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International MS Equipment Identities

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Title: INTERNATIONAL MOBILE STATION EQUIPMENT IDENTITIES

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0. SCOPE

The purpose of this recommendation is to define the principal purpose and use of International Mobile station Equipment Identities (IMEI).

The recommendation GSM 03.03 describes the technical manner of numbering, addressing and identification.

1. DEFINITION

An "International Mobile Station Equipment Identity" is a unique number which shall be allocated to each individual mobile station equipment in the GSM system and shall be unconditionally implemented by the MS manufacturer.

2. GENERAL

As described in GSM recommendation 02.17, an MS can only be operated if a valid "International Mobile Subscriber Identity" (IMSI) is present. An IMSI is primarily intended for obtaining information on the use of the GSM network by subscribers for individual charging purposes.

Besides the IMSI, the implementation of IMEI is found necessary in order to obtain knowledge about the presence of specific mobile station equipment in the network, disregarding whatever subscribers are making use of these equipments.

The main objective is to be able to take measures against the use of stolen equipment or against equipment of which the use in the GSM system can not or no longer be tolerated for technical reasons.

The IMEI is incorporated in an MS module which is connected to the MS and is physically secured.

This implementation of each individual module should be carried out by the manufacturer who is also responsible for ascertaining that each IMEI is unique and keeping detailed records of produced and delivered MS.

All type approval authorities and all network operators will immediately receive updated information from a central body concerning all newly issued (or changed) type approval numbers.

This data should contain all background information related to the type approval as described in T/SF XY and recommendation GSM 11.01.

A central body shall keep a database updated with this data;

preferably there shall be established an on-line access to the database for type approval authorities and network operators.

The central body shall be enabled to obtain information from the manufacturer concerning produced serial numbers and also the meaning behind place of final assembly codes.

3. COMPOSITION OF IMEI

The composition of the IMEI shall be such that each individual mobile station equipment can be separately identified.

Information ins contained in the IMEI by which the GSM PLMN, after requesting it, can immediately decide whether or not to accept calls made by means of this equipment.

Secondly, the IMEI shall directly or indirectly contain all information which is necessary for the network operator to make relations through its administrative system to trace the equipment to its origin of production. Recommendation GSM 03.03 describes the structure of the IMEI in detail.

4. ADMINISTRATIVE USE OF IMEI

A network operator can make administrative use of the IMEI in the following manner :

In principle there is the possibility of using so called "white lists", "grey lists" and "black lists". The use of such lists is at the operators' discretion.

The white list is composed of all number series of equipment identities that have been allocated in the different participating GSM countries.

To clarify: This list is not composed of individual identities but only indicates a range of numbers by specifying beginning and end of the series. When a type approval authority in a specific country approves and allocates a particular number series, it is mandatory to send all other participating GSM countries this new information via a central body. For further details : see GSM recommendation 11.01 on type approval.

The black list contains all equipment identities that belong to equipment that need to be barred.

This information, if available, shall be sent to other network operators on a periodic basis, in order to facilitate the barring of the equipment involved in other GSM PLMN and to give the possibility to trace the persons using this equipment on the basis of the IMSI(s).

Besides the black and white list, administrations have the possibility to use a grey list.

To the grey list are added equipment identities that belong to not properly working equipments (faulty equipments).

Equipments on the grey list are not barred, but reported to the operation & maintenance staff together with the subscriber identities (IMSI) that use the grey-listed equipment identity. The operation and maintenance staff can decide to call the subscriber (with the reported IMSI) that uses the equipment at that moment. (If so, the staff needs to find the directory number that is related to the IMSI).

If the fault equipment burdens or pollutes the network too much, it can be decided to put it on the black list.

5. PRODECURE

The IMEI can be requested by the network at any time.

However, to avoid unnecessary loading of the radiopath it is decided to in principal request for equipment identity information just after call set-up. This does not exclude the possibility to also request for equipment identity information at any other time as long as a dedicated resource is available on the radio path.

6. GATHERING OF STATISTICS

When using the principle procedure as described in paragraph 5, statistical information can be obtained about the different types of equipments at succesful call set-up. Not succesful call set-ups are excluded from the statistics, since the request for equipment identity is only sent after succesful call set-up.

Requesting for the equipment identities at other instances, as also described in section 5, will yield other statistics, e.g. information about the different types of equipment at location updatings.

It is up to each network operator to determine what statistics are required, how they are obtained and how are used.

7. USE OF IMEI IN CASE OF EMERGENCY CALLS

Emergency calls can in some PLMNs be made without having to send the subscriber identity (IMSI) to the network. In this case the misuse of MS equipments after placing invalid emergency calls can be restrained by using the equipment identity.

If a specific equipment is misused by someone placing invalid

emergency calls many times, an operator may provide the authority receiving the emergency calls :

- the equipment identity and, if any, the subscribers IMSI that uses the equipment and
- to eventually black-list this equipment identity for a certain period of time.

The network request for the equipment identity is sent to the MS after the emergency call has been set-up. The procedure is the same as for normal call set-up.