as allocating body	Manufacturer Code	Serial number

Where

MMMM Identifies the manufacturer. Multiple codes may be allocated per manufacturer, at the discretion of the allocating body, but each code is unique to a single manufacturer.

ZZZZZZ Represents the serial number selected by the manufacturer.

## 6.2 Format of the Test IMEI for North America

### 6.2.1 Format from 01/01/2003

Where

TAC			SN	
8 digits			6 digits	
001	WWW	XX	YYY	ZZZ
To identify Test ME		Reserved for future use, fixed to "00"	Test ME Type	Serial number

WWW Identifies the Allocating Body using the MNC. 000 is the GSM NA

XX Is reserved for future use and fixed to "00"

YYY Represents a number chosen by the Allocating Body for the test ME type.

ZZZ Represents the serial number selected by the manufacturer.

## 7 REPORTING BODY IDENTIFIER LIST

The GSM Association shall maintain a list of all Reporting Bodies and their Reporting Body Identifier. This list is available as Appendix A to this document. The update of the Appendix shall not require ratification of the document by the GSMA Plenary.

## **8 TEST IMEI ALLOCATING BODY LIST**

The GSM Association shall maintain a list of contacts for the issuing of Test IMEI. This list is available as Appendix B to this document. The update of the Appendix shall not require ratification of the document by the GSMA Plenary.

## **9 LIST OF TYPE ALLOCATED GSM MOBILE EQUIPMENT AND IMEI ALLOCATIONS BY REPORTING BODIES.**

The Reporting Bodies shall provide sufficient information to the GSM Association to be able to maintain lists of Type Allocated GSM Mobile Equipment and IMEI Allocations by Reporting bodies to allow connection to networks.

## **10 CEIR**

The GSM Association shall operate a Central Equipment Identity Register (CEIR) for use by its members. The CEIR shall contain White List Information of Mobile Equipment determined as suitable for worldwide use on GSM networks. It may also contain Black List information of the IMEI of ME that are considered not suitable for use on GSM networks due to being stolen, duplicated, a threat to network integrity or other reasons. The GSM Association shall determine valid reasons for blacklisting. The CEIR may also contain GREY list information about IMEIs of ME whose status is unclear.

The GSM Association reserves the right to determine if the technical basis for Type Allocation is suitable to permit IMEIs allocated by a Reporting Body to be included in the CEIR white list.

The GSM Association reserves the right to determine if information supplied by a Reporting Body is suitable for inclusion in the CEIR white list.

Individual members of the GSM Association may choose what IMEI information to enter to their own EIR. This may include IMEI information excluded from entry to the CEIR in the White, Black or Grey lists.

The GSM Association shall not enter Test IMEI allocations to the CEIR. The decision to enter Test IMEI to EIR is the responsibility of individual members of the GSM Association.

## **11 GSM ASSOCIATION RESPONSIBILITIES**

Within the context of this document the GSM Association shall have the following responsibilities.

- Coordinate the allocation of the Reporting Body Identifier.
- Maintain a list of Type Allocated GSM Mobile Equipment and IMEI allocations by Reporting Bodies containing details of TAC/FAC codes (Note that the FAC code is obsolete for new TAC allocations from 01/01/03), manufacturers, models and band/mode capability for all IMEIs allocated by Reporting Bodies.
- Ensure integrity of CEIR white, black and grey list information and update white list with new IMEI allocations according to the conditions of section 10.
- Ensure integrity of CEIR process.
- Maintain a list of contacts for issuing Test IMEI.
- Document and maintain the procedures to be followed by Reporting Bodies for notification of allocated IMEI.
- Provide expertise and advice on Allocation and IMEI issues where appropriate.

## **12 REPORTING BODY RESPONSIBILITIES**

Within the context of this document the Reporting Bodies shall have the following responsibilities with respect to IMEI and Type Allocation.

- Ensure that the requirements for Type Allocation are satisfied.
- Allocate IMEI TAC codes for mobile equipment within their jurisdiction. Allocation of a specific Serial Number Range is optional. Note that from 01/01/03 the Reporting Bodies shall move to allocating an 8 digit TAC in line with the guidelines in this document.
- Coordinate with other Reporting Bodies where the equipment requiring Type Allocation is under the jurisdiction of more than one Reporting Body.
- Inform the GSM Association of new Type Allocations and IMEI allocations providing the following information
  - TAC & Serial number range (if allocated)
  - Model type and Marketing name
  - Manufacturer/IMEI Holder
  - Software/Hardware Version Type Allocated
  - GSM phase/release of the product
  - Band/Mode information
  - Date of Type Allocation
  - Any additional information to the Type Allocation status.

This should be done as soon as possible after granting Type Allocation to avoid delays in connecting equipment to networks. Such reporting may be subject to the permission of the manufacturer concerned

### **13 TYPE ALLOCATION HOLDER RESPONSIBILITIES**

Within the context of this document Type Allocation Holders have the following responsibilities.

- Comply with the relevant Type Allocation requirements.
- Ensure IMEI are secure and have integrity.
- Consider recommendations to increment SVN for new software in Phase 2 (or later) ME.
- Apply to relevant bodies for Test IMEI when required.
- Gain permission from operators to use test ME where required.

## APPENDIX A – REPORTING BODY IDENTIFIER LIST

Please contact the GSM Association HQ to obtain the latest update of this list.

Note: Global Decimal Administrator (GDA) multi RAT 3GPP2/3GPP mobile assignments are allocated from within the individual IMEI Reporting Body Identifier allocation space. Global Hexadecimal Administrator (GHA) multi RAT 3GPP2/3GPP mobiles are allocated starting from the Reporting Body Identifier 99 allocation space.

**Table 1: Bodies currently authorised to allocate IMEIs:**

Reporting Body Identifier	Reporting Body or allocated Use	Bands/Modes	Contact Details
00	Test ME (allocated by countries with a 1 or 2 digit international dialling prefix)	All	See Test IMEI Issuer List (Appendix B)
01	IMEI allocated by CTIA.		Mr. Will Lightfoot  CTIA – The Wireless Association® 1400 16 <sup>th</sup> Street, NW Suite 600 Washington, DC 20036 <a href="http://www.ctia.org/certification">www.ctia.org/certification</a> Direct: +1 202 736 3208 Main: +1 202 785 0081 Wireless: +1 202 213 5010 Fax: +1 202 736 1629
02-09	Test ME (allocated by countries with a 3 digit international dialling prefix) See Test IMEI Section	All	See Test IMEI Issuer List (Appendix B)
11-29	<i>Reserved for future use. Do not allocate.</i>		
31-32	<i>Reserved for future use. Do not allocate.</i>		
34	<i>Reserved for future use. Do not allocate.</i>		



Reporting Body Identifier	Reporting Body or allocated Use	Bands/Modes	Contact Details
35	BABT	All	<p>Mr John Talbot Tel. +44 1932 251264 Fax: +44 1932 251201 E-mail: <a href="mailto:john.talbot@babt.com">john.talbot@babt.com</a></p> <p>Mr Les Rowland Tel. +44 1932 251254 Fax: +44 1932 251201 E-mail: <a href="mailto:les.rowland@babt.com">les.rowland@babt.com</a></p> <p>E-mail: <a href="mailto:imei@babt.com">imei@babt.com</a></p>
36-43	<i>Reserved for future use. <b>Do not allocate.</b></i>		
46-48	<i>Reserved for future use. <b>Do not allocate.</b></i>		
55-85	<i>Reserved for Future Use <b>Do not allocate</b></i>		

Reporting Body Identifier	Reporting Body or allocated Use	Bands/Modes	Contact Details
86	TAF (China) Telecommunication Terminal Testing & Approval Forum	All	Mr. Peng Zhen Tel: +86 10 82051164 Fax: +86 10 82053375 E-mail: <a href="mailto:pengzhen@tenaa.com.cn">pengzhen@tenaa.com.cn</a>  Miss Li Xin Tel: +86 10 82051447 Fax: +86 10 82051448 E-mail: <a href="mailto:lixin@tenaa.com.cn">lixin@tenaa.com.cn</a>
87-90	<i>Reserved for Future Use</i> <b>Do not allocate</b>		
91	MSAI - Mobile Standard Alliance of India	All	Mr. Ashwani Budhiraja Tel: +91 981 802 0309 Fax: +91 114 508 3259 E-mail: <a href="mailto:ab@msai.in">ab@msai.in</a>  E-mail: <a href="mailto:ineedimei@msai.in">ineedimei@msai.in</a>

Reporting Body Identifier	Reporting Body or allocated Use	Bands/Modes	Contact Details
92	<i>Reserved for Future Use</i> <b>Do not allocate</b>		
92-98	<i>Reserved for Future Use</i> <b>Do not allocate</b>		
98	<i>Reserved for Future Use</i> <b>Do not allocate</b>  <b>Note: a few codes had previously been assigned from this block 91010000 to 98007800</b>		
99	<b>Global Hexadecimal Administrator (GHA)</b> <b>For multi RAT 3GPP2/3GPP mobiles</b>	All	John Derr TIA 2500 Wilson Blv., Suite 300 Arlington, VA 22201 USA E-mail: <a href="mailto:meidadmin@tiaonline.org">meidadmin@tiaonline.org</a>

**Table 2: Reporting Bodies' Areas of Responsibilities**

Reporting Body	For Sale Internationally	For Sale in China Only
BABT	All Bands (Except GSM 850/GSM 1900 only)	All Bands (Except TD-SCDMA)
CTIA	All Bands (Except GSM 900/GSM 1800/WCDMA only)	All Bands (Except TD-SCDMA)
TAF	All Bands (Except GSM 850/GSM 1900 only)	All Bands
MSAI	All Bands (Except GSM 850/GSM 1900 only)	All Bands (Except TD-SCDMA)
TIA	All Bands (GHA for multi RAT 3GPP2/3GPP mobiles)	All Bands (GHA)

**Table 3: Bodies that no Longer Allocate IMEIs:**

Reporting Body Identifier	Reporting Body or allocated Use	Bands/Modes	Contact Details
10	DECT PP with GSM functionality	DECT	
30	Iridium	GSM Satellite	Don Gunasekara Tel. +1 202 326 5762 Fax: +1 202 408 3801 E-mail: <a href="mailto:don_gunasekara@iridium.com">don_gunasekara@iridium.com</a>
33	DGPT / ART	900/1800	Robert Bonin Tel. +33 1 4319 6924 Fax: +33 1 4319 6805 E-mail:
44	BABT	900/1800	Mr John Talbot Tel. +44 1932 251264 Fax: +44 1932 251201 E-mail: <a href="mailto:john.talbot@babt.com">john.talbot@babt.com</a>  Mr Les Rowland Tel. +44 1932 251254 Fax: +44 1932 251201 E-mail: <a href="mailto:les.rowland@babt.com">les.rowland@babt.com</a> <a href="mailto:imei@babt.com">imei@babt.com</a>

Reporting Body Identifier	Reporting Body or allocated Use	Bands/Modes	Contact Details
45	NTA	900/1800	Jørn F. Jonsson tel: +45 3545 0271 Fax: +45 3545 0010 e-mail: <a href="mailto:jj@itst.dk">jj@itst.dk</a>
49	BZT/BAPT/Reg TP	900/1800	Mr Berthold Wilhelm Tel. +49 681 9330 561 Fax: +49 681 9330 737 E-mail: <a href="mailto:berthold.wilhelm@bapt.de">berthold.wilhelm@bapt.de</a>
50	BZT ETS Certification GmbH.	900/1800	Mr Joerg Haucke Tel. +49 33631 88822 Fax: +49 33631 88866 E-mail: <a href="mailto:etsdrgenz@aol.com">etsdrgenz@aol.com</a>
51	Cetecom ICT Services GmbH	900/1800	Mr Lothar Schmidt Tel. +49 681 598 8723 Fax: +49 681 598 8875 E-mail:
52	CETECOM GmbH	900/1800	Mr Nikolaus Wahl Tel. +49 2054 9519 37 Fax: +49 2054 9519 88 E-mail: <a href="mailto:nikolaus.wahl@cetecom.de">nikolaus.wahl@cetecom.de</a>
53	TUV Product Service GmbH (Munich)	900/1800	Mr Eduard Stangl Tel. +49 9424 94070 Fax: +49 9424 94007 60
54	PHOENIX TEST-LAB GmbH	900/1800	Dipl.-Ing. Holger Bentje Tel. +49 5235 9500-24 Fax: +49 5235 9500-28 E-mail: <a href="mailto:notifiedbody@phoenix-test-lab.de">notifiedbody@phoenix-test-lab.de</a>

## APPENDIX B – LIST OF TEST IMEI ALLOCATING BODIES:

Please contact the GSM Association HQ to obtain the latest update of this list.

1st 6 digits of the Test IMEI	ALLOCATING BODY	Contact Person(s)	Telephone	Fax	E-mail
001 001-001 017	GSM North America, PTCRB	Mr. Will Lightfoot	+1 202 736 3208	+1 202 736 1629	<a href="mailto:Wlightfoot@ctia.org">Wlightfoot@ctia.org</a>
00 44 MMMM	BABT	Mr. John Talbot Mr. Les Rowland	+44 1932 251264 +44 1932 251254	+44 1932 251201	<a href="mailto:john.talbot@babt.com">john.talbot@babt.com</a> <a href="mailto:les.rowland@babt.com">les.rowland@babt.com</a> <a href="mailto:imei@babt.com">imei@babt.com</a>
00 86 MMMM	TAF (China)	Mr. Peng Zhen Miss Li Xin	+86 10 82051164 +86 10 82051447	+86 10 82053375 +86 10 82051448	<a href="mailto:pengzhen@tenaa.com.cn">pengzhen@tenaa.com.cn</a> <a href="mailto:lixin@tenaa.com.cn">lixin@tenaa.com.cn</a>
00 91 MMMM	MSAI (India)	Mr. Ashwani Budhiraja	+91 981 802 0309	+91 114 508 3259	<a href="mailto:ab@msai.in">ab@msai.in</a>

## APPENDIX C – INFORMATIVE ANNEX - IMEISV

The Network can also request the IMEISV from Phase 2 (or later) ME. The IMEISV shall contain the first 14 digits of the IMEI plus a Software Version Number (SVN). The SVN shall be incremented when the ME software is modified. Allocation of the 2 digit SVN may be controlled by the Reporting Body, at the discretion of the Reporting Body. SVN of “99” is reserved for future use (See GSM 03.03).

### C.1 GSM 02.16 - MS Software Version Number (SVN)

A Software Version Number (SVN) field shall be provided. This allows the ME manufacturer to identify different software versions of a given type approved mobile.

The SVN is a separate field from the IMEI, although it is associated with the IMEI, and when the network requests the IMEI from the MS, the SVN (if present) is also sent towards the network. It comprises 2 decimal digits.

The White list shall use the IMEI, while the Black and Grey Lists may also use the SVN.

### C.2 3GPP TS 22.016 - MS Software Version Number (SVN)

A Software Version Number (SVN) field shall be provided. This allows the ME manufacturer to identify different software versions of a given mobile.

The SVN is a separate field from the IMEI, although it is associated with the IMEI, and when the network requests the IMEI from the MS, the SVN (if present) is also sent towards the network.

The White list shall use the IMEI, while the Black and Grey Lists may also use the SVN.

### C.3 Structure of the IMEISV

The structure of the IMEISV is as follows.

TAC	Serial No	SVN
NNXXXXYY	ZZZZZZ	SS

Where

NN

XXXXYY

ZZZZZZ

SS

Reporting Body Identifier

ME Type Identifier defined by Reporting Body

Allocated by Reporting Body but assigned per ME by the manufacturer

Software Version Number 00 – 98. 99 is reserved for future use. (See GSM 03.03)

#### **C.4 Software Version Number Allocation Principles**

The Reporting Body, at the discretion of the Reporting Body, may control allocation of the SVN. All ME designed to Phase 2 or later requirements shall increment the SVN for new versions of software. The initial version number shall be 00. The SVN of 99 shall be reserved.

The allocation process for SVN shall be one of the following procedures.

- The Reporting Body allocates a new SVN number a new software release.
- The Reporting Body defines the allocating process to be applied by the Type Allocation Holder.

If there are more than 99 software versions released the Reporting Body may undertake one of the following options.

- Issue a new TAC code for the ME Type
- Issue new FAC codes to utilise with the existing TAC code and set the SVN to zero and subsequently increment for new software versions. (Note that this action is not valid after 01/01/03)

#### **C.5 Security Requirements**

The SVN is not subject to the same security requirements as the IMEI as it is associated with the ME software. The SVN should be contained within the software and incremented every time new software is commercially released. The SVN should uniquely identify the software version.

#### **C.6 Phase 1 Software Version Identification Requirements**

Phase 1 ME does not have a SVN or IMEISV and therefore a means should be provided to identify the software version of the ME. This may be via Man Machine Interface (MMI) means or some other mechanism. This will greatly assist in the identification and resolution of interworking issues

#### **C.7 Phase 2 (or later) Software Version Identification Requirements**

Apart from the IMEISV and SVN, Phase 2 and later ME should have some other means to identify the software version. This will greatly assist in the identification and resolution of interworking issues



## APPENDIX D – INFORMATIVE ANNEX – HISTORICAL STRUCTURE OF THE IMEI

### D.1 Historical IMEI Structure

The IMEI structure valid until 31/12/02 is as follows

TAC	FAC	Serial No	Check Digit
NNXXXX	YY	ZZZZZZ	A

Discussions within the industry, including 3GPP2, agreed that the structure change to combine the TAC and FAC into a single eight-digit TAC code.

This format has been documented in the 3GPP requirements 02.16, 03.03, 22.016 and 23.003.

Effectively the FAC code should be considered as obsolete.

It was noted that there was a need for a transition period to allow:

- The Operators to modify their systems to use the eight digit TAC rather than a six digit one
- The Manufacturers to make any necessary changes to their production processes
- The Reporting Bodies to make any changes to their IMEI allocation systems
- The GSM Association to make any changes to their databases and systems
- The Contractor to make any changes to its systems

The transition period ran from 31/12/02 until 1/4/04.

To achieve this transition, all eight-digit TAC codes allocated between 31/12/02 and 31/3/04 were given unique combinations of the first six digits (NNXXXX) with the seventh and eighth digits (YY) being fixed to 00.

Any request by a Terminal Manufacturer for a FAC code after 31/12/02 resulted in that Manufacturer being supplied with a fresh 8 digit TAC. This was to allow the 3GPP industry to move to the 8-digit TAC code without the need to implement changes to their IMEI analysis and tracking systems before 1/4/04.

The meaning of the acronyms for the IMEI format valid until 31/12/02 is:

<b>TAC</b>	Type Allocation Code, formerly known as Type Approval Code
NN	Reporting Body Identifier
XXXX	ME Type Identifier defined by Reporting Body
<b>FAC</b>	Final Assembly Code
YY	Under control of the Reporting Body. May be used to indicate the manufacturing site. More than one FAC per site should be used to permit production of greater than 1000000 ME.
<u>ZZZZZZ</u>	Allocated by Reporting Body but assigned per ME by the manufacturer
A	Phase 1 = 0 Phase 2 (or later) = Check digit, defined as a function of all other IMEI digits

### **The IMEI Format valid prior to 01/01/03**

#### **D.1.1 Type Allocation Code - 6 digits. (Valid prior to 01/01/03)**

The TAC identifies the Type Allocation Code, formerly known as the Type Approval Code, for the type of the ME. It consists of two parts; the first part defines the Reporting Body allocating the TAC and the second part defines the ME type.

The following allocation principles apply:

- Each ME Type shall have a unique TAC code or set of TAC codes.
- More than one TAC may be allocated to an ME Type at the discretion of the Reporting Body. This may be done to permit the production of more than 1 million units or to distinguish between market variations.
- The TAC code shall uniquely identify an ME Type.
- If the TAC was granted to a particular software version of one ME Type that is then used in another ME type the TAC code shall be different.
- TAC codes may vary between software versions for a phase 1 ME Type at the discretion of the Reporting Body.
- In Phase 2 (and later releases) the TAC shall remain the same and the SV number shall identify the software version. See IMEISV.
- Where there is more than one Type Allocation Holder for an ME Type then the TAC code shall be different.

#### **D.1.2 Reporting Body Identifier (NN) – 2 digits (valid prior to 01/01/03)**

The first two digits of the TAC are the Reporting Body Identifier. These digits indicate which Reporting Body issued the IMEI. The GSM Association shall coordinate the allocation of the first 2 digits to Reporting Bodies. See Appendix A for IMEI Reporting Body Identifiers that have already been allocated.

Valid Range 00 – 99 in accordance with allocations in Appendix A

The following allocation principles apply:

- The GSM Association shall coordinate the allocation of the Reporting Body Identifier.
- The Reporting Body Identifier shall uniquely identify the Reporting Body.
- If for some reason the same Reporting Body Identifier must be used then the first digit of the ME Type Identifier will also be used to define the Reporting Body. The GSM Association shall coordinate the allocation to the Reporting Body of the range of values of the first digit of the ME Type Identifier. This range shall be contiguous. This approach is to be avoided if at all possible.

#### **D.1.3 ME Type Identifier (XXXX) – 4 digits (valid prior to 01/01/03)**

The following 4 digits of the TAC are under the control of the Reporting Body. These 4 digits together with the Reporting Body 2 digit identifier uniquely identify each ME Type.

Valid Range 0000 – 9999

The following allocation principles apply:

- Every ME Type shall have a unique TAC or set of TACs. A TAC may not be associated with more than one ME Type. An ME Type may have more than one TAC.
- Major changes to the ME Build Level shall require a new ME Type Identifier. Major changes to ME Build Level would normally include the addition of new features or changes that modify the performance of the ME Type. Minor changes to the ME Build Level that do not change the performance of the ME require no new ME Type Identifier. The Reporting Body shall determine what constitutes a major or minor change to the ME Build Level.
- The ME Type Identifier should be allocated sequentially wherever possible. Gaps in the ME type range are to be avoided if possible.
- Multiband or multimode ME shall only have one TAC and therefore one IMEI. Where more than one Reporting Body is involved in the allocation of the IMEI coordination is required between the Reporting Bodies to ensure that all requirements have been met before the IMEI is allocated.

#### **D.1.4 Final Assembly Code (FAC) - 2 digits (valid prior to 01/01/03)**

These two digits (YY) are generally used to identify the specific factory or manufacturing site of the ME. The allocation of the FAC is under the control of the Reporting Body.

Valid Range 00 – 99

The following allocation principles apply:

- More than one FAC should be allocated where necessary to a Factory or site to allow for the situation where the factory produces more than 1 million units per ME Type.
- Further FACs should be requested and assigned for a ME type where the Serial Number Range is exhausted.
- A FAC shall not be used to distinguish between ME Types.

#### **D.1.5 Serial Number (SNR) - 6 digits (valid prior to 01/01/03)**

The 6 digit SNR (ZZZZZZ) in combination with the FAC is used to uniquely identify each ME of a particular ME Type.

Valid Range 000000 – 999999

The following allocation principles apply:

- Each ME of each ME Type must have a unique Serial Number in combination with the FAC for a given TAC code.
- SNR shall be allocated sequentially wherever possible.
- The Reporting Body may allocate a partial range to be used for the serial number.

#### **D.1.6 Spare Digit / Check Digit – 1 digit (valid prior to 01/01/03)**

##### *D.1.6.1 Phase 1/1+ ME*

For Phase 1 ME this is a spare digit and its use has not been defined. The spare digit shall always be transmitted to the network as “0”.

##### *D.1.6.2 Phase 2 (and later) ME*

For Phase 2 (or later) mobiles it shall be a Check Digit calculated according to Luhn formula (ISO/IEC 7812). See GSM 02.16. The Check Digit shall not be transmitted to the network. The Check Digit is a function of all other digits in the IMEI. The Software Version Number (SVN) of a Phase 2 (or later) mobile is not included in the calculation.

The purpose of the Check Digit is to help guard against the possibility of incorrect entries to the CEIR and EIR equipment.

The presentation of Check Digit (CD) both electronically (see Section 5) and in printed form on the label and packaging is very important. Logistics (using bar-code reader) and EIR/CEIR administration cannot use the CD unless it is printed outside of the packaging, and on the ME IMEI/Type Accreditation label.

The check digit shall always be transmitted to the network as “0”.

## D.2 Non-American Test IMEI

### D.2.1 Format until 01/01/03

TAC			FAC	SN	
6 digits			2 digits	6 digits	
0	VVV	WW	XX	YYY	ZZZ
To identify Test ME	Country of allocation	Allocating Body		Test ME Type	Serial number

Where:

VVV	Identifies the country allocating the IMEI (country code). The country is identified by its international dialling prefix. Example 353 for Ireland, 044 for the UK. International Dialling prefixes in the range of 100 to 199 are not permitted as this conflict with NA IMEI ranges. (These ranges are not presently allocated to any country) Should contention occur due to use of the same country code by more than one country or the use of and International dialling prefix in the 1xx range then the GSM Association shall assign a Test IMEI country code or range of Test IMEI if required.
WW	Identifies the Allocating Body in a country, using the MNC. A Reporting Body should use "00". If "00" is already used by an operator or another Reporting Body then "99" shall be used. Where more than two Reporting Bodies exist then the numbers 98, 97 etc shall be used. The GSM Association in Dublin shall use "99" along with 353 as the country Identifier.
XX	Represents the final assembly code allocated by the Test IMEI Allocating Body.
YYY	Represents a number chosen by the Allocating Body for the test ME type.
ZZZ	Represents the serial number selected by the manufacturer.

### D.2.2 Format from 01/01/2003 to 01/02/2005

TAC				SN	
8 digits				6 digits	
0	VVV	WW	XX	YYY	ZZZ
To identify Test ME	Country of allocation	Allocating Body	Reserved for future use, fixed to "00"	Test ME Type	Serial number

Where

**VVV** Identifies the country allocating the IMEI (country code). The country is identified by its international dialling prefix. Example 353 for Ireland, 044 for the UK. International Dialling prefixes in the range of 100 to 199 are not permitted as this conflicts with NA IMEI ranges. (These ranges are not presently allocated to any country) Should contention occur due to use of the same country code by more than one country or the use of an International dialling prefix in the 1xx range then the GSM Association shall assign a Test IMEI country code or range of Test IMEI if required.

**WW** Identifies the Allocating Body in a country, using the MNC. A Reporting Body should use "00". If "00" is already used by an operator or another Reporting Body then "99" shall be used. Where more than two Reporting Bodies exist then the numbers 98, 97 etc shall be used. The GSM Association in Dublin shall use "99" along with 353 as the country Identifier.

**XX** Is reserved for future use and fixed to "00"

**YYY** Represents a number chosen by the Allocating Body for the test ME type.

**ZZZ** Represents the serial number selected by the manufacturer.

### D.3 American Test IMEI

#### D.3.1 Format until 01/01/03

TAC		FAC	SN	
6 digits		2 digits	6 digits	
001	WWW	XX	YYY	ZZZ
To identify Test ME			Test ME Type	Serial number

Where

WWW	Identifies the Allocating Body using the MNC. 000 is the GSM NA
XX	Represents the final assembly code allocated by the Test IMEI Allocating Body.
YYY	Represents a number chosen by the Allocating Body for the test ME type.
ZZZ	Represents the serial number selected by the manufacturer.

## 14 DOCUMENT MANAGEMENT

### Document History

Version	Date	Brief Description of Change	Approval Authority	Editor / Company
3.1.0	04/04/1998	Clarifications and terminology changes as approved at MoU#39		
3.1.1	18/06/1998	Update to Appendix A and B		
3.1.2	04/08/1998	Update to Appendix A and B		
3.1.3	August 1998	Document Classification Scheme		
3.1.4	March 1999	NS CR Fast Track Procedure		
3.1.8	April 2000	Update to Appendix A and B		
3.1.9	May 2000	Update to Appendix A		
3.1.10	October 2000	Update to take account of R&TTE Directive		
3.2.0	September 2002	Update to take account of JEM Meeting output and changes to the core specifications.		
3.3.0	December 2004	Update to take account of changes to Test IMEI allocation and updates for revised TAC format, and Update of Test IMEI procedure, IMEI security, IMEI SV		
3.3	6 January 2006	Updated format and version number to current methods, re-designated control number from TW.06 to DG.06 consistent with group name.		
3.4	1 March 2007	Note about UMA terminal added to Section 1 ME Type		
3.5	1 November 2007	TD-SCDMA allocation requirements added.		
3.6	7 February 2008	The Test IMEI format description was corrected in the table in Appendix B		
3.7	8 <sup>th</sup> December 2008	TD-SCDMA allocation details updated.		
4.0	October 2009	Re-writing of Document.	DG#22 EMC#	Les Roland / BAPT
5.0	29 June 2010	CR005 References' added to 3GPP2 & GHA. Corrections to the "Check Sum" reference	DG25	Paul Gosden / GSMA



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Type	Description
Document Owner	DG
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### Feedback

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