

Source: Secretary

Title: Communication received from Committee TR.45 concerning the allocation of Electronic Serial Numbers

Agenda item: 11

Document for:

Decision	
Discussion	
Information	X

1 Introduction

The attached correspondence has been received from the Chairman of Committee TR.45 and concerns the allocation of ESNs. It also contains the findings of a Joint Expert's Group on Equipment Numbering which has an impact on the products built to 3GPP specifications.

These results may well lead to change requests being presented within 3GPP and thus the correspondence is provided here for information.



COMMITTEE CORRESPONDENCE

Please reply to:

Cheryl Blum
Chair, TR-45
c/o Lucent Technologies
1960 Lucent Lane
Room 9D-242
Naperville, IL 60566
cjblum@lucent.com

April 17, 2002

Mr. Steve Dennett
Chair 3GPP2 SC
S.Dennett@motorola.com

Subject: Electronic Serial Number (ESN) Exhaust

Dear Steve,

The Telecommunication Industry Association (TIA) TR-45 estimates that **currently available ESNs will be exhausted by the end of 2004**. To address this crisis situation, the TR-45 Ad-Hoc Group on UIM/ESN recommended the support of a 56-bit International Mobile Equipment Identifier (IMEI) or Mobile Equipment Identifier (MEID) as the long term ESN replacement for mobile equipment identifier for development and implementation before ESN exhaust. The concepts presented in the attached contribution, TR45/02.03.06.12 for ESN exhaust and replacement, were supported by TIA Committee TR-45 at our meeting on 6-7 March 2002. The recommendations contained in this contribution were also presented at the 3GPP2 JEM on MEID convened in February in Seattle, Washington. I would like to take this opportunity to thank 3GPP2 for convening the JEM and for providing TR-45 with the resulting JEM report (per the 3GPP2 liaison report to TR-45, contribution TR45/02.03.06.19).

TR-45 asks 3GPP2 to consider the recommendations and requirements in contribution TR45/02.03.06.12 and provide a recommendation to TR-45 on ESN replacement prior to our next Committee meeting scheduled for 5-6 June 2002. Review, comments and recommendation are also being sought from other organizations (e.g., CTIA, ATIS) to ensure input from all affected groups and experts are taken into consideration regarding this extremely important and critical issue. Due to the eminent exhaust of the ESN pool, TR-45 will make a final decision regarding a technical solution to the exhaust problem at the June meeting in Chicago, Illinois.

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TIA TR-45 looks forward to 3GPP2's recommendations regarding this issue. If you have any questions, please do not hesitate to contact me at 603-713-1449, cjblum@lucent.com.

Regards,

Cheryl Blum, Chair TR-45

CC: 3GPP, Mr. Adrian Scrase
ARIB, Mr. Takao Yamakura
ATIS, Mr. Ed Hall
CDG, Mr. Sam Samra
CTIA, Ms. Kathryn Condello
CWTS, Mr. Wan Yi
ETSI, Mr. Karl Heinz Rosenbrock
GSM Association, Mr. Robert Conway
GSMNA, Mr. Jim Murrell
IEEE, Mr. Stuart Kerry
IETF Internet Advisory Board, Mr. Scott Bradner
ITU, Mr. Fabio Leite
OHG, Mr. Michael Walker
TTA, Mr. Hong Won Kim
TTC, Mr. Keiji Yoshino
TIA ESN Administrator, Mr. Bill Belt
TIA UIM Administrator, Mr. Henry Cuschieri

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Title

TR-45 UIM/ESN Ad Hoc Group Report to TR-45

Source



9505 Arboretum Blvd.

Austin, TX 78759

Submitted by: Terry Watts, Chair TR-45 UIM/ESN Ad Hoc Group

Tel: 512-372-5844

Fax: 512-241-5844

email: terry.watts@cingular.com

Abstract

This is the TR-45 UIM/ESN Ad Hoc Group Report to the TR-45 Committee.

Recommendation

Approve the recommendations and requirements for support of IMEI or MEID as the ESN replacement for Mobile Equipment Identifier.

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1 Recommendation for ESN Replacement

2 The TR-45 UIM/ESN Ad Hoc Group provided input to the 3GPP2 MEID JEM on February
 3 11-12, 2002. The input correspondence is attached to this report. Based on this
 4 correspondence and positive feedback, the Ad Hoc Group recommends that support for a 56-
 5 bit IMEI or MEID be developed before ESN exhaust as the long term replacement for ESN as
 6 the Mobile Equipment Identifier. Below are requirements that the Ad Hoc Group supports in
 7 order for the TR-45 Subcommittees to develop their standards to support this ESN
 8 replacement as the Mobile Equipment Identifier. This work should be completed in 18
 9 months or less from the date of this recommendation.

10 Along with the requirements identified below, the TR-45 Committee should begin addressing
 11 the IMEI or MEID assignment guidelines that are used by an IMEI or MEID Administrator
 12 for the TR-45 defined wireless standards.

13 Requirements Submitted by TR-45 UIM/ESN AHG

14 A. The following are assumptions to support IMEI or MEID as the ESN replacement:

- 15 1. MS's that support IMEI or MEID shall not use ESN Code resources except as noted
 16 below.
- 17 2. The Analog air interface shall not be required to support IMEI or MEID. An MS
 18 that supports an IMEI or MEID and accesses an Analog Control Channel shall send
 19 the UIM ID or H'80ZZZZZZ as the ESN, where Z corresponds to a 24 bit hash of
 20 the IMEI or MEID.
- 21 3. The Digital Air Interfaces shall provide a mechanism to notify the MS that it
 22 supports IMEI or MEID on Digital only. This may require new messages and
 23 procedures for requesting the IMEI or MEID from the MS by the network. It is
 24 presently NOT a requirement that the IMEI or MEID be sent by the mobile station
 25 for every access.
- 26 4. The *TIA/EIA-41* standard shall define a new parameter for IMEI or MEID. If there is
 27 no requirement for sending the IMEI or MEID by the MS on every access, then new
 28 procedures for requesting the IMEI or MEID from the MS may be required.
- 29 5. For backward compatibility in *TIA/EIA-41*, a system that supports IMEI or MEID
 30 shall send the IMEI or MEID, if received from the MS. The ESN parameter received
 31 from the MS is also sent and used as the ESN input to the CAVE algorithm. ESN
 32 Manufacturer Code D'128 (H'80) is reserved for expanded ESN use and shall be
 33 used for IMEI or MEID purposes also.
- 34 6. When an MS that supports IMEI or MEID accesses a system that does not support
 35 IMEI or MEID, the MS shall send the UIM ID or H'80ZZZZZZ as the ESN, where
 36 Z corresponds to a 24 bit hash of the IMEI or MEID.
- 37 7. For backward compatibility, the MS that supports IMEI or MEID shall use the UIM
 38 ID or H'80ZZZZZZ, where Z corresponds to a 24 bit hash of the IMEI or MEID, as
 39 the ESN input to the CAVE algorithm per home carrier choice of ID.
- 40 8. The hash algorithm should be defined by the TR-45 AHAG.

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- B. Impacts on the Network and Third party ESN fraud prevention applications should be considered by initiating industry notification of proposals for review & comment prior to adoption.
- C. If a migration path is required, it should be clearly defined and tested before adoption to mitigate any legacy system interoperability issues, e.g., hashing.
- D. ESN & UIM guidelines may be amended to include any IMEI or MEID approved decisions for insight.
- E. Consider any implications of an expected response from the FCC regarding the letter sent to Steven Markendorf addressing the question of reassigning ESNs effective June 2002 and Part 22 amendments.
- F. Ensure that a viable ESN replacement is developed and implemented before ESN exhaust.



COMMITTEE CORRESPONDENCE

February 1, 2002

Mr. Terry L. Watts
Chair, TIA TR-45 UIM/ESN
Ad Hoc Group
Cingular Wireless
9505 Arboretum Blvd.
Austin, TX 78759

via electronic mail

3GPP2 MEID JEM
February 11-12, 2002
Seattle, WA

RE: TR-45 UIM/ESN Ad Hoc Group Input to MEID JEM

Dear JEM Participants,

The TR-45 UIM/ESN Ad Hoc Group took an assignment from the TR-45 Committee to provide input to the 3GPP2 MEID JEM. Attached is a list of assumptions for MEID as a replacement for ESN as the MS equipment identification. These assumptions are provided as input to the JEM if the JEM will be considering MEID as a replacement for ESN.

Please don't hesitate to contact me (terry.watts@cingular.com or 512-372-5844) if you have any further questions.

Regards,

Terry L. Watts
Chair, TIA TR-45 UIM/ESN Ad Hoc Group
ATT: Assumptions

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Assumptions Submitted by TR-45 UIM/ESN AHG

- 1
- 2 A. If the JEM decides to consider MEID as ESN replacement the following are assumptions
3 to support MEID:
- 4 1. MS's that support MEID shall not use ESN Code resources except as noted below.
- 5 2. The Analog air interface shall not be required to support MEID. An MS that
6 supports an MEID and accesses an Analog Control Channel shall send the UIM ID
7 or H'80ZZZZZZ as the ESN, where Z corresponds to a 24 bit hash of the MEID.
- 8 3. The Digital Air Interfaces shall provide a mechanism to notify the MS that it
9 supports MEID on Digital only. It is NOT a requirement that the MEID be sent by
10 the mobile station for every access, unless the FCC does not change the current
11 regulation. This may require new messages and procedures for requesting the MEID
12 from the MS by the network.
- 13 4. The *TIA/EIA-41* standard shall define a new parameter for MEID. If there is no
14 requirement for sending the MEID by the MS on every access, then new procedures
15 for requesting the MEID from the MS may be required.
- 16 5. For backward compatibility in *TIA/EIA-41*, a system that supports MEID shall send
17 the MEID, if received from the MS. The ESN parameter received from the MS is
18 also sent and used as the ESN input to the CAVE algorithm. ESN Manufacturer
19 Code D'128 (H'80) is reserved for expanded ESN use and shall be used for MEID
20 purposes also.
- 21 6. When an MS that supports MEID accesses a system that does not support MEID, the
22 MS shall send the UIM ID or H'80ZZZZZZ as the ESN, where Z corresponds to a
23 24 bit hash of the MEID.
- 24 7. For backward compatibility, the MS that supports MEID shall use the UIM ID or
25 H'80ZZZZZZ, where Z corresponds to a 24 bit hash of the MEID, as the ESN input
26 to the CAVE algorithm per home carrier choice of ID.
- 27 8. The hash algorithm should be defined by the TR-45 AHAG.
- 28 B. Impacts on the Network and Third party ESN fraud prevention applications should be
29 considered by initiating industry notification of proposals for review & comment prior to
30 adoption.
- 31 C. If a migration path is required, it should be clearly defined and tested before adoption to
32 mitigate any legacy system interoperability issues, e.g., hashing.
- 33 D. ESN & UIM guidelines may be amended to include any MEID approved decisions for
34 insight.
- 35 E. Consider any implications of an expected response from the FCC regarding the letter sent
36 to Steven Markendorf addressing the question of reassigning ESNs effective June 2002
37 and Part 22 amendments.
- 38 F. Ensure that a viable ESN replacement is developed and implemented before ESN
39 exhaust.

1 **TITLE:**

2 **Report on 3GPP2**

3 **SOURCE:**

4 Steve Dennett
5 Chairman 3GPP2
6 847-523-6868
7 S.Dennett@motorola.com



8 **ABSTRACT:**

9 This contribution is provided as a status update on 3GPP2
10 activities
11

12 **RECOMMENDATION:**

13 Submitted as FYI
14

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3GPP2 SC & OP Summary of Activities

Scheduled Meetings:

The 3GPP2 Steering Committee last met on January 24/25 2002 in Seoul, Korea. The last meeting of the Organizational Partners was held in Seoul as well on January 25 2002, immediately following the Steering Committee meeting. The next Steering Committee and Organizational Partner meeting are scheduled for Maui, Hawaii on March 18 and 19, 2002.

Specific SC, OP, and TSG schedules are posted on the 3GPP2 web site at <http://www.3gpp2.org>

Summary of Activities:

- 3GPP2 has received correspondence from IFAST announcing the launch of an international awareness project to promote the deployment of ANSI-41 by explaining its capabilities to wireless service providers worldwide. 3GPP2 input is being coordinated via the TSG-N Chair.
- Steering Committee endorsed the output of the November 2001 meeting between 3GPP and 3GPP2 which discussed possible harmonization of HSDPA and 1xEV-DV. Steering committee forwarded output statement to the ITU.
- 3GPP2 is in the process of adapting its publication policy by incorporating a 45-day SDO review of output (specifications/reports). This modification is designed to ensure that SDO input is addressed prior to the publication of a 3GPP2 deliverable, avoiding the possibility of immediate revision following SDO transposition.
- A volunteer is being sought to serve as 3GPP2-IETF liaison as prescribed in the collaborative agreement between the two organizations published as RFC3131.
- The TSG-S Vision ad hoc group is developing a long-term evolution path for CDMA2000, and will be participating in a vision Joint Experts Meeting to take place later in 2002.
- A new liaison has been established between 3GPP2 and TR45 AHAG, following the establishment of 3GPP2 TSG-S WG4 on Security.
- 3GPP2 Project Management Team (PMT) is focusing its efforts on refining the PMT processes, providing comprehensive Work Plans, drafting an initial Release Plan, and implementing cross-TSG coordination.
- 3GPP2 to take part in IP Core Network harmonization meeting taking place April 2002. Mark Lipford, Sprint PCS is 3GPP2 co-chair. Details on 3GPP2 web site – <http://www.3gpp2.org>.
- Discussions between 3GPP2 and the WAP Forum designed to forge a cooperation agreement between the two organizations have renewed.


- 1 • 3GPP2 hosted a numbering Joint Experts Meeting in Seattle, WA in February to
2 which the following organizations were invited: 3GPP, ETSI, TR-45, TTA, TTC,
3 ARIB, CWTS, TIA ESN Administrator, TIA UIM Administrator, IETF IAB, OHG,
4 GSM Assoc., and CTIA. The report of this meeting is attached (Annex A). As one
5 of the invitees, TR45 will be receiving all official output documents from this
6 meeting.

7

8 Meeting information and other pertinent information can be found on the 3GPP2 web
9 site at www.3gpp2.org. Specific contributions from the Seoul meetings are available at
10 [ftp.3gpp2.org/SC_OP/Working](ftp://ftp.3gpp2.org/SC_OP/Working).

11

12 Respectively submitted,

13 

14 Steve Dennett, Chair 3GPP2 Steering Committee

15 cc: Henry Cuschieri, Secretary to 3GPP2

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1 **Mobile Equipment Numbering JEM**
2 **Report and Conclusions**

3 **1. Introduction**

4 **1.1** The Purpose of the JEM

5 The group determined the need and the desire to have unique mobile
6 equipment identifiers applicable globally with population capacity far
7 beyond forecasts available to the group for many decades. The JEM focus
8 was on IMT-2000 technologies and their 2G predecessors, however the
9 proposed scheme does not preclude adoption by other RF technologies.

10 **1.2** The Purpose of this Document

11 This report reflects the consensus opinion of JEM participants convened to
12 address global circulation of mobile terminals and impacts on the wireless
13 industry equipment numbering. The expectation is that this output
14 document will be considered by the SDO's for adoption in the relevant
15 specifications.

16 **2. Planned Uses of Equipment Identifiers**

17 The sole purpose of the identifier is to uniquely identify a mobile terminal.

18 **3. Scope and Timeline for Equipment ID**

19 **3.1.** 3GPP

20 The GSM IMEI Strategy Forum (GISF) consisting of representatives from
21 the GSM Association (GSMA) representing operators, the European
22 Information and Communications Technology Association (EICTA) Cellular
23 Communications Issue Group representing most of the global
24 manufacturers, together with representatives from ARIB (Japan) and the
25 GSM North America (GSMNA), have adopted a revised IMEI structure,
26 which is backwards compatible, anticipating the need for expanded
27 numbering capacity as a result of the introduction of third generation
28 terminals and multi-mode terminals.

29 Since the summer of 2001, administration of the revised system has been
30 entrusted to a third party Contractor, currently BABT (British Approval
31 Board for Telecommunications) sponsored by the GSMA, prior to the
32 establishment of a formal system. Regional allocations are provided by
33 parties such as ARIB under the guidance of the Contractor.

34 Change requests are now being prepared for submission to the SDO for
35 revision of the ETSI TS 100 508 and 3GPP TS 22.016 specifications to
36 reflect the GISF industry initiative.

1 **3.2. 3GPP2**

2 The three critical items are:

- 3 • Global Circulation requirements for unique mobile equipment
4 identification
- 5 • Anticipated ESN Exhaustion
- 6 • R-UIM and ESN resource pooling

7 The technical focus is primarily concerned with the global circulation
8 requirements. However, ESN exhaustion and the R-UIM/ESN resource
9 pooling issues provide the impetus for resolving these three items in an
10 expeditious time frame.

11 **3.3. IEEE**

12 The recommendation of this JEM is intended for the sole use in cellular
13 communications.

14 IEEE will take the proposed Equipment ID methodology and study it
15 within the Working Groups for applicability in other applications without
16 conflict to cellular communications usage.

17 Depending on the agenda, it is expected that this would be discussed at
18 the next IEEE 802.11, and 802.15 meetings scheduled for March 2002.
19 Status reports will be returned as correspondence to the distribution list
20 for this JEM report.

21 **3.4. Others**

22 The JEM report will be distributed to the invitee list for comment.

23 **4. Structure, Format, and Capacity of Equipment ID**

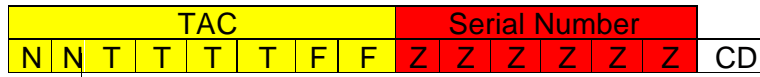
24 This group recommends that there should be coordination between the
25 appropriate SDO's and industry groups to ensure that there is no conflict
26 or overlap between the numbering ranges allocated to any group.

27 A consensus was reached on the use of 56-bit identifier structure
28 expected to be compatible between 3GPP and 3GPP2. The details are
29 described in Sections 4.1 and 4.2

30 Additionally, a broader structure has been proposed for the SDO's to
31 consider, capable of incorporating IEEE EUI-64 and potentially other
32 equipment identifier schemes. The details are described in Section 4.3.

33 **4.1. Structure of Equipment ID for 3GPP**

34 The following structure shall be followed.

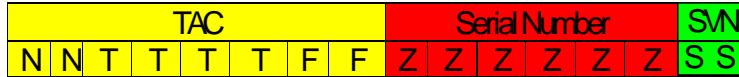


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Basic 3GPP Format

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3GPP Format with SVN

6

Note that the same structure shall also be used for GSM.

7

The function of the digits is:

8

NN - Reporting Body

9

TAC - Type Allocation Code

10

FF - Formerly Final Assembly Code; no specific function

11

now, proposed to be fixed to 00 for a period until March 2003.

12

ZZZZZZ - Serial Number

13

CD - Check Digit; transmitted as a '0' integrity protection.

14

SS - Software Version Number (Optional)

15

There is a slight transition issue with this approach from an existing Operator's viewpoint. Any existing tools identifying terminals from their TACs would need to be modified to look across an 8-digit field, rather than a 6-digit field. To address this, it is suggested that for an interim period (proposed 18 months) the allocated TAC codes have their two least significant digits (the 'FF' digits) set to '00'. This will allow Operators to use existing software tools. At a later date the remaining 99 FF values for each NNTTTT can begin to be allocated.

23

Existing 6-digit TAC codes in the 35 range have been allocated from 350000 to 350260. This means that there are some 9,740 TAC codes still available, whose two LSDs are 00. This range should be sufficient for any reasonable interim period.

24

25

26

27

Following the interim period, the maximum number of IMEIs available using this scheme would be:

28

29

 77 (number of free 'NN groups') * $1,000,000$ (TAC Codes) * $1,000,000$

30

(Serial Numbers) which is $77,000,000,000,000$ terminals ($77 * 10^{12}$). This

31

quantity is far in excess of any estimated requirements.

32

4.2. Structure of Equipment ID for 3GPP2

33

4.2.1. Structure and Format

34

The proposal is to utilize a structure that is hexadecimal encoded, and syntactically consistent with the IMEI structure. This structure would not

35

1 utilize all of the fields in the exact semantic manner as is currently utilized
 2 with the IMEI. The numbering space would be allocated in a manner that
 3 does not impact the current users of the decimally encoded IMEI. The
 4 proposed structure is also consistent with the existing ESN allocation
 5 scheme using 24-bit Serial Numbers.

6 The proposed MEID structure:

Manufacturer Code							Serial Number						CD
R	R	X	X	X	X	X	Z	Z	Z	Z	Z	Z	C

7

8 All of these fields are defined as hexadecimal values with the following
 9 valid range.

10 RR - valid range A0 .. FF – globally administered

11 XXXXXX - valid range 000000 .. FFFFFFFF

12 Where possible allocation may be as follows:

13 000000 - for test/prototype mobiles allocated in small quantities

14 000001 - FFFFFFFE - allocated to regional administration bodies or
 15 mobile manufacturers, subject to industry agreement

16 FFFFFFFF - reserved

17 ZZZZZZ - valid range 000000 .. FFFFFFFF

18 C - valid range 0-F - not transmitted over the air

19 Note: The distribution of the XXXXXX field may be dependent on the
 20 number of administration bodies. In the case of a small number of global
 21 administration bodies, the entire XXXXXX may be allocated to identify a
 22 mobile manufacturer. In the case of a large number of regional
 23 administration bodies, the XXXXXX may be distributed to indicate the
 24 regional administration body and the mobile manufacturer, for example
 25 XXXX, XX.

26 4.2.2. Numbering Capacity

27 The proposed 2GPP2 identifier structure numbering capacity can be
 28 computed as follows:

29 There are 96 codes when RR is restricted to the A0 .. FF range.

30 Note that additional 60 codes could be made available in the
 31 ranges of 0A .. 0F, 1A .. 1F, 2A .. 2F, ... , 9A .. 9F, subject to
 32 industry agreement.

33 There are 16,777,215 codes in the XXXXXX field.

34 There are 16,777,215 Serial Numbers in ZZZZZZ field.

35 The total numbering capacity would exceed 281×10^{12} (281 trillion) per
 36 RR code.

37 The current ESN numbering space consists of:

1 256 Manufacturer Codes (8-bit).

2 16,777,215 Serial Numbers per Manufacturer Code.

3 The proposed structure provides for a raw numbering space that is 65,535
4 times the size of the existing ESN numbering space per RR code. The
5 total numbering space using 96 RR codes represents a space that is
6 6,291,360 times as large as the current ESN numbering space.

7 **4.3. Equipment Identity Super-Structure**

8 The following structure for Equipment Identity should be considered by
9 the SDOs:

10

Equipment Identifier Type	Equipment Identifier Digits
8 bits	64 bits

11

Where:

12

Equipment Identifier Type indicates formatting of the equipment identifier
13 (e.g., MEID, IMEI, EUI-48, EUI-64, etc.) Each type may have a different
14 structure, but the overall length should be fixed. The IMEI may be easily
15 extracted for purposes such as GSM-CDMA roaming.

16

Equipment Identifier Digits identifies the assignment authority (if not
17 implicitly identified by the equipment identifier type), the manufacturer,
18 and a serial number. This information may be used to query a database
19 for more detailed information on a given terminal.

20

5. Ownership of and Access to Databases for Equipment ID

21

The group recognizes that the ultimate ownership and content of
22 Equipment Databases rests with the manufacturers of equipment,
23 however the access to databases may be arranged through one or more
24 designated intermediaries as agreed by the industry.

25

Access to databases should be structured as a lookup to obtain
26 information about a particular type of equipment, and it shall not, for
27 example, reveal any batch information about production lots or equipment
28 quantities of any kind.

29

6. Administration of Commonality

30

The principles governing administration of common issues associated with
31 equipment identifiers should be as follows:

32

- Impartial administrator(s) with clearly defined scope and charter shall
33 be appointed.

- 1 • The principal duty of the administrator(s) shall be to manage
- 2 equipment identifier numbering space.
- 3 • Administrator(s) shall manage the equipment numbering space in an
- 4 economical fashion.
- 5 • Mobile equipment manufacturers should be able to deal directly with
- 6 the administrator(s).
- 7 • The administrator(s) shall in no way impede production flows and shall
- 8 respond to a request by a manufacturer without undue delay. In the
- 9 longer term, an automatic process of number assignment should be
- 10 investigated.
- 11 • The administrator(s) should strive to make assignment allocations
- 12 available in the fashion that meets local market needs. Further details
- 13 may be elaborated in subsequent JEM meetings, as required by the
- 14 participating SDO's

15 **7. Migration/Implementation Issues**

16 The specification of the Mobile Terminal Equipment ID should consider the

17 most efficient implementation and numbering structure, which will:

- 18 (a) Minimize impact on existing infrastructures and systems
- 19 (b) Provide for migration from legacy systems over a reasonable
- 20 time period.

21 The migration path to the Mobile Terminal Equipment ID from existing

22 equipment ID schemas, such as ESN, should be clearly outlined.

23 A detailed schedule for initial implementation, migration milestones,

24 legacy support phases and interoperability shall be the responsibility of

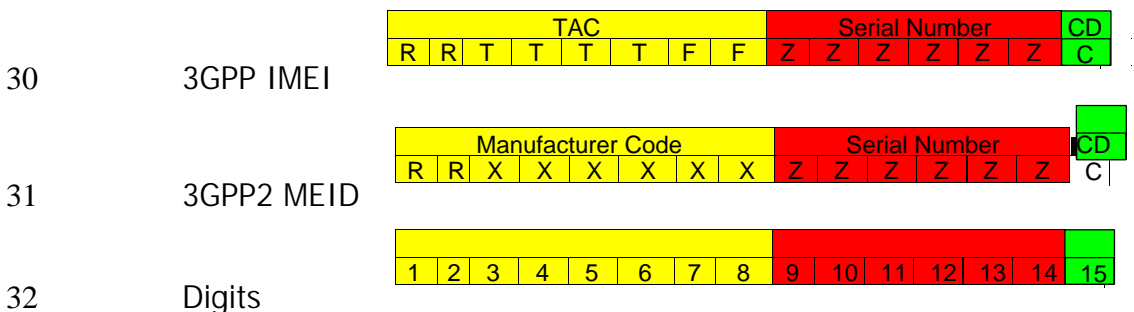
25 the Groups with jurisdiction over the respective existing equipment ID

26 schemas; such as 3GPP, 3GPP2, and their constituent SDOs.

27 **Equipment IDs for Multi-Mode Terminals**

28 The JEM agreed that Multi-Mode terminals needed to meet the

29 requirements of all areas. The two basic formats are shown below:



1 Note that the 3GPP IMEI-SV is not discussed in this section, but is
 2 mentioned earlier in this document. It is expected that any Multi-Mode
 3 terminal would support the IMEI SV format when operating in the 3GPP
 4 mode. This format is not discussed in this section, since it has no direct
 5 impact on the multi-mode operation.

6 The function of the digits is:

7 RR – Reporting Body Identifier; in the case of the 3GPP IMEI this shall be
 8 in the range 00 to 99, in the case of the 3GPP2 MEID this shall be in the
 9 range A0 to FF.

10 Digits with Common use:

1-2	RR	Reporting Body Identifier- the body that recorded the IMEI/MEID in the appropriate register. In the case of the 3GPP IMEI this shall be in the range 00 to 99; In the case of the 3GPP2 MEID this shall be in the range A0 to FF
9-14	ZZZZZZ	Serial Number In the case of the 3GPP IMEI this shall be in the range 000000 to 999999; In the case of the 3GPP2 MEID this shall be in the range 000000 to FFFFFFFF
15	C	Check Digit In the case of the 3GPP IMEI this shall be in the range 0 to 9 when marked on the handset and/or packaging and when displayed on the handset following the input of *#06# to the MMI. It shall, however, be transmitted as 0. In the case of the 3GPP2 MEID this shall be in the range 0 to F, but shall not be transmitted.

11

12 Digits with Differing use:

3-8	TTTTFF	TAC Code - 3GPP This shall be a unique code in the range 000000 to 999999 which identifies the Manufacturer and Model. It shall be allocated by the reporting body on request.
3-8	XXXXXX	Mobile Manufacturer Code – 3GPP2 This shall be a code in the range 000000 to FFFFFFFF that identifies the mobile manufacturer, or regional administration body & mobile manufacturer.

- 1 For a multi-mode (3GPP2/3GPP or 3GPP2/GSM) terminal to meet the
2 requirements of both regions, the following rules need to be applied:
- 3 1. All digits are to be decimal (i.e., none of the A through F digits may be
4 used).
 - 5 2. The code in digits 1 to 8 shall be assigned by an appropriate body and
6 communicated to all relevant bodies (including the GSM Association).
 - 7 3. The code in digits 3 to 8 shall specify a terminal type and
8 manufacturer

9 Since the RR digits cannot be hexadecimal, the allocation must be from
10 the 3GPP RR range. Consequently, in order that these digits can be
11 allocated, the GSM Association's Contractor will need to gather suitable
12 information to allow a six-digit TAC code to be provided.
13

1 Appendix A: List of Acronyms and Abbreviations

3GPP	Third Generation Partnership Project
3GPP2	Third Generation Partnership Project Two
ARIB	Association of Radio Industries and Businesses
BABT	British Approval Board for Telecommunications
CD	Check Digit
CDMA	Code-Division Multiple Access
EICTA	European Information and Communications Technology Association
ESN	Electronic Serial Number
ETSI	European Telecommunication Standards Institute
EUI-48	48-bit Equipment Unique Identifier defined by IEEE for MAC addressing
EUI-64	64-bit Equipment Unique Identifier defined by IEEE
FAC	Final Assembly Code
GISF	GSM IMEI Strategy Forum
GSM	Global System for Mobile Communication
GSM A	GSM Association
GSMNA	GSM North America
IEEE	Institute of Electrical and Electronics Engineers
IMEI	International Mobile Equipment Identity
IMT-2000	International Mobile Telecommunication Technology for 2000's
JEM	Joint Expert Meeting
LSD	Least-Significant Digit
MAC	Medium Access Control
MEID	Mobile Equipment Identity
MMI	Man-Machine Interface
R-UIM	Removable User Identity Module
SDO	Standards Development Organization
TAC	Type Allocation Code
TS	Technical Specification
SV	Software Version

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