3GPP2 SC.R4002-0 v14.0
November 2018

GHA (Global Hexadecimal Administrator) Assignment Guidelines and Procedures for Mobile Equipment Identifier (MEID) and Short Form Expanded UIM Identifier (SF_EUIMID)

Revision History

Revision	**Description of Changes**	**Date**
Version 1.0	Republished S.R0089-0 to SC.R4002-0 v1.0 Initial Publication	February 2004
Version 2.0	SC.R4002-0 updates	October 2004
Version 3.0	SC.R4002-0 updates	March 2006
Version 4.0	SC.R4002-0 updates to address EUIM_ID SF	26 July 2007
Version 5.0	SC.R4002-0 updates to clarify MFR Code segment assignments	18 January 2008
Version 6.0	SC.R4002-0 updates to clarify multimode assignments & SF UIMID	June 2010
Version 7.0	SC.R4002-0 updates multimode assignment form and editorials	March 2011
Version 8.0	SC.R4002-0 updates including MEID form updates, Annex re: MEID db and editorials	April 2012
Version 9.0	SC.R4002-0 updates including Form “A” LTE band updates & contact Title boxes, New TIA address location & editorials	March 2013
Version 10.0	Updates include Form “A” multimode sections with equipment types and editorial updates.	6 December 2013
Version 11.0	Updates include Form “A” multimode sections with single model and new bands. Also MEID db and editorial updates.	September 2015
Version 12.0	Updates include editorial & Form “A” multimode sections with extensive Carrier Aggregation operating bands added.	December 2016
Version 13.0	Updates include 256 blocks of 65,536 codes for segmentation, also editor updates including Form “A” multimode page updates.	July 2017
Version 14.0	Updates include editorial, MEID database Form “A” compatibility	November 2018

TABLE OF CONTENTS

Foreword

This foreword is not part of this specification.

This document contains the guidelines and procedures for the assignment and use of Mobile Equipment IDentifiers (MEIDs) for Mobile Stations (MSs), and Short Form Expanded UIM Identifiers (SF_EUIMID) for R-UIMs or CSIMs.

This specification was prepared by the Third Generation Partnership Project 2 (3GPP2).

1.0 PREFACE

Correspondence relating to the administration herein should be directed to the MEID Global Hexadecimal Administrator.

MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

2.0 SCOPE

The Mobile Equipment IDentifier (MEID) [1] is used as a means to facilitate mobile equipment identification and to track mobiles. Short Form Expanded UIM Identifier (SF_EUIMID) [6], [7], with similar format to MEID, may be stored on a Removable UIM (R-UIM) or CSIM and used to identify it for certain functions. The Global Equipment Identifier (GEID) coordinated range encourages global roaming and harmonization between 3G technologies as a universal mobile equipment identifier.

The fields in the MEID or SF_EUIMID are coded with hexadecimal coding {note: SF_EUIMID shall use RR=A0-FF (regardless if it is a CDMA only or GSM+CDMA card)}. The addressing space is quite large and exhaustion issues are not expected. In further text, unless specifically noted otherwise, the term MEID will be used to mean either MEID in the narrow sense (i.e. identifier stored on the mobile equipment hardware), or SF_EUIMID (i.e. identifier stored on the Removable User Identity Module (R-UIM) or CSIM.

GEID (i.e., IMEI and MEID) provides the manufacturer identity of the ME, and information such as type allocation (for multi-mode MEID assignments) and serial number. By means of manufacturer's data base lookup, MEID may help service providers identify the ME to the levels of model, manufactured factory and lot numbers. The information can be used for corrective or preventive actions to improve the service quality. The MEID allows a list of MEs that have been stolen or denied service to be maintained e.g., Central Equipment Identity Register (*CEIR*).

The MEID has a number structure and allocation system that is globally recognized and applied in multiple access technologies.

Regulatory requirements associated with MEID are a subject of relevant laws and regulations, and relevant technical specifications in the country where equipment is placed on the market.

These guidelines are in the context of international cellular telecommunications industry standards. It is recommended that systems compliant with the industry standards follow these guidelines to facilitate international roaming and to minimize fraud.

The MEID is entered into the MS by the manufacturer of the MS. The MEID is composed mainly of two basic components, the manufacturer's code and the serial number. These guidelines specify the procedure for acquisition, transfer, return and regulation of the MEID Manufacturer's (MFR) Codes.

These guidelines pertain to all digit segments of the MEID format. The GHA manages all digit segments of the MEID, but directly administers only the MEID MFR Code segment. The manufacturer to which the MEID MFR Code or subdivided segmented block is assigned directly administers the assigned Serial Number segment. Detailed Mobile Equipment Identifier (MEID) assignment information is provided by the Global Hexadecimal Administrator (GHA).

These guidelines apply globally; however, they do not supersede the regulations, procedures or requirements of any appropriate legal or regulatory authority.

A compliant MS must have an MEID in accordance with these guidelines.

Equipment identifiers other than MEID and SF_EUIMID (e.g., ESN, UIM-ID [3],[4]) are not addressed here.

If a multi-mode MS supports one or more 3GPP2 defined radio interfaces (e.g., analog, CDMA) and utilizes a single mobile equipment identifier, that identifier conforms to the MEID guidelines. If a multi-mode MS supports both 3GPP2 and 3GPP defined radio interfaces (e.g., CDMA, GSM), the mobile equipment identifier conforms to the IMEI guidelines [3.2] and/or these guidelines.

3.0 INFORMATIVE REFERENCES

3.1

[1]	*3GPP2 S.R0048-A*	*3G Mobile Equipment Identifier (MEID)*
[2]	*GSMA TS.06*	*IMEI Allocation and Approval Guidelines (also references TS.30 & TS.37)*
[3]	*3GPP2 SC.R4004-0*	*UIM ID Manufacturer's Code Assignment Guidelines and Procedures*
[4]	*TIA*	*ESN Manufacturer's Code Assignment Guidelines and Procedures*
[5]	*3GPP2 SC.R4001-0*	*Global Equipment Numbering Administrative Procedures*
[6]	*3GPP2 SC.R4003-0*	*Expanded R-UIM Numbering Procedures*
[7]	*3GPP2 S.R0111-0*	*Expanded R-UIM ID Stage 1*
[8]	*3GPP2 X.S0008-A*	*MAP Support for the Mobile Equipment Identity (MEID)*

4.0 ASSUMPTIONS AND CONSTRAINTS

These guidelines and procedures are based on the following assumptions and constraints:

4.1 The guidelines are designed to provide the greatest latitude to MS, R-UIM and CSIM manufacturers while permitting the effective and efficient management of a finite resource.

4.2 The coordinating function of the GEID administration is performed by the Global MEID Administrators. (See Ref. [5]).

4.2.1 The function of the IMEI Global Decimal Administration (GDA) is performed by an appointed IMEI Administrator.

4.2.2 The function of the MEID Global Hexadecimal Administration (GHA) is performed by the 3GPP2 appointed MEID Administrator.

4.3 The guidelines as set forth in this document remain in effect until there is change as a result of 3GPP2 standards development or regulatory policy (where applicable) direction to change them.

4.4 The guidelines do not describe the method by which MEIDs are transmitted across and processed by networks. Network interworking arrangements are contained in other standards, documents, or business agreements.

4.5 The applicant/assignee of an MEID MFR Code(s) should provide evidence of credentials, if requested, to produce MSs.

4.6 The GHA may appoint other regional entities as a regional reporting body with MEID assignment authorization.

4.7 Without authorization of 3GPP2, the Administrator shall take no action impacting legacy equipment identifiers. Administration and Implementation of MEID shall have no negative impact on the application and use of legacy equipment and identifiers (e.g., ESN, UIM ID).

5.0 MEID FORMAT AND FUNCTION

5.1 The 56-bit MEID identifier structure is compatible between 3GPP IMEI and 3GPP2.

5.2 Each MS is assigned a unique MEID. When used as SF_EUIMID, it is uniquely assigned to an R-UIM or CSIM.

5.3 The MEID identifies the manufacturer of the MS. When SF_EUIMID is assigned to an R-UIM or CSIM, it identifies an R-UIM or CSIM manufacturer.

5.4 MEID Structure and Format

The MEID digit range is hexadecimal or decimal (multimode e.g., RR99) and syntactically consistent with the IMEI structure. However, the MEID structure does not utilize all of the fields in the exact semantic manner as in IMEI. The MEID numbering space is allocated in a manner that does not impact the decimally encoded IMEI. The MEID structure is also consistent with the ESN allocation scheme which uses 24-bit Serial Numbers.

The MEID structure (Note: format used for protocol and Hex to Decimal conversion):

In the case of MEIDs for terminals conforming exclusively to 3GPP2 technology, all of these fields are defined as hexadecimal values with the following valid range:

RR - valid range A0 … FF – globally administered by GHA (i.e., MEID Administrator)
XXXXXX - valid range 000000… FFFFFF
ZZZZZZ - valid range 000000… FFFFFF
C - valid range 0… F – not transmitted over the air

In the case of IMEI/MEIDs for terminals designed to comply with both 3GPP and 3GPP2 air interface specifications (i.e., multimode terminals), all of these fields are defined as decimal values. Note: a decimal MEID is also considered an IMEI, though an IMEI <decimal only> cannot be considered an MEID because an MEID can also be hexadecimal. The following valid decimal ranges are globally assigned by the GHA[1] for multimode terminals: (Note: other multimode IMEI ranges are globally administered by the GDA from allocation space within other individual GDA RR decimal ranges and those GDA ranges are an IMEI as opposed to an MEID or IMEI/MEID).

[1] GHA presently assigning RR 99 range.

RR - valid range ‘99’, ‘98’, ‘97’….. – globally administered by GHA (i.e., MEID Administrator)
XXXXXX - valid range 000000… 999999
ZZZZZZ - valid range 000000… 999999
C - valid range 0 … 9 – not transmitted over the air

5.4.1 Numbering Capacity

The MEID numbering capacity can be computed as follows:

There are 96 codes when RR is restricted to the A0 .. FF range. Note that additional 60 codes could be made available in the ranges of 0A .. 0F, 1A .. 1F, 2A .. 2F, … , 9A .. 9F, subject to industry agreement. [3.5]

There are 16,777,216 codes in the XXXXXX field.

There are 16,777,216 Serial Numbers in ZZZZZZ field.

The total numbering capacity exceeds 281 x 10^12 (281 trillion) per RR code.

The MEID is the hardware identifier migrated from the ESN, and SF_EUIMID is a card identifier migrated from the UIMID that was derived from the ESN.

The current ESN numbering space consists of:

256 Manufacturer Codes (8-bit).

16,777,216 Serial Numbers per Manufacturer Code.

The MEID provides for a raw numbering space that is 65,535 times the size of the existing ESN numbering space per RR code. The total numbering space using 96 RR codes represents a space that is 6,291,456 times as large as the current ESN numbering space.

5.5 The hexadecimal and decimal MEID ranges do not specify the frequency band, air-interface technology or supported service associated with the MS, though the decimal range assignments capture similar data (see Form “A” pages 3xx) required for the GHA providing to the GDA for coordinated insertion to the IMEI database.

6.0 GEID SPECIFIC GDA and GHA ASSIGNMENT GUIDELINES COORDINATION

Except as provided for Sections 2.8, 6.3, 6.4, 6.5 of the Global Numbering document Ref [5], the working procedures and/or terms of reference of the GDA and GHA take precedence over the Global Numbering Administration Procedures (see Ref. [5] Section 3.3).

7.0 ASSIGNMENT PRINCIPLES

7.1 MEID MFR Codes shall be assigned to permit the effective and efficient use of a finite resource in order to maximize the existing allocated resource inventory and to defer, as long as practical, the need to request additional or replacement for MEID MFR Code resources.

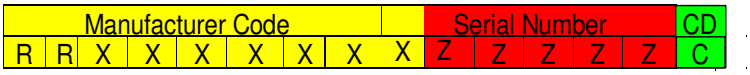
7.2 Upon application, the MEID administrator shall assign one or more MEID MFR Code(s) to each legitimate MS manufacturer, R-UIM or CSIM manufacturer. An MEID MFR Code shall not be simultaneously assigned to more than one MEID manufacturer.

The MEID Administrator presently assigns MEIDs in;

- FULL MFR Code Deployable singlemode hexadecimal blocks of 16,777,216. The MFR ID Code portion = six (6) hex digits.

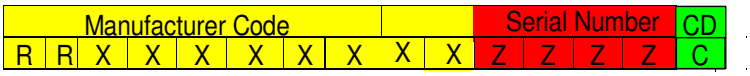
- Segmented MFR Code Deployable singlemode hexadecimal blocks of 1,048,576[2]. The MFR ID Code portion = seven (7) hex digits.

In this case, the Manufacturer Code field uses a digit from the Serial Number field:



- Segmented MFR Small Code Deployable singlemode hexadecimal blocks of 65,536[3]. The MFR ID Code portion = eight (8) hex digits.

In this case, the Manufacturer Code field uses two digits from the Serial Number field:



- Multimode Deployable blocks of 1,000,000. The MFR ID Code / IMEI TAC portion = six (6) decimal digits.

- MEID MFR Code hexadecimal blocks of 2048 units for singlemode testing purposes. Test MEID may only be used for prototype device testing. Test block ranges must not be used for mass production units or externally accessible on an operator's network.

- MEID MFR Code / IMEI TAC in decimal blocks of 2000 units for multimode testing purposes. Test MEID may only be used for prototype device testing. Test block ranges must not be used for mass production units or externally accessible on an operator's network.

- MEID MFR Code block contains 16,777,216 MEIDs. This block can be either assigned by the GHA as a whole, or it can be subdivided and assigned as 16 blocks of 1,048,576 (1,000,000 if multimode Decimal range) MEIDs each, 32 blocks of 524,288, 64 blocks of 262,144 or 256 blocks of 65,536.

A segmented MEID MFR Code may be assigned by the MEID Administrator, at his or her discretion, when it is judged that a segmented code may be an efficient use of the MEID MFR Code resource. This is the preferred method to help mitigate future exhaust concerns.

To responsibly address future numbering resource exhaust and also accommodate smaller manufacturer needs, Segmented Code deployable block assignment is the preferred method to assign MEID resources. Detailed Mobile Equipment Identifier (MEID) assignment information is provided by the Global Hexadecimal Administrator (GHA).

7.3 Reassignment; An unused MEID MFR Code that is recovered or returned from a previous assignee may be reassigned by the GHA to another manufacturer without limitation according to the principles in section 13.

7.4 An MEID Serial Number is assigned by the manufacturer to each MS, R-UIM or CSIM which it manufactures. An MEID is unique to a single MS, R-UIM or CSIM. The manufacturer exercises due

[2] GHA is presently assigning RR A1 range subdivided as 16 blocks of 1,048,576

[3] GHA is presently assigning RR A2 range subdivided as 256 blocks of 65,536

diligence in the design and manufacture of the MS, R-UIM or CSIM to ensure tamper resistance of the factory set MEID outside of place of manufacture and authorized service centers.

7.5 MEID MFR Codes are a global public resource. The assignment of any MEID MFR Code does not imply ownership of the resource by either the entity to which it is assigned or by the entity performing the administrative function.

7.6 Should a manufacturer transfer production of a type of MS, R-UIM or CSIM to a different manufacturer, then the use of the assigned MEID MFR Code is transferable to the new manufacturer using the Form D.

7.7 The MEID administrator:

- Assigns MEID MFR Codes in a fair, timely and impartial manner to any applicant that meets the criteria for assignment.
- Addresses each application in the order they are received and assign MEID MFR Codes from the available pool of unassigned codes based on applicant information provided and historical data. When all of the codes have been assigned, codes that had been assigned but never used and subsequently recovered by the MEID Administrator are assigned.
- Makes all assignments based on the procedures in these guidelines.
- Shall treat sensitive information received from applicants as proprietary and confidential, and not share with non-administrator personnel.
- Is the only global administrator authorized to assign hexadecimal (base 16) ranges i.e. MEID.

7.8 Information that is requested of applicants in support of an MEID MFR Code application shall be uniform and should be kept to a minimum. In the case of multimode IMEI/MEID equipment, the information to be divulged differs and is more detailed than for non-multimode terminals (see Ref. [2]).

7.9 Assigned MEID MFR Codes should start to be deployed as soon as possible, but no later than twelve months after assignment. If the assignee can demonstrate that an assigned MEID MFR Code has not started to be consumed solely due to delays beyond its control, the time period can be extended for up to 90 days. At the discretion of the administrator, three additional 90-day extensions may be granted.

7.10 An entity which is denied an MEID MFR Code assignment or extension under these guidelines has the right to appeal that decision.

7.11 Entities applying for assignment of MEID MFR Code(s) (see Ref. [5] Section 3.3), or entities to which MEID MFR Code(s) have been assigned shall comply with these guidelines.

7.12 There may be an administrative fee associated with an application for an MEID MFR Code(s).

8.0 CRITERIA FOR MEID ASSIGNMENT

The assignment criteria in this section should be considered by a potential MEID MFR Code applicant before submitting an MEID MFR Code application and is used by the MEID administrator in reviewing and processing an MEID MFR Code application:

8.1 Applicants for an MEID Manufacturer Code must satisfy the Administrator that they intend to place equipment on the market. (e.g., FCC Identifier and Grant Date).

8.2 An MEID MFR Code is only assigned by the administrator upon receipt and approval of a completed *Form A – MEID Manufacturer's Code Application*.

8.3 Form A should indicate the anticipated number of MFR Codes initially required. This information is held confidential by the MEID Administrator.

9.0 RESPONSIBILITIES OF MEID MANUFACTURER'S CODE APPLICANTS & ASSIGNEES

Entities requesting MEID MFR Code assignments shall comply with the following:

9.1 MEID MFR Code applicants and assignees must meet all conditions specified in these guidelines. Copies of the guidelines may be obtained from the MEID Administrator or overseeing industry body.

9.2 Applicants must apply in writing to the MEID Administrator by completing *Form A - MEID MFR Codes Application*. Copies of all required forms are included in these guidelines.

9.3 The MEID shall be set by the manufacturer. The manufacturer shall make every reasonable effort for the MEID to be not alterable, not capable of duplication nor removable outside of a manufacturer authorized service center, and any attempt to remove, tamper with, or change the MEID host component or operating system as originally programmed by the manufacturer shall render the MS inoperative. Where a dedicated MEID device is utilized, it must be permanently attached to the device that reads the MEID and the path to the device must be secured. The device shall not be removable and its pins shall not be accessible. The MEID is incorporated in an MS module, which is contained within the MS equipment. The MEID 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). The manufacturer who is also responsible for ascertaining that each MEID is unique and keeping detailed records of produced and delivered MS, R-UIM or CSIM should carry out implementation of each individual module.

9.4 MEID MFR Code assignees shall:

9.4.1 Assign a different MEID to each MS, R-UIM or CSIM, within the range allocated to the manufacturer. Note: R-UIM or CSIM vendors may subdivide their assigned MC (also known as "Issuer Code" see [6]) or their MC segment among network operators, but all SF_E-UIM_IDs associated with it must be used as E-UIM_IDs (i.e. none can be used as MEIDs for MEs). When submitting *Form A – Mobile Equipment IDentifier (MEID) Application,* one or the other must be identified in the General description of the MS, R-UIM or CSIM MEID Use Declaration line item.

9.4.2 Assign and efficiently manage the Serial Number associated with the assigned MEID MFR Codes. Maintain up-to-date and accurate assignment records that match MEIDs of their produced MSs, R-UIMs or CSIM. These records may be required for audit purposes. Receipt of Form G is also used as an audit tool. Unused ranges of MEID Code(s) assignments may be candidates for reclamation and reassignment.

9.4.3 Inform the MEID administrator of changes in the information associated with an MEID MFR Code assignment by using *Form D – Request for Change in MEID Assignment Information*. Changes may occur because of the transfer of an MEID MFR Code(s), through merger or acquisition, to a different MS manufacturer. The initial assignee of the MEID MFR Codes involved in a transfer occurring through merger, acquisition or other means must immediately inform the MEID Administrator when such a change becomes effective. Timely submission of change information enables the MEID Administrator to maintain accurate MEID MFR Code assignment records.

9.4.4 Participate in review of the MEID process, when requested.

9.4.5 Deploy any MEID MFR Code, assigned either directly by the administrator or obtained through merger or acquisition, within the time period specified. Inform the MEID Administrator of MEID MFR Code deployment by submitting *Form C – MEID Use Declaration*.

9.4.6 Apply to the MEID Administrator for an extension if the deployment requirement cannot be met and the MEID MFR Code is still required.

9.4.7 Return to the Administrator, using *Form F – MEID Assignment Return*:

- Any MEID MFR Code no longer needed for the production of MSs. An assignee that does not completely use MEID MFR(s) assignments should return the unused MEID MFR(s) to the MEID Administrator as soon as possible,
- Any MEID MFR Code not deployed within the time period specified, including extensions, or
- Any MEID MFR Code not used in conformance with these assignment guidelines.

9.4.8 Return to the MEID Administrator, on an annual basis on the anniversary date of the issuance of the MEID MFR Code, a duly completed and signed *Form G*.

10.0 RESPONSIBILITIES OF THE MEID ADMINISTRATOR

The role of the MEID Administrator is to manage the entire MEID resource and to directly administer the MEID MFR Code segment of the MEID. In this context, the MEID Administrator shall:

10.1 Provide to the industry general and specific information on the structure, proper use and management of MEIDs for MSs, R-UIMs or CSIMs meeting regulatory requirements.

10.2 Provide copies of these guidelines and forms to MEID MFR Code applicants and assignees, and assist them in completing the required forms.

10.3 Review and process MEID MFR Code applications as follows:

10.3.1 Review the application to determine if all requested information is provided and credible. If not, return the application to the applicant requesting that any deficiency be corrected.

10.3.2 Inform applicants of the status of their requests using *Form B – MEID Manufacturer's Code Application Disposition*. There are two possible dispositions: 1) granted or 2) additional information required. Notify the applicant in writing of the disposition within thirty days from receipt of Form A. The response includes:

- If granted, the specific MEID MFR Code(s) assigned,
- If additional information is required, the specific information required.

10.3.3 Keep confidential all information relative to anticipated volume of MSs, R-UIMs or CSIMs and/or market launch details provided by applicant.

10.4 Use the following MEID MFR Code assignment procedures:

10.4.1 The Administrator should assign MEID MFR Codes in numerical sequence.

10.4.2 There may be considerations or limitations on the part of the manufacturer that require a specific assignment or preclude them being able to use the next consecutive MEID MFR Code assignment. These exceptions are set forth below and in the addenda (if any) to this document.

10.4.3 The following MEID MFR Code(s) are not available for MFR Code assignment due to previous assignment and reservation (also see Section 18) e.g., test mobiles, expansion space:

Code A0000000 (Not available)

Code FFFFFFFF (Not available)

10.4.4 MEID MFR Code applicants eligible for multiple MEID MFR Codes (i.e., applicants with high run rates as determined by the MEID Administrator using historical data and unbiased judgment) may request that such codes be assigned in the next available block of numerically sequential codes (excepting those codes reserved or unavailable for assignment, pursuant to Section 9.4.2 or any subsequent addenda to these guidelines). In such cases, a separate Form A should be submitted for each MEID MFR Code required, along with a cover letter requesting their assignment in a sequential block.

10.5 Maintain accurate and current MEID MFR Code assignment records. Update the records as required to respond to requests for changes in assignment information reported by MEID MFR Code assignees. Respond to these requests within thirty days using *Form E – Confirmation of Change of MEID Assignment Information.*

10.6 Provide via an agreed method, a list of assigned MEID MFR Codes. The list includes the MEID MFR Code number, the manufacturer to which the code is currently assigned, and the assignee.

10.7 Track the number of MEIDs assigned and report this data regularly to the applicable Standards Development Organizations.

10.8 Investigate any MEID MFR Code that has not started to be deployed within the required time frame, and issue extensions if appropriate. Notify the appropriate Engineering Committee if an assignee fails to start to deploy an assigned MEID MFR Code within two extensions.

10.9 Reclaim assigned MEID MFR Code(s), as needed.

10.10 Direct the MEID conservation program and conduct periodic reviews, as required, of MEID MFR Code assignee records.

10.11 Inform the wireless telecommunications industry, via the agreed method, of any revisions to these guidelines.

10.12 The term of the MEID Administrator shall be for one (1) year from the date of appointment by the overseeing industry body. One (1) extension of the appointment is automatic. The appointment may be reviewed by the overseeing industry body at any time.

11.0 MEID MANUFACTURER'S CODE RETURN AND RECLAMATION PROCEDURES

11.1 Assignee responsibilities:

Assignees shall return MEID MFR Code(s) that are no longer required, not deployed, or not used in conformance with these assignment guidelines. In addition, assignees shall return the Code(s) and an indication of the range of Serial Numbers that have been used if the manufacturer has not manufactured an MEID MS, SF_MEID R-UIM or SF_MEID CSIM for at least one year.

Assignees shall cooperate with the MEID Administrator in carrying out its reclamation and review responsibilities.

11.2 Administrator responsibilities:

The MEID Administrator shall contact any MEID MFR Code assignee identified as not having returned to the Administrator, for reassignment, any MEID MFR Code(s) no longer required, not deployed, or not used in conformance with these assignment guidelines.

The Administrator shall first seek clarification from the assignee regarding any alleged non-use or misuse. If the assignee provides an explanation satisfactory to the administrator, and in conformance with these assignment guidelines, the MEID MFR Code will remain assigned. If no satisfactory explanation is provided, the Administrator will request a letter from the assignee returning the assigned code(s) for reassignment. If a direct contact can not be made with the assignee to effect the above process, a registered letter will be sent to the assignee address of record requesting that they contact the Administrator within thirty days regarding the alleged code non-use or misuse. If the letter is returned as non-delivered, the Administrator will advise the overseeing industry body i.e., the body that Administrator reports to (e.g. the ESN and MEID Administrator reports to TIA).

The MEID Administrator will consult with the overseeing industry body for guidance on any instance which is not resolved through the procedures in the paragraph above. The overseeing industry body will coordinate with appropriate industry fora in seeking a suggested resolution.

If the overseeing industry body cannot suggest a resolution, or if the MEID MFR Code assignee will not comply with the resolution suggested by the overseeing industry body, the MEID Administrator may refer the case to the appropriate regulatory body (pertinent to the jurisdiction where the assignee is located).

11.3 The overseeing industry body responsibilities:

- Accept all referrals of alleged non-use or misuse of MEID MFR Codes from the MEID Administrator or any other entity (also see section 15.0 regarding dispute resolutions),
- Investigate the referral,
- Review referrals in the context of these assignment guidelines,
- Attempt to identify a suggested resolution of the referral, and
- Inform the MEID Administrator of the suggested resolution, if identified, or that the overseeing industry body was unable to identify a suggested resolution,
- If a suggested resolution is not in conformance with the existing guidelines, the overseeing industry body may initiate the guidelines revision process [Section 14].
- Material changes or exceptions to these procedures should occur with industry consensus reflected in the change process, and in accord with Global Administration Procedure evolution.

12.0 MEID RESOURCE CONSERVATION AND ASSIGNMENT REVIEWS

12.1 Assignment and management of MEID resources are undertaken with the following conservation objectives:

- To efficiently and effectively administer/manage a limited resource through code conservation, and
- To eliminate or delay the potential for MEID exhaustion.

The process to achieve these objectives should not impede the introduction of competitive wireless services which use MEIDs.

12.2 To promote the efficient and effective use of numbering resources, reviews of MEID MFR Code assignments may be performed to ensure consistent compliance with these guidelines.

12.3 The MEID Administrator tracks and monitors MEID MFR Code assignments and assignment procedures to ensure that all segments of the MEIDs are being used in an efficient and effective manner. Ongoing administrator procedures that foster conservation shall include, but not be limited to, the following:

- An active reclamation program to reclaim unused or misused MEID MFR Code,
- Strict conformance with these guidelines by those assigning MEID MFR Codes and MEID Serial Numbers,
- Appropriate and timely modifications to these guidelines to enhance text that may have allowed inefficient use of MEID MFR Codes,
- Periodic specific and random reviews of assignments and assignment procedures.
- GSMA have re-examined the issue of TAC/MFR ID exhaustion in preparation for the "one model one TAC/MFR ID". The new forecast indicates that there are multiple 100s of years of capacity available. GSMA confirmed that TAC exhaustion is not an issue and does not need to influence TAC/MFR ID allocation activity.

12.4 The MEID Administrator may initiate a review of an MEID MFR Code assignee's assignment records. The review may be precipitated by a complaint from outside the Administrator's organization or by the Administrator. The review shall be initiated if a request for an MEID MFR Code assignment is received from a manufacturer that already has an MEID MFR Code assignment. The purpose of a review is to verify the MEID MFR Code assignee's compliance with the provisions set forth in these guidelines. The review is performed by the MEID Administrator or by a neutral third party acceptable to the reviewed party and the Administrator.

12.4.1 These reviews are conducted at the MEID MFR Code assignee's premises or at a mutually agreed to location and at a mutually agreed to time.

12.4.2 The MEID Administrator shall not copy or remove the information from the premises nor disclose the information to non-MEID Administrator personnel.

12.4.3 The MEID Administrator reviews the following information to ensure conformance with these guidelines and the proper use of the MEID resource:

- Verification that not more than one MEID MFR Code is assigned unless near serial number exhaustion has been reached under all but one of the assigned MEID MFR Codes, or, if a new MEID MFR Code assignment has been requested, verification that near serial number exhaustion has been reached under all assigned MEID MFR Codes. However, a manufacturer can request the assignment of multiple MEIDs if that manufacturer can certify that they reasonably expect to exhaust all their assigned MEIDs within six months of issuance.
- Verification of assignment for each working MEID MFR Code, (e.g. declaration from manufacturer)
- Date of assignment of each working MEID MFR Code,
- Implementation date of each working MEID MFR Code,
- Indication of MEID Serial Number assignment to MSs, R-UIMs or CSIMs, and
- Status and status date of each MEID MFR Code unavailable for assignment; *i.e.*, MEID MFR Codes reserved, aging, pending and/or, suspended.

12.5 Review results should be used to identify and recommend to the overseeing industry body specific corrective actions that may be necessary. Examples of specific corrective actions, which may be proposed, are as follows:

- Modifications to these assignment guidelines to reflect the specific circumstance revealed by the review,

- Additional training for MEID MFR Code assignees concerning the assignment guidelines,
- Return of assigned MEID MFR Code,
- Requirements for supporting documentation of future MEID MFR Code requests in non-compliant situations, or
- Modifications to the process in which records are maintained or MEID MFR Codes are assigned.

12.6 Review results with respect to MEID MFR Code assignee information and/or recommended MEID MFR Code assignee process modifications shall be treated on a proprietary and confidential basis.

12.7 Failure to participate or cooperate in a review shall result in the activation of MEID MFR Code reclamation procedures.

13.0 MEID EXHAUSTION CONTINGENCY

13.1 When 75% of all the available MEID MFR Codes have been assigned, or assignments are exceeding 10% of the resource per year, the MEID Administrator shall inform the overseeing industry body.

13.2 When the MEID Administrator informs the overseeing industry body that the MEID MFR Codes are approaching exhaustion, the overseeing industry body:

- Conducts a review of current MEID MFR Codes assignments to ensure that efficient MEID MFR Codes utilization is in effect, and, if not,
- Recommends additional procedures to be initiated to effect more efficient MEID MFR Codes utilization, or if efficient utilization is in effect,
- Makes a determination of the most efficient method of expanding the MEID keeping in mind the requisite lead time required to adequately address the network elements which utilize the MEID.

13.3 Using data provided by the overseeing industry body, the wireless industry shall undertake to specify the desired method and time frame needed to implement the proposed changes in the MEID. There should be concurrence from all disciplines in the wireless industry as to the method and time frame for implementation of a replacement for MEID MFR Codes.

13.4 A partially used MEID MFR Code may be reassigned to another manufacturer for use with limited serial numbers if a significant block of serial numbers associated to that MEID MFR Code remained unassigned.

When the criteria in section 13.1 have been reached the administrator may recommend methods of conservation and re-use of parts of assigned blocks that will not be used.

An MEID MFR Code(s) recovered or returned to the administrator for reassignment may remain dormant. If no MSs, R-UIMs or CSIM have been manufactured by the previous assignee, the code(s) may be reissued. If, however, MSs, R-UIMs or CSIM have been produced and sold, the code(s) shall be blocked from future use. As the need for MEID MFR Codes becomes critical (e.g., 90% of available codes are assigned), codes which have been partially used by a previous assignee may be re-assigned with serial number range limitations. That is, if the previous assignee had only produced a limited number of equipment using a contiguous serial number range, the present assignee may use the code to produce equipment with serial numbers that do not duplicate those of the previous assignee. It should be recognized that the re-issue of an MEID MFR Code is considered an exceptional measure anticipated to be invoked only during MEID resource exhaust timeframes.

14.0 MAINTENANCE OF GUIDELINES

It may be necessary to modify the guidelines periodically to meet changing and unforeseen circumstances. The administrator, any entity in the wireless telecommunications sector or the appropriate wireless industry forum, may identify the need for guidelines modification. When need for modification is identified by other than the forum, the identifying entity submits the modification issue to the forum. The forum coordinates the modification process. Questions or concerns regarding the maintenance of the guidelines may be directed to:

MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA
Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

15.0 APPEALS PROCESS

Disagreements may arise between the MEID Administrator and MEID applicants or assignees in the context of the administration and management of MEIDs and the application of these guidelines. In all cases, the MEID Administrator and MEID applicants/assignees shall make reasonable, good faith efforts to resolve such disagreements among themselves, consistent with the guidelines, prior to pursuing any appeal. Appeals may include, but are not limited to, one or more of the following situations,

By submitting an application for MEID Codes, accepting these Guidelines, or accepting any MEID MFR Code Assignments, the company agrees that these Guidelines and all disputes arising out of or relating to the application for or assignment of MEID MFR codes shall be governed by the laws of the state of Virginia without giving effect to applicable conflict of laws provisions. The parties further agree that they will first attempt to resolve any and all disputes, differences, or questions arising out of or relating to these Guidelines, or the validity, interpretation, breach, or violation or termination thereof through a meeting of the principals of the parties. Such meeting may be in person, via telephone or via videoconference. If such a meeting does not resolve the dispute between the parties, the matter must first be brought to a meeting of the TIA TR-45 EUMAG. If that meeting does not resolve the issue, the matter must then be brought to the industry experts participating in TIA TR-45. In the event such meetings are unsuccessful, then such dispute shall be finally and solely determined and settled by arbitration in Washington, D.C. in accordance with the Commercial Arbitration Rules of the American Arbitration Association. In any such arbitration proceedings, the arbitrators shall adopt and apply the provisions of the Federal Rules of Civil Procedure relating to discovery so that each party shall allow and may obtain discovery of any matter not privileged which is relevant to the subject matter involved in the arbitration to the same extent as if such arbitration were a civil action pending in a United States District Court. Judgment upon any arbitration award may be entered and enforced in any court of competent jurisdiction. All notices required hereunder shall be in writing.

Reports on any resolution resulting from the above situations, the content of which is mutually agreed upon by the involved parties, and kept on file by the MEID Administrator. At a minimum, the report contains the final disposition of the appeal; e.g., whether or not an MEID was assigned.

16.0 GLOSSARY

3GPP - Third Generation Partnership Project

3GPP2 - Third Generation Partnership Project Two

Assignee - The entity to which an IMEI/MEID, MEID, UIM or ESN has been assigned for the manufacture of mobile stations.

Brand Owner (BO) - Brand Owners are Private Labels that neither design nor manufacture any products. These companies generally select and acquire existing products from Original Design Manufacturers (ODMs) who offer their off-the-shelf portfolio to their customers. Brand Owners / Private Labels sometimes also work through IDHs for their design requirements and Electronic Manufacturing Services (EMS's) for contract

manufacturing. These companies market the procured products under their own brand names to the consumers.

CEIR - Central Equipment Identity Register

CMRS - Commercial Mobile Radio Service. A mobile service (or functional equivalent) that is (1) provided for profit, (2) an interconnected service, and (3) available to the public, or to such classes of eligible users as to be effectively available to a substantial portion of the public.

Conservation - Consideration given to the efficient and effective use of a finite resource in order to minimize the need to expand its availability while at the same time allowing the maximum flexibility in the introduction of new services, capabilities and features.

CSIM – CDMA2000® Subscriber Identity Module

ESN - The Electronic Serial Number

Electronic Manufacturing Services (EMS)- Companies that provide manufacturing services to other companies including Original Equipment Manufacturers (OEMs) and Independent Design Houses (IDH's). EMS do not sell or market any product under their own brand.

EUIM-ID - Expanded R-UIM Identity

GAN - Generic Access Network

GDA - Global Decimal Administrator

GHA - Global Hexadecimal Administrator

GEID - Global Equipment Identifier encompasses both the GDA and GHA assignable numbering range for coordinated global roaming and harmonization between 3G technologies as a universal mobile equipment identifier.

GSMA - GSM Association

IMEI - International Mobile Equipment Identity, which may uniquely identify a mobile station

Independent Design House (IDH) - Companies that have independent in-house design expertise and produce custom / reference designs for other companies including ODM's, OEM's, and EMS's but do not provide any manufacturing services to their customers neither do they sell or market any products under their own brand.

ME - Mobile Equipment. *(See also Mobile station, R-UIM or CSIM)*

MEID - Mobile Equipment Identity, which may uniquely identify a mobile station

MS - Mobile Station. Interface equipment used to terminate the radio path at the user side. The mobile station contains an Electronic Serial Number and other identification information, either a Mobile Identification Number (MIN) or an International Mobile Station Identification (IMSI).

Multi-Mode IMEI/MEID MS - Mobile Station designed to operate according to more than one air interface or Network specification. Terminals designed to comply with both 3GPP and 3GPP2 specifications. Note: IMEI /MEID Manufacturers ID Code field is similar to an IMEI TAC field.

Original Design Manufacturer (ODM) - Companies that design and manufacture products that are sold by other companies under their own brand names. The ODM's do not sell or market their products directly to the consumers.

Original Equipment Manufacturer (OEM) - Company that designs, manufacture, sell, and market products under their own brand name. Some OEM's only design their products while the manufacturing is outsourced to contract manufacturers, generally referred to EMS / ECM (Electronic Manufacturing Services / Electronic Contract Manufacturing).

Overseeing Industry body - The body that the MEID Administrator reports to (e.g. ESN Administrator and MEID Administrator reports to TIA).

Regulatory Approved Licensed two-way CMRS service provider - Any entity that is authorized, as appropriate, by local, state, or federal regulatory authorities to provide two-way mobile stations to the public.

R-UIM - Removable User Identification Module, often called the Subscriber Identity Module (SIM) card.

Sensitive Information - Information expressly identified as such by applicant or information on submitted forms other than manufacturer name and contact information.

Serial Number - The portion of the MEID or IMEI that uniquely identifies the MS within the Manufacturer code allocation space.

SF_EUIMID - Short Form EUIM-ID.

SIM/ (U)SIM/ UICC/ eUICC - (similar to R-UIM and CSIM cards) Subscriber Identity Module/ Universal Subscriber Identity Module/ Universal Integrated Circuit Card/ enhanced Universal Integrated Circuit Card.

TAC - Type Allocation Code (IMEI 3GPP terminology).

TIA - Telecommunications Industry Association.

UIM - User Identification Module.

17.0 MEID ADMINISTRATIVE REPORT INFORMATION

An MEID GHA administrative report may be available to materially and directly-affected parties via the TIA online MEID database.

18.0 MEID MANUFACTURER'S CODE ASSIGNMENT

The MEID Manufacturers Code assignment information may be available to materially and directly-affected parties via the TIA online MEID Manufacturers Code assignment database as determined by TIA. Login/password credentials are required.

The following table is an example of MEID ranges.

Manufacturer Code		Manufacturer (list manufacturer name or regional administration body and contact information when allocated)
Hexadecimal	Decimal	
	98dddddd	GHA (for 3GPP/3GPP2 multi-mode terminals) <* see note below this table>
	99dddddd	GHA (for 3GPP/3GPP2 multi-mode terminals) (Start)
A0000000		**Reserved for test / prototype mobiles allocated in small quantities**
A0000001		Available for allocation to regional administration bodies or mobile manufacturers (Start)
--->	--->	Available for allocation to regional administration bodies or mobile manufacturers
FFFFFFFE	*4,294,967,294*	Available for allocation to regional administration bodies or mobile manufacturers
FFFFFFFF	*4,294,967,295*	**Reserved**

* Note: With the exception of ranges inadvertently assigned by the GDA prior to January 2010.

19.0 MEID APPLICATION AND RELATED FORMS PACKAGE

The MEID db online application process is the near realtime primary method for MEID Applications and Assignments and is found at **https://tiameid.org** . The online application process adheres to the same guidelines herein. Form versions used in the MEID database may vary slightly from these to accommodate online processing.

The forms included in this package are used for communication between the MEID Administrator and applicants for assignees of these resources. The online MEID application process is the primary application method. Forms included in this package are:

Form A – Mobile Equipment Identifier (MEID) Application also applicable for SF_EUIMID i.e., R-UIM or CSIM

Applicants complete, sign, and return this form to apply for an MEID. Note: Form "A" pages 3a, 3b, 3c, 3d, 3e, 3f and 3g (used primarily for multi-mode assignments) may be submitted independently when information is updated and the page 3g "Update Section" is completed.

Form B – Mobile Equipment Identifier (MEID) Application Disposition also applicable for SF_EUIMID i.e., R-UIM or CSIM.

The MEID GHA Administrator uses this form to notify the applicant of the outcome of his/her application, which may be a code assignment, denial, or a request for additional clarifying information.

Form C – Mobile Equipment Identifier (MEID) Use Declaration also applicable for SF_EUIMID i.e., R-UIM or CSIM.

The recipient of an Mobile Equipment Identifier (MEID) assignment uses this form to notify the MEID Administrator that the assigned code has been deployed.

Form D – Request for Change in Mobile Equipment Identifier (MEID) Assignment Information also applicable for SF_EUIMID i.e., R-UIM or CSIM

Mobile Equipment Identifier (MEID) assignees use this form to notify the MEID Administrator of a change in any of the assignment information; for example, a change in the name, address, or phone number of the contact person in the company holding the Mobile Equipment Identifier (MEID). As a more complex example, this form should also be used to record the transfer of a Mobile Equipment Identifier (MEID) to a new company, as might happen as a result of a merger or acquisition.

Form E – Confirmation of Change in Mobile Equipment Identifier (MEID) Assignment Information also applicable for SF_EUIMID i.e., R-UIM or CSIM.

The MEID Administrator uses this form to acknowledge a change initiated by a Mobile Equipment Identifier (MEID) assignee through submission of Form D.

Form F – Mobile Equipment Identifier (MEID) Assignment Return also applicable for SF_EUIMID i.e., R-UIM or CSIM.

Mobile Equipment Identifier (MEID) assignees use this form to return to the pool any Mobile Equipment Identifier (MEID) which are no longer required.

Form G – Certification of Compliance with MEID Guidelines also applicable for SF_EUIMID i.e., R-UIM or CSIM.

Mobile Equipment Identifier (MEID) assignees use this form to certify compliance with the MEID Assignment Guidelines and Procedures.

Return completed forms to:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA
Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM) Note: MEID database version may vary slightly.

Entity (company name) requesting assignment: .....
General description of the MS ○ or R-UIM/CSIM ○ to be provided **(Check One)**

.....

.....

Regulatory Agency Reference Code (if applicable): ……...

Multi-Mode (RR99) MS terminals designed to comply with both 3GPP and 3GPP2 air interface specifications?
YES ○ NO ○ (one (1) Decimal RR99 block = 1,000,000)

IMPORTANT: If "YES" must complete pages 3a, 3b, 3c, 3d, 3e, 3f and 3g of FORM "A".

Test Block?
YES ○ NO ○

Singlemode Block size (tick one per Form A)?

○ A0 (1 block = 16,777,216) ○ A1 (1 block = 1,048,576) ○ A2 (1 block = 65,536)

Number of Serial Numbers being requested: .....

Do special considerations apply?
YES ○ NO ○

If YES, please specify the special consideration(s) needed

.....

.....

……..

The MEID shall be set by the manufacturer. The manufacturer shall make every reasonable effort for the MEID to be not alterable, not capable of duplication nor removable outside of a manufacturer authorized service center, and any attempt to remove, tamper with, or change the MEID host component or operating system as originally programmed by the manufacturer shall render the MS inoperative. Where a dedicated MEID device is utilized, it must be permanently attached to the device that reads the MEID and the path to the device must be secured. The device shall not be removable and its pins shall not be accessible. The MEID is incorporated in an MS or R-UIM or CSIM. The MEID 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). The manufacturer is also responsible for ascertaining that each MEID is unique and keeping detailed records of produced and delivered MSs, R-UIMs and CSIMs.

Form "A" Page 1

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

Contact: (Family name): …… (Given name): …….....

Name Title: Mr.◯ Mrs.◯ Ms.◯ Dr.◯ Other: ◯ _____

Company: ....

Address: ....

……...

City: ……..……... State (Province): ……..…….. Postal Code (ZIP): .....

Country: .....

Phone: ..... Cell (Mobile): …… Fax: .....

E-mail: ..... [Chat e.g., WeChat]: ……

Signature below indicates that the applicant:

- Certifies the accuracy of the information provided in this application,
- Commits to deploy any assigned MEID Manufacturer's Code(s) within the time period specified by the assignment guidelines,
- Certifies that the **MOBILE EQUIPMENT IDENTIFIER** (MEID) Manufacturer's Code will be used in mobile sets for CMRS,
- Certifies that any required authorization has been secured from the appropriate federal, state, or local regulatory bodies, and
- Understands and agrees that the use of any assigned MEID Manufacturer's Code(s) in a manner other than in conformance with the assignment guidelines may result in forfeiture.

Authorized name: ..... Job Title: .....

Authorized signature: .....

E-mail: .....

Date of application: .....

Form "A" Page 2

Complete next pages 3a, 3b, 3c, 3d, 3e, 3f and 3g ONLY if you are requesting MEID Mfr Codes for Multi-Mode equipment designed to comply with both 3GPP and 3GPP2 air interface specifications.

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM) **(CONTINUED)** Note: MEID database version may vary slightly.

Complete these pages ONLY if you are requesting IMEI/MEID Manufacturer's Codes for Multi-Mode ME or MS equipment designed to comply with both 3GPP and 3GPP2 air interface specifications.

WARNING – Must be filled out accurately and in full for proper global interoperability, as the information is promulgated for input for the GSMA IMEI database.

NOTE: Form "A" pages 3a, 3b, 3c, 3d, 3e, 3f and 3g may be submitted independently when information is updated and the "Update Section" is completed (see page 3g).

Should any of the requested block(s) be labeled "Reserved" for confidential identification? YES* ○ NO ○

Number of Blocks you want to Reserve? _____

*** If "YES", a*pplicants MUST promptly follow up "Reserved" block requests with updated details (e.g., marketing/brand/model names, "tick box" characteristics), including the UPDATE SECTION information below, to the MEID Administrator prior to these products being shipped for commercial deployment.***

==========

Brand: _____ May be same as Manufacturer {i.e., entity requesting assignment} or different.

Model: _____ One model per TAC/MFR ID

Manufacturers Internal Model Name: _____(Optional) Free text for any internal description used by MFR.

Marketing Name(s): _____ Include all names and variants of the model. Separate any Marketing Names that will be used for the sale of the device, by commas.

Are you the OEM? YES ○ NO ○ Note: If "NO", MUST provide the details of the manufacturer (ODM) or design house (IDH) :

ODM / IDH Company Name: _____

ODM / IDH Contact Name:_____

ODM / IDH Contact E-mail Address: _____

ODM / IDH Contact Address: _____

Equipment Type: (select one)

Tablet ○ IoT Device ○ Dongle ○ Modem ○ Mobile/Feature Phone ○

WLAN Router ○ Wearable ○ Smartphone ○

Operating System/Platform supported: (Only one (1) Operating System per IMEI/MEID).

Android ○ Android Wear ○ Bada ○ BlackBerry ○ CyanogenMod ○ Firefox ○ iOS ○ KaiOS ○

Linux ○ Mac OS ○ Nucleus ○ Phoenix ○ Proprietary OS ○ RTOS ○ S30 ○ Sailfish ○

Symbian ○ ThreadX ○ TIZEN ○ UBUNTU ○ Windows ○ Windows Phone ○ YunOS (Aliyan) ○

None ○ (Automatic selection ONLY. No manual selection is allowed). If the Equipment Type is "Dongle", "WLAN Router" or "Modem", the box for "Operating System" will be pre-selected as "None".

Device Certification Bodies: _____ (Optional)

Form "A" Page 3a

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

Low Power Wide Area Network (LPWAN) Support? YES ◯ NO ◯

If LPWAN Support is "YES" :

Does your device support EC-GSM-IoT? YES ◯ NO ◯

Does your device support Cat-NB1? YES ◯ NO ◯

Does your device support Cat-NB2? YES ◯ NO ◯ (If 'YES' then Cat-NB1 is automatically ticked as well.)

Does your device support Cat-M1? YES ◯ NO ◯

Does your device support Cat-M2? YES ◯ NO ◯ (If 'YES' then Cat-M1 is automatically ticked as well.)

Modes, Bands Supported:

GAN ☐

CDMA 2000® ☐

GSM Bands

GSM 450 ☐ GSM 850 (GSM 800) ☐ GSM 900 ☐ GSM 1800 ☐ GSM 1900 ☐

WCDMA FDD Bands

WCDMA FDD Band 1 ☐ WCDMA FDD Band 1 ☐ WCDMA FDD Band 3 ☐

WCDMA FDD Band 4 ☐ WCDMA FDD Band 5 ☐ WCDMA FDD Band 6 ☐

WCDMA FDD Band 7 ☐ WCDMA FDD Band 8 ☐ WCDMA FDD Band 9 ☐

WCDMA FDD Band 10 ☐ WCDMA FDD Band 11 ☐ WCDMA FDD Band 12 ☐

WCDMA FDD Band 13 ☐ WCDMA FDD Band 14 ☐ WCDMA FDD Band 19 ☐

WCDMA FDD Band 20 ☐ WCDMA FDD Band 21 ☐ WCDMA FDD Band 22 ☐

WCDMA FDD Band 25 ☐ WCDMA FDD Band 26 ☐ WCDMA FDD Band 32 ☐

WCDMA TDD / TD-SCDMA Bands

WCDMA TDD Band A (also known as TD-SCDMA Band A) ☐

WCDMA TDD Band B ☐ WCDMA TDD Band C ☐ WCDMA TDD Band D ☐

Form "A" Page 3b

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

E-UTRA LTE FDD Bands

LTE FDD Band 1 ☐	LTE FDD Band 2 ☐	LTE FDD Band 3 ☐	LTE FDD Band 4 ☐
LTE FDD Band 5 ☐	LTE FDD Band 6 ☐	LTE FDD Band 7 ☐	LTE FDD Band 8 ☐
LTE FDD Band 9 ☐	LTE FDD Band 10 ☐	LTE FDD Band 11 ☐	LTE FDD Band 12 ☐
LTE FDD Band 13 ☐	LTE FDD Band 14 ☐	LTE FDD Band 15 ☐	LTE FDD Band 16 ☐
LTE FDD Band 17 ☐	LTE FDD Band 18 ☐	LTE FDD Band 19 ☐	LTE FDD Band 20 ☐
LTE FDD Band 21 ☐	LTE FDD Band 22 ☐	LTE FDD Band 23 ☐	LTE FDD Band 24 ☐
LTE FDD Band 25 ☐	LTE FDD Band 26 ☐	LTE FDD Band 27 ☐	LTE FDD Band 28 ☐
LTE FDD Band 29 ☐	LTE FDD Band 30 ☐	LTE FDD Band 31 ☐	LTE FDD Band 32 ☐
LTE FDD Band 65 ☐	LTE FDD Band 66 ☐	LTE FDD Band 67 ☐	LTE FDD Band 68 ☐
LTE FDD Band 69 ☐	LTE FDD Band 70 ☐	LTE FDD Band 71 ☐	LTE FDD Band 72 ☐
LTE FDD Band 73 ☐	LTE FDD Band 74 ☐	LTE FDD Band 75 ☐	LTE FDD Band 76 ☐

E-UTRA LTE TDD Bands

LTE TDD Band 33 ☐	LTE TDD Band 34 ☐	LTE TDD Band 35 ☐	LTE TDD Band 36 ☐
LTE TDD Band 37 ☐	LTE TDD Band 38 ☐	LTE TDD Band 39 ☐	LTE TDD Band 40 ☐
LTE TDD Band 41 ☐	LTE TDD Band 42 ☐	LTE TDD Band 43 ☐	LTE TDD Band 44 ☐

Form "A" Page 3c

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

Intra-band contiguous Carrier Aggregation (CA) operating bands and configurations

CA_1C ☐ CA_2C ☐ CA_3C ☐ CA_4C ☐ CA_5C ☐ CA_7B ☐ CA_7C ☐ CA_12B ☐
CA_13C ☐ CA_23B ☐ CA_27B ☐ CA_38C ☐ CA_39C ☐ CA_40C ☐ CA_40D ☐
CA_41C ☐ CA_41D ☐ CA_42C ☐ CA_42D ☐

Inter-band Carrier Aggregation (CA) operating bands and configurations (Two Bands)

CA_1A-3A ☐ CA_1A-5A ☐ CA_1A-7A ☐ CA_1A-8A ☐ CA_1A-11A ☐ CA_1A-18A ☐

CA_ 1A-19A ☐ CA_ 1A-20A ☐ CA_1A-21A ☐ CA_ 1A-26A ☐ CA_1A-28A ☐ CA_1A-40A ☐

CA_ 1A-41A ☐ CA_1A-41C ☐ CA_1A-42A ☐ CA_1A-42C ☐ CA_2A-4A ☐ CA_ 2A-2A-4A ☐

CA_2A-4A-4A ☐ CA_2A-2A-4A-4A ☐ CA_2A-5A ☐ CA_2A-2A-5A ☐ CA_2C-5A ☐

CA_2A-12A ☐ CA_2A-2A-12A ☐ CA_2A-12B ☐ CA_2C-12A ☐ CA_2A-13A ☐ CA_2A-2A-13A ☐

CA_2A-17A ☐ CA_2A-28A ☐ CA_2A-29A ☐ CA_2C-29A ☐ CA_2A-30A ☐ CA_2C-30A ☐

CA_3A-5A ☐ CA_3C-5A ☐ CA_3A-7A ☐ CA_3A-7B ☐ CA_3A-7C ☐ CA_3C-7A ☐

CA_3A-8A ☐ CA_3A-3A-8A ☐ CA_3A-19A ☐ CA_3A-20A ☐ CA_3A-26A ☐ CA_3A-27A ☐

CA_3A-28A ☐ CA_3A-31A ☐ CA_3A-38A ☐ CA_3A-40A ☐ CA_3A-40C ☐ CA_3A-42A ☐

CA_3A-42C ☐ CA_4A-5A ☐ CA_4A-4A-5A ☐ CA_4A-7A ☐ CA_4A-4A-7A ☐ CA_4A-12A ☐

CA_4A-4A-12A ☐ CA_4A-12B ☐ CA_4A-13A ☐ CA_4A-4A-13A ☐ CA_4A-17A ☐

CA_4A-27A ☐ CA_4A-28A ☐ CA_4A-29A ☐ CA_4A-30A ☐ CA_5A-5A ☐ CA_5A-7A ☐

CA_5A-12A ☐ CA_5A-13A ☐ CA_5A-17A ☐ CA_5A-25A ☐ CA_5A-29A ☐ CA_5A-30A ☐

CA_5A-40A ☐ CA_7A-8A ☐ CA_7A-12A ☐ CA_7A-20A ☐ CA_7A-22A ☐ CA_7A-28A ☐

CA_7B-28A ☐ CA_8A-11A ☐ CA_8A-20A ☐ CA_8A-40A ☐ CA_8A-41C ☐ CA_11A-18A ☐

CA_12A-25A ☐ CA_12A-30A ☐ CA_18A-28A ☐ CA_19A-21A ☐ CA_19A-42C ☐

CA_20A-31A ☐ CA_20A-32A ☐ CA_21A-42A ☐ CA_21A-42C ☐ CA_23A-29A ☐

CA_25A-26A ☐ CA_25A-41A ☐ CA_25A-41C ☐ CA_25A-41D ☐ CA_26A-41A ☐

CA_26A-41C ☐ CA_29A-30A ☐ CA_38A-40A ☐ CA_38A-40A-40A ☐ CA_38A-40C ☐

CA_39A-41A ☐ CA_39A-41C ☐ CA_39C-41A ☐ CA_41A-42A ☐ CA_41A-42C ☐

Form "A" Page 3d

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

Inter-band Carrier Aggregation (CA) operating bands and configurations

CA_1A-3A-5A ☐ CA_1A-3A-8A ☐ CA_1A-3A-19A ☐ CA_1A-3A-20A ☐ CA_1A-3A-26A ☐

CA_1A-3A-28A ☐ CA_1A-3A-42A ☐ CA_1A-5A-7A ☐ CA_1A-7A-20A ☐ CA_1A-7A-28A ☐

CA_1A-18A-28A ☐ CA_1A-19A-21A ☐ CA_1A-19A-42A ☐ CA_1A-21A-42A ☐ CA_2A-4A-5A ☐

CA_2A-4A-12A ☐ CA_2A-2A-4A-12A ☐ CA_2A-4A-4A-12A ☐ CA_2A-4A-13A ☐ CA_2A-4A-29A ☐

CA_2A-4A-30A ☐ CA_2A-5A-12A ☐ CA_2A-5A-13A ☐ CA_2A-5A-29A ☐ CA_2A-5A-30A ☐

CA_2C-5A-30A ☐ CA_2A-12A-30A ☐ CA_2C-12A-30A ☐ CA_2A-29A-30A ☐ CA_2C-29A-30A ☐

CA_3A-7A-8A ☐ CA_3A-7A-20A ☐ CA_3A-7A-28A ☐ CA_3A-19A-42A ☐ CA_4A-5A-12A ☐

CA_4A-5A-13A ☐ CA_4A-5A-30A ☐ CA_4A-7A-12A ☐ CA_4A-12A-30A ☐ CA_4A-29A-30A ☐

CA_7A-8A-20A ☐ CA_19A-21A-42A ☐

Inter-band Carrier Aggregation (CA) operating bands and configurations (Four Bands)

CA_2A-4A-5A-30A ☐ CA_2A-4A-12A-30A ☐ CA_2A-4A-29A-30A ☐

Intra-band non-contiguous Carrier Aggregation (CA) operating bands and configurations (With Two Sub-Blocks)

CA_2A-2A ☐ CA_3A-3A ☐ CA_4A-4A ☐ CA_7A-7A ☐ CA_23A-23A ☐ CA_25A-25A ☐

CA_40A-40A ☐ CA_41A-41A ☐ CA_41A-41C ☐ CA_41C-41A ☐ CA_42A-42A ☐

CA_42A-42C ☐ CA_42C-42A ☐

Inter-band dual connectivity operating bands and configurations (Two Bands)

DC_1A-3A ☐ DC_1A-5A ☐ DC_1A-7A ☐ DC_1A-8A ☐ DC_1A-19A ☐ DC_1A-21A ☐

DC_2A-4A ☐ DC_2A-13A ☐ DC_3A-5A ☐ DC_3A-7A ☐ DC_3A-8A ☐ DC_3A-19A ☐

DC_3A-20A ☐ DC_3A-26A ☐ DC_4A-7A ☐ DC_4A-12A ☐ DC_4A-13A ☐ DC_4A-17A ☐

DC_5A-7A ☐ DC_5A-12A ☐ DC_5A-17A ☐ DC_7A-20A ☐ DC_7A-28A ☐ DC_19A-21A ☐

DC_39A-41A ☐

Form "A" Page 3e

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

Other Radio Interfaces Supported:

3GPP2 ☐ CDMA ☐ Satellite ☐ None ☐

Other ☐ _____ (i.e., modes/bands not listed on the Form. These are not entered in the coordinated IMEI database if they are not standardized)

SIM / UICC / eUICC:

NOTE:
If more than one (U)SIM can be connected at the same time to a transceiver, for example in Stand-by Mode, the transceiver shall have multiple, unique IMEI/MEIDs so that all (U)SIMs, that are connected at the same time, will use a separate, unique IMEI/MEID.

For devices with Multiple SIMs which are all Active at the same time (have simultaneous connections to the network) each SIM must use a separate, unique IMEI/MEID.

Multiple SIMs where some SIM(s) are in Standby Mode (only listening on the network) each SIM must use a separate, unique IMEI/MEID.

Multiple SIMs which are all Passive (only one can connect to the network at any time and the connection is switched between the SIM) only one IMEI/MEID is required to be allocated to the transceiver.

If the transceivers are different (e.g. different chipset, different frequency bands, different control software), then the transceivers must have a different serial number range, and the SIM(s) associated with that transceiver would have an IMEI/MEID from the same IMEI/MEID serial number range. Each transceiver shall have enough unique IMEI/MEIDs so that all (U)SIMs that are connected at the same time can use separate, unique IMEI/MEIDs.

Support Removable UICC? Earlier removable SIM, USIM, and eSIM support is represented as Removable UICC.

YES ○ NO ○ (If "YES", Select the number of UICC supported.)

Support Non Removable UICC?

YES ○ NO ○ (If "YES", Select the number of UICC supported.)

UICC Support (Select the number of UICC slots that the device supports.) (The default is 1 if UICC = "YES")

1○ 2○ 3○ 4○

Support Removable eUICC?

YES ○ NO ○ (If "YES", Select the number of eUICC supported.)

Support Non Removable eUICC?

YES ○ NO (If "YES", Select the number of eUICC supported.)

eUICC Support (Select the number of eUICC slots that the device supports.) (The default is 1 if eUICC = "YES")

1○ 2○ 3○ 4○

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

Support NFC?

YES ○ NO ○

Support Bluetooth?

YES ○ NO ○

Support WLAN?

YES ○ NO ○

UPDATE SECTION:

Note: Use of the Update Section is for follow up of "Reserved" block requests to provide updated details (e.g., marketing/brand/model names, "tick box" characteristics). Use of the Update Section for other than "Reserved" block updates are limited to data errors / corrections with the approval of the MEID Administrator.

Date of update: ……..…

Date of original application: ……

Company: .....

Authorized name: .....

Job Title: .....

Authorized signature: .....

Phone: .....

Cell (Mobile): ..…….……

E-mail: .....

MFR ID code and Block #(s) related to original application: _____

Form "A" Page 3g

FORM A – MOBILE EQUIPMENT IDENTIFIER (MEID) APPLICATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM **(CONTINUED)** Note: MEID database version may vary slightly.

All Applicants Complete this Page 4

There may be a non-refundable application fee for each MEID Manufacturer's Code requested and allocated by the administrator. Administrative fee for applications are set by the MEID Global Hexadecimal Administrator. Please refer to the TIA website for the current fee structure. Payment of the non-refundable application fee is:

☐ by wire transfer (TIA invoice will include bank wire transfer information) or

☐ by enclosed check (made payable to Telecommunications Industry Association) or

☐ by credit card (mark one): ☐ MasterCard

☐ Visa

☐ American Express

Credit card number _____

Expiration date (Month MM / Year YY) _____

If applicable, reference PO (Purchase Order) number on Invoice: _____

Signature of card holder_____

Printed name of card holder_____

Dated: _____

Return completed application forms to:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

Form "A" Page 4

FORM B – MOBILE EQUIPMENT IDENTIFIER MANUFACTURER'S CODE APPLICATION DISPOSITION (also applicable for SF_EUIMID i.e., R-UIM or CSIM) Note: MEID database version may vary slightly

The MEID Administrator has reviewed your application filed for assignment of an MEID Manufacturer's Code. The box checked below indicates the action taken:

☐ Your application has been granted. The MEID Manufacturer's Code(s) and serial number code range(s) assigned for your use is/are:

.....

The assignment is effective as of: .....

The information recorded for this assignment is shown below. Please notify the MEID Administrator immediately of any errors in or changes to this information.

(*Display computer generated assignment information here.*)

☐ Your application has not been granted at this time for the following reason(s):

.....

.....

You are entitled to appeal as specified in Section 15 of the assignment guidelines.

☐ The following additional information is needed to process your application:

.....

.....

Authorized name: ..... Job Title: .....

Authorized signature: .....

Phone: ..... Cell (Mobile): ..…… E-mail: .....

Date: .....

Form "B"

FORM C – MOBILE EQUIPMENT IDENTIFIER USE DECLARATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM) Note: MEID database version may vary slightly.

By submitting this form, I certify that

MEID Manufacturer's Code and Serial Number Range(s): .....

Assigned to: .....

Assigned range is first used effective (date of first use):
.....

Authorized name: ..... Job Title: .....

Authorized signature: .....

Phone: ..... Cell (Mobile): ..…… E-mail: .....

Date of this notification: .....

Return completed application forms to:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

Form "C"

FORM D – REQUEST FOR CHANGE IN MOBILE EQUIPMENT IDENTIFIER INFORMATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM) Note: MEID database version may vary slightly.

Effective (date): .....

Change Contact Information (CCI)

Information on File for All Previous Singlemode Deployable MEID and/or Multimode IMEI/MEID Manufacturer ID Code Assignments are Now Changed as Reflected Below:

Previous Company Name and Primary Contact Information:

New Company Name and Primary Contact Information:

OR

Change MEID Assignments (CMA)

The assignment information for MEID Manufacturer's Code and Serial Number Range(s):

..... *should be changed. The changes are described below:*

Authorized name: ..... Job Title: .....

Authorized signature: .....

Phone: ..... Cell (Mobile): ..…… E-mail: .....

Date of this notification: .....

Return completed application forms to the:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

Form "D"

FORM E – CONFIRMATION OF CHANGE IN MOBILE EQUIPMENT IDENTIFIER ASSIGNMENT INFORMATION (also applicable for SF_EUIMID i.e., R-UIM or CSIM)
Note: MEID database version may vary slightly

Your request-dated _____ for change(s) to the assignment information for MEID Manufacturer's Code and Serial Number Range(s)_____ has been processed by the administrator and the changes have been made.

Please verify the revised assignment information below and report any errors or discrepancies to the administrator.

(*Display computer generated assignment information here.*)

Authorized name: ..... Job Title: .....

Authorized signature: .....

Phone: ..... Cell (Mobile): ..…… E-mail: .....

Date of this notification: .....

Report discrepancies to the:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

Form "E"

FORM F – MOBILE EQUIPMENT IDENTIFIER ASSIGNMENT RETURN (also applicable for SF_EUIMID i.e., R-UIM or CSIM) Note: MEID database version may vary slightly.

MEID Manufacturer's Code and Serial Number Range(s): .....

Currently held by: .....
is no longer required effective (date) ..... and may be returned to the pool for assignment to another entity. Only Entire Blocks shall be returned.

Serial Numbers used thus far are in the range of _____ to _____.

Authorized name: ..... Job Title: .....

Authorized signature: .....

Phone: ..... Cell (Mobile): ..…… E-mail: .....

Date of this notification: .....

Return completed forms to the:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

Form "F"

FORM G - CERTIFICATION OF COMPLIANCE WITH MEID GUIDELINES (also applicable for SF_EUIMID i.e., R-UIM or CSIM) Note: MEID database version may vary slightly.

We, _____ (Assignee), certify that MEID Code and Serial Number Range(s)
_____,
_____,
_____,
_____,
_____,
_____

has been used in accordance with all of the terms and provisions set forth in the MEID Guidelines as published by 3GPP2 and TIA and posted on the latter's web site on the date of this certification ("MEID Guidelines"). We further specify that we have complied in specific with applicable Sections of the MEID Guidelines.

We understand that failure to comply with the MEID Guidelines may result in the forfeiture of the above MEID Code and Serial Number Range(s).

Serial Numbers used thus far are in the range of _____ to _____.

Authorized name: ..... Job Title: .....

Authorized signature: .....

Phone: ..... Cell (Mobile): ..…… E-mail: .....

Date: _____

Return completed Form G on an annual basis to:

Engineering Committee TR-45 MEID Global Hexadecimal Administrator
c/o Telecommunications Industry Association
1320 N. Courthouse Rd. Suite 200
Arlington, VA 22201 USA

_____

Phone: +1 703-907-7791
Fax: +1 703-907-7728
meidadmin@tiaonline.org

Form "G"

ANNEX "A" (Informative)

Descriptions of the Form "A" IMEI/MEID Mfr Codes for Multi-Mode Equipment Types

- For Modem manufacturers, it should be the manufacturer who requests the IMEI/MEID as these may go into many different devices. In all other cases it should be the Brand Owner who requests the IMEI/MEID.

Mobile / Feature Phone: A device supporting basic personal communication services, e.g. voice call and SMS. (Not strictly limited to basic services, but not entering in the definition of a Smartphone).

Smartphone: A device with large display, predominantly with touch screen technology, fast processor and memory in the Gigobyte range. A fully-featured OS / platform that provides voice and data communications capabilities, enables personalization of the device by the user and in addition supports installation and maintenance of mobile applications (e.g. downloadable from an Application store).

Tablet: A device with a display minimum 5-inches, slate-type form factor, touch screen, providing data communications and/or voice capabilities, fully-featured OS providing connection to an Application store through which the user can personalize the device's functionality and services.

Dongle: A device which can be inserted in a laptop or other computer to provide cellular network connectivity.

Modem: A device designed for embedding in other equipment to provide cellular connection functionality.

WLAN Router: A device that performs advanced routing functionalities and uses the cellular network as Wide Area Network interface.

IoT Device: A device, whose main function is to allow objects to be accessed, sensed and/or controlled remotely across existing mobile network infrastructures.

Wearable: A body worn mobile device that connects to the 3GPP2/3GPP cellular network directly with its own eUICC or UICC.

In addition, it may have none, some or all of the following:

1. A touch screen display
2. Other forms of interaction such as hard or soft buttons
3. Voice controls
4. Sensors built in or connected to the device
5. An OS, which provides voice and/or data communications capabilities on the 3GPP2/3GPP mobile network
6. Other technologies like Wi-Fi, Bluetooth
7. Enables personalization of the device by the user
8. Supports installation and maintenance of applications, e.g. downloadable content from an application store.

Examples of a "Wearable" devices:

1. Smartwatch
2. Heart Monitor
3. Blood Pressure Monitor
4. Blood Pulse monitor
5. Animal Monitoring
6. Body (Arm, Leg, Chest) Sports Monitor