CR-Form-v5

CHANGE REQUEST

| ⌘ | **22.016** CR **A014** | ⌘**rev** | **-** | ⌘ | Current version: | **7.2.0** | ⌘ |

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Proposed change affects: ⌘　(U)SIM ☐　ME/UE ☐　Radio Access Network ☐　Core Network **X**

Title: ⌘	Combining the TAC and FAC fields of the IMEI	
Source: ⌘	Vodafone	
Work item code: ⌘	TEI	***Date:*** ⌘　11 June 2002
Category: ⌘ **A**		***Release:*** ⌘　R98

Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	*Use one of the following releases:* *2* *(GSM Phase 2)* *R96* *(Release 1996)* *R97* *(Release 1997)* *R98* *(Release 1998)* *R99* *(Release 1999)* *REL-4* *(Release 4)* *REL-5* *(Release 5)*

Reason for change: ⌘	CR 03.03-A055, approved in CN #16, combined the TAC and FAC fields of the IMEI. This needs to be reflected in the annex to 02.16 which defines the computation of the IMEI check digit.
Summary of change: ⌘	Combine the TAC and FAC fields of the IMEI in annex A
Consequences if not approved: ⌘	Formal incorrectness of the procedure for computing the IMEI check digit

Clauses affected: ⌘	A.1; A.3
Other specs affected: ⌘	**X** Other core specifications ⌘　CR 03.03-A056 (approved in CN #16) ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	For Release 99 onwards, the check digit computation is defined in an annex to TS 23.003

Annex A (normative): IMEI Check Digit computation

A.1　　Representation of IMEI

The International Mobile station Equipment Identity and Software Version Number (IMEISV), as defined in TS GSM 03.03, is a 16 digit decimal number composed of four distinct elements:

-　an 8~~6~~ digit Type Assignment ~~Approval~~ Code (TAC);

-　~~a 2 digit Final Assembly Code (FAC);~~

-　a 6 digit Serial Number (SNR); and

-　a 2 digit Software Version Number (SVN).

The IMEISV is formed by concatenating these four elements as illustrated below:

TAC		SNR	SVN
~~TAC~~	~~FAC~~	~~SNR~~	~~SVN~~

Figure A.1: Composition of the IMEISV

The IMEI is complemented by a check digit as defined in section 3. The Luhn Check Digit (CD) is computed on the 14 most significant digits of the IMEISV, that is on the value obtained by ignoring the SVN digits.

The method for computing the Luhn check is defined in Annex B of the International Standard "Identification cards - Numbering system and registration procedure for issuer identifiers" (ISO/IEC 7812).

In order to specify precisely how the CD is computed for the IMEI, it is necessary to label the individual digits of the IMEISV, excluding the SVN. This is done as follows:

The (14 most significant) digits of the IMEISV are labelled $D14$ $D13$ ... $D1$, where:

-　TAC = $D14$ $D13$ ... $D7\sout{9}$　　　　(with $D7\sout{9}$ the least significant digit of TAC);

-　~~FAC = D8 D7~~　　　　　　　~~(with D7 the least significant digit of FAC); and~~

-　SNR = $D6$ $D5$ ... $D1$　　　　(with $D1$ the least significant digit of SNR).

A.2　　Computation of CD for an IMEI

Computation of CD from the IMEI proceeds as follows:

Step 1:　　　Double the values of the odd labelled digits $D1$, $D3$, $D5$ ... $D13$ of the IMEI.

Step 2:　　　Add together the individual digits of all the seven numbers obtained in Step 1, and then add this sum to the sum of all the even labelled digits $D2$, $D4$, $D6$ ... $D14$ of the IMEI.

Step 3:　　　If the number obtained in Step 2 ends in 0, then set CD to be 0. If the number obtained in Step 2 does not end in 0, then set CD to be that number subtracted from the next higher number which does end in 0.

A.3 Example of computation

IMEI (14 most significant digits):

TAC								SNR					
D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1
2	6	0	5	3	1	7	9	3	1	1	3	8	3

~~TAC~~						~~FAC~~		~~SNR~~					
~~D14~~	~~D13~~	~~D12~~	~~D11~~	~~D10~~	~~D9~~	~~D8~~	~~D7~~	~~D6~~	~~D5~~	~~D4~~	~~D3~~	~~D2~~	~~D1~~
~~2~~	~~6~~	~~0~~	~~5~~	~~3~~	~~1~~	~~7~~	~~9~~	~~3~~	~~1~~	~~1~~	~~3~~	~~8~~	~~3~~

Step 1:

2	6	0	5	3	1	7	9	3	1	1	3	8	3
	$\times 2$		$\times 2$		$\times 2$		$\times 2$		$\times 2$		$\times 2$		$\times 2$
	12		10		2		18		2		6		6

~~2~~	~~6~~	~~0~~	~~5~~	~~3~~	~~1~~	~~7~~	~~9~~	~~3~~	~~1~~	~~1~~	~~3~~	~~8~~	~~3~~
	~~$\times 2$~~		~~$\times 2$~~		~~$\times 2$~~		~~$\times 2$~~		~~$\times 2$~~		~~$\times 2$~~		~~$\times 2$~~
	~~12~~		~~10~~		~~2~~		~~18~~		~~2~~		~~6~~		~~6~~

Step 2:

$$2 + 1 + 2 + 0 + 1 + 0 + 3 + 2 + 7 + 1 + 8 + 3 + 2 + 1 + 6 + 8 + 6 = 53$$

Step 3:

$$CD = 60 - 53 = 7$$