IMSI_T and IMSI_M usage

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IMSI structure (ITU E.212)

Example - for SkyLink:

```
250 09 xxx xxx xxxx
```

<table>
<thead>
<tr>
<th>MCC</th>
<th>MNC</th>
<th>MSIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 digits</td>
<td>NMSI</td>
<td>IMSI (≤15 digits)</td>
</tr>
</tbody>
</table>

MCC: Mobile Country Code  
MNC: Mobile Network Code  
MSIN: Mobile Station Identifier Number  
NMSI: National Mobile Station Identity  
IMSI: International Mobile Station Identity

Proven worldwide-unique subscriber identity; fits both cdma2000 and W-CDMA

Historically, in North America, MIN is equal to a Directory Number of the NA Numbering Plan
CDMA Full

IMSI is an optional feature ... which allows CDMA mobiles to access the system and be identified by their full IMSI. When CDMA Full IMSI is not active, only the 10 least significant IMSI digits are used for system access and mobile identification.

In other words,
- without Full (15-digit) IMSI – no IMSI support at all, just 10-digit MIN;
- with Full IMSI – no difference between using IMSI_M and IMSI_T

Problems already happen: KSS (Kemerovo), Diallog (Belarus) – they do support full IMSI, but do not support IMSI_T, so IMSI_T (programmed) is ignored, IMSI_M (missing) is requested.
Result: ROAMING REJECTED
possible “bad” solution: program both IMSI_M and IMSI_T
2.3.12.1 Authentication

For authentication purposes, the mobile station shall use IMSI_M if it is programmed; otherwise, the mobile station shall use IMSI_T. The base station uses the IMSI selected according to the same criteria.

2.6.2.2.5 Extended System Parameters Message

- The mobile station shall set its operational IMSI, IMSI_O, as follows:
  - If IMSI_T_SUPPORTED is equal to '0', the mobile station shall set IMSI_O to IMSI_Mp.
  - If IMSI_T_SUPPORTED is equal to '1' and the mobile station's IMSI_Tp has been programmed, the mobile station shall set IMSI_O to IMSI_Tp.
  - If IMSI_T_SUPPORTED is equal to '1' and the mobile station's IMSI_Tp has not been programmed, the mobile station shall set IMSI_O to IMSI_Mp.
Proposed corrections to 3GPP2 – remove IMSI_M:

Temporal solution

Var.1 – remove IMSI_T_SUPPORTED check, so new algorithm could be:

- If the mobile station’s IMSI_T has been programmed, the mobile station should set IMSI_O to IMSI_T
- If the mobile station’s IMSI_T has not been programmed, the mobile station should set IMSI_O to IMSI_M

why keep IMSI_M and IMSI_T DIFFERENT?

Var.2 – remove IMSI_M field at all
International roaming: requirements and restrictions

- If a handset (UIM-card) has 15-digit IMSI programmed, network must use it;
- If a network does not support 15-digit IMSI, this network is **not available** for 3G-1X roaming;
- If a handset does not have 15-digit IMSI programmed, this handset is **not available** for 3G-1X roaming.
CDMA to GSM roaming: proposal to remove double subscription

**Now:**

- IMSIc
- IMSIg

**Future:**

- IMSIc = IMSIg
- = IMSI

- trial with Megafon (need middle GSM operator)
- if ALLOWED to establish a DIRECT connection to GSM world

CDMA (3G-1X) networks

UMTS (GSM) networks