

CR-Form-v7

CHANGE REQUEST

⌘ **23.003 CR 053** ⌘ rev **1** ⌘ Current version: **5.3.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Restructuring the IMEI to combine the TAC and FAC in Annex B		
Source:	⌘ Vodafone		
Work item code:	⌘ TEI_5	Date:	⌘ 27/08/2002
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ CR 23.003-044 submitted to CN4#14 as N4-020713, and approved in CN #16, did not reflect the changed structure of the IMEI in the procedure for computing the Luhn check digit, described in Annex B. This change is proposed as a non-critical correction, agreed by consensus		
Summary of change:	⌘ Replace the separate 6-digit TAC (Type Approval Code) and 2-digit FAC (Final Assembly Code) with an 8-digit TAC (Type Allocation Code) in Annex B.		
Consequences if not approved:	⌘ Misalignment between the definitions of the IMEI structure in subclause 6.2 and Annex B		

Clauses affected:	⌘ Annex B										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N		X		X		X	Other core specifications	⌘
Y	N										
	X										
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘										

Annex B (normative): IMEI Check Digit computation

B.1 Representation of IMEI

The International Mobile station Equipment Identity and Software Version Number (IMEISV), as defined in TS 23.003, is a 16 digit decimal number composed of ~~four~~three distinct elements:

- an ~~86~~ digit Type ~~Approval~~Allocation 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~~three elements as illustrated below:

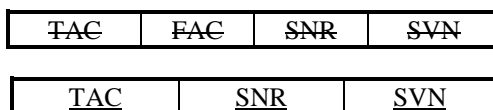


Figure A.1: Composition of the IMEISV

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) [3].

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~~9 (with ~~D7~~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).

B.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.

B.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									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	
x2				x2			x2		x2		x2		x2	
12		10			2		18		2		6		6	
2	6	0	5	3	1	7	9	3	1	1	3	8	3	
x2				x2			x2		x2		x2		x2	
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:

$$CD = 60 - 53 = 7$$