3GPP TSG-T (Terminals) Meeting #9
Hawaii, USA, 20 - 22 September, 2000

Tdoc TP-000157

3G TS 31.121 V1.0.0 (2000-09)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Terminals; UICC-Terminal Interface; USIM Application Test specification (Release 1999)

Keywords
USIM,UICC

3GPP

Postal address

3GPP support office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet
http://www.3gpp.org

Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

The present document is an early draft of the USIM Conformance Test Specification. It is being elaborated during 2000 by 3GPP MCC task 162 under the guidance of 3GPP TSG-T WG3. It is expected to be complete by late November 2000 and then submitted for approval to 3GPP TSG-T #10 (6 - 8 December, Bangkok). For further information, please contact the T3 secretary (Michael.Sanders@etsi.fr) or the 31.121 rapporteur, as listed in the history section.

Introduction

This document defines the Application Test specification.

The aim of the present document is to ensure interoperability between an UICC and a Terminal independently of the respective manufacturer, card issuer or operator. The present document does not define any aspects related to the administrative management phase of the UICC. Any internal technical realisation of either the UICC or the Terminal is only specified where these are reflected over the interface.

Application specific details for applications residing on an UICC are specified in the respective application specific documents. The logical and physical Characteristics of the UICC Terminal interface is specified in document 3G TS 31.101 [19] The Universal Subscriber Identity Module (USIM)-application for 3G telecommunication networks is specified in document 3G TS 31.102 [2].

1 Scope

The present document provides the UICC (Universal IC Card)-Terminal Interface Conformance Test Specification between the 3rd Generation Terminal and USIM (Universal Subscriber Identity Module) as an application on the UICC and the Terminal for 3G telecom network operation:

- the default setting of the USIM;
- the applicability of each test case;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes, and

a brief description of the test procedure and the specific acceptance criteria.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] 3G TS 23.038: "Alphabets and language-specific information".

[2] 3G TS 31.102: "Characteristics of the USIM application".

[3] 3G TS 31.110: "Numbering system for telecommunication IC card applications".

[4] 3G TS 31.111: "USIM Application Toolkit (USAT)".

[5] ITU-T Recommendation E.118: "The international telecommunication charge card".

[6] ISO 639 (1988): "Code for the representation of names of languages".

[7] ISO/IEC 7810 (1995): "Identification cards - Physical characteristics".

[8] ISO/IEC 7811-1 (1995): "Identification cards - Recording technique - Part 1: Embossing".

[9] ISO/IEC 7811-3 (1995): "Identification cards - Recording technique - Part 3: Location of embossed characters on ID-1 cards".

[10] ISO/IEC 7816-1 (1998): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Physical characteristics".

[11] ISO/IEC 7816-2 (1999): "Identification cards - Integrated circuit(s) cards with contacts, Part 2: Dimensions and locations of the contacts".

[12] ISO/IEC 7816-3 (1997): "Identification cards - Integrated circuit(s) cards with contacts, Part 3: Electronic signals and transmission protocols".

[13] ISO/IEC 7816-4 (1995): "Identification cards - Integrated circuit(s) cards with contacts, Part 4: Interindustry commands for interchange".

[14] ISO/IEC 7816-5 (1994): "Identification cards - Integrated circuit(s) cards with contacts, Part 5: Numbering system and registration procedure for application identifiers".

[15] ISO/IEC 7816-6 (1996): "Identification cards - Integrated circuit(s) cards with contacts, Part 6: Interindustry data elements".

[16] ISO/IEC 7816-8 (1999): "Identification cards - Integrated circuit(s) cards with contacts, Part 8: Security related Interindustry commands".

[17] ISO/IEC FCD 7816-9 (1999): "Identification cards - Integrated circuit(s) cards with contacts, Part 9: Additional Interindustry commands and security attributes".

[18] ISO/IEC 10646-1 (1993): "Information technology - Universal Multiple-Octet Coded Character Set (UCS) - Part 1: Architecture and Basic Multilingual Plane".

[19] 3G TS 31.101: "UICC-Terminal Interface; Physical and Logical Characteristics"

[20] 3G TS 22.011: "Service Accessibility"

[21] 3G TS 21.905: "Vocabulary for 3GPP Specifications"

[22] 3G TS 22.024: "Description of Charge Advice Information (CAI)"

[23] 3G TS 23.086: "Advice of Charge (AoC) supplementary services - Stage 2"

[24] 3G TS 24.086: "Advice of Charge (AoC) supplementary services - Stage 3"

[25] 3G TS 22.101: "Service aspects; Service principles"

3 Definitions, symbols, abbreviations and coding

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

3V technology Smart Card: smart Card operating at 3V-± 10% and 5V ± 10%.

1.8V technology Smart Card: smart Card operating at 1.8V ± 10% and 3V ± 10%.

3V technology Terminal: Terminal operating the Smart Card - Terminal interface at 3V ± 10% and 5V ± 10%.

1.8V technology Terminal: Terminal operating the Smart Card - Terminal interface at 1.8V ± 10% and 3V ± 10%.

Function: function contains a command and a response pair.

Application DF: application DF is the entry point to an application.

Access conditions: set of security attributes associated with a file.

Application: application consists of a set of security mechanisms, files, data and protocols (excluding transmission protocols).

Application protocol: set of procedures required by the application.

Card session: link between the card and the external world starting with the ATR and ending with a subsequent reset or a deactivation of the card.

Current directory: latest MF or DF or ADF selected.

Current EF: latest EF selected.

Data Object: information coded as TLV objects, i.e. consisting of a Tag, a Length and a Value part.

Dedicated File (DF): file containing access conditions and, optionally, Elementary Files (EFs) or other Dedicated Files (DFs).

Directory: general term for MF, DF and ADF.

Elementary File (EF): file containing access conditions and data and no other files.

File: directory or an organised set of bytes or records in the UICC.

File identifier: 2 bytes which address a file in the UICC.

GSM session: that part of the card session dedicated to the GSM operation.

ID-1 UICC: UICC having the format of an ID-1 card (see ISO/IEC 7816-1 [10]).

Master File (MF): unique mandatory file containing access conditions and optionally DFs and/or EFs.

Multi-application card: card that can have more than one selectable application.

Multi-session card: card that supports more than one concurrent selectable application session during a card session.

Multi-application capability Terminal: Terminal that can support more than one application.

Normal USIM operation: relating to general, PIN related, 3G and or GSM security and subscription related procedures.

Padding: one or more bits appended to a message in order to cause the message to contain the required number of bits or bytes.

Plug-in UICC: second format of UICC.

Proactive UICC: UICC, which is capable of issuing commands to the Terminal. Part of USAT.

Access Technology: the Access technology for the Radio Network: UTRAN, GSM etc.

Record: string of bytes within an EF handled as a single entity.

Record number: number, which identifies a record within an EF.

Record pointer: pointer, which addresses one record in an EF.

Selectable application: application that is selectable by an AID according to the process described in ISO/IEC 7816-4 [13] over the Terminal-UICC interface.

Selectable application session: link between the application and the external world during a card session starting with the application selection and ending with de-selection or termination of the card session.

UICC application toolkit procedures: defined in 3G TS 31.111 [4].

USIM session: USIM session is a selectable application session for a USIM application.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

t_F	fall time
t_R	rise time
V_{IH}	Input Voltage (high)
V_{IL}	Input Voltage (low)
V_{OH}	Output Voltage (high)
V_{OL}	Output Voltage (low)

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AC	Access Condition
ACT	ACcess Technology
ACK	ACKnowledge
ADF	Application Dedicated File
ADM	Access condition to an EF which is under the control of the authority which creates this file
AID	Application IDentifier
ALW	ALWays
AM	Access Mode
AM-DO	Access Mode Data Object
AoC	Advice of Charge
AoCC	Advice of Charge Charging
APDU	Application Protocol Data Unit
ARR	Access Rule Reference
ATR	Answer To Reset
BGT	Block Guard Time
BWT	Block Waiting Time
C-APDU	Command APDU
CLA	CLAss
CRT	Control Reference Template
CLK	Clock
C-TPDU	Command TPDU
CWI	Character Waiting Integer
CWT	Character Waiting Time
DAD	Destination ADdress
DF	Dedicated File
DO	Data Object
EDC	Error Detection Code byte
EF	Elementary File
etu	elementary time unit
f	frequency
FCP	File Control Parameters
Fi	Clock rate conversion factor
FID	File Identifier
GSM	Global System for Mobile communications
ICC	Integrated Circuit Card
I-Block	Information Block
ID	IDentifier
IEC	International Electrotechnical Commission
IFS	Information Field Sizes
IFSC	Information Field Size for the UICC
IFSD	Information Field Size for the Terminal
INF	INFormation field
INS	INStruction
I/O	Input/Output
ISO	International Organization for Standardization
Lc	Length of Command data sent by the application layer in a case 3 or 4 Command.
LCSI	Life Cycle Status Information
Le	Maximum length of data Expected by the application layer in response to a case 2 or 4 Command.
LEN	LENgth
LRC	Longitudinal Redundancy Check
LSB	Least Significant Bit
Luicc	Exact Length of data available in the UICC to be returned in response to the case 2 or 4 Command received by the UICC
MF	Master File
MMI	Man Machine Interface

MSB	Most Significant Bit
NAD	Node Address byte
NEV	NEVer
NPI	Numbering Plan Identifier
OSI	Open System Interconnection
P1	Parameter 1
P2	Parameter 2
P3	Parameter 3
PCB	Protocol Control Byte
PIN	Personal Identification Number
PPS	Protocol and Parameter Selection
PS	PIN Status
PS_DO	PIN Status Data Object
R-APDU	Response APDU
R-Block	Receive-ready Block
RFU	Reserved for Future Use
R-TPDU	Response TPDU
RST	Reset
SAD	Source ADdress
S-Block	Supervisory Block
SC	Security Condition
SC_DO	Security Condition Data Object
SE	Security Environment
SEID	Security Environment IDentifier
SFI	Short (elementary) File Identifier
State H	High state logic level
State L	Low state logic level
SW	Status Word
TE	Terminal Equipment
TLV	Tag Length Value
TPDU	Transfer Protocol Data Unit
SS	System Simulator (GSM)
USS	UMTS System Simulator
USIM	Universal Subscriber Identity Module
WI	Waiting time Integer
VPP	Programming power input, optional use by the card
WTX	Waiting Time eXtenstion
WWT	Work Waiting Time

3.4 Coding Conventions

The following coding conventions apply to the present document.

All lengths are presented in bytes, unless otherwise stated. Each byte B is represented by bits b8 to b1, where b8 is the most significant bit (MSB) and b1 is the least significant bit (LSB). In each representation, the leftmost bit is the MSB.

In the UICC, all bytes specified as RFU shall be set to '00' and all bits specifies as RFU shall be set to '0'. If the GSM and/or USIM application exists on a UICC or is built on a generic telecommunications card, then other values may apply for the non- GSM or non-USIM applications. The values will be defined in the appropriate specifications for such cards and applications. These bytes and bits shall not be interpreted by a Terminal in a GSM or 3G session.

The coding of Data Objects in the present document is according to ISO/IEC 7816-6 [16].

4 Default Values

All Test defined in the subsequent clauses applies to Terminal using both type of currently specified UICC (ID-1 UICC or Plug-in UICC) in TS 31.101 clause 4 unless otherwise stated.

The following sequence of tests confirms:

a) the correct interpretation of data read from the USIM (Universal Subscriber Identification Module) by the Terminal;

b) the correct writing of data to the USIM by the Terminal;

c) the initiation of appropriate procedures by the Terminal;

d) High level protocols.

All tests apply to the USIM application on the UICC.

A USIM simulator will be required as part of the USS. Alternatively, to perform the logical tests, USIMs programmed with specific data may be used. The USIM data is not defined within the initial conditions of the tests unless it differs from the default values defined below.

4.1 Definition of default values for USIM-Terminal interface testing (Default UICC)

A USIM containing the following default values is used for all tests of this present document unless otherwise stated.

For each data item, the logical default values and the coding within the elementary files (EF) of the USIM follow.

NOTE 1: Bx represents Byte x of the coding.
NOTE 2: Unless otherwise defined, the coding values are hexadecimal.

4.1.1.1 EF_{IMSI} (IMSI)

Logically: 2460813579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	75	F9	FF	FF

4.1.1.2 EF_{AD} (Administrative Data)

Logically: Normal operation
OFM to be deactivated by the Terminal
MNC: 3 digit

Coding:	B1	B2	B3	B4
Hex	00	00	00	03

4.1.1.3 EF_{LOCI} (Location Information)

Logically: LAI-MCC: 246
LAI-MNC: 081
LAI-LAC: 0001
TMSI: "FF .. FF"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	FF	FF	FF	FF	42	06	18	00	01	FF	00

4.1.1.4 EF_{Keys} (Ciphering and Integrity Keys)

Logically: Key Set Identifier KSI: 0x
Ciphering Keys CK: xx
Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B30	B31	B32
Hex	0x	xx	xx	...	xx	xx	xx	...	xx	xx	xx

4.1.1.5 EF_{KeysPS} (Ciphering and Integrity Keys for Packet Switched domain)

Logically: Key Set Identifier KSI: 0x
Ciphering Keys CK: xx
Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B30	B31	B32
Hex	0x	xx	xx	...	xx	xx	xx	...	xx	xx	xx

4.1.1.6 EF_{ACC} (Access Control Class)

Logically: One and only one access class from 0 - 9, e.g. class 7 for which the coding is "00 80".

4.1.1.7 EF_{FPLMN} (Forbidden PLMNs)

Besides of the 4 mandatory EF_{FPLMN} 2 optional EF_{FPLMN} are defined according to TS 31.102 subclause 4.2.16

Logically: PLMN1: 234 001 (MCC MNC)
PLMN2: 234 002
PLMN3: 234 003
PLMN4: 234 004
PLMN5: 234 005
PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	04	10	32	04	20	32	04	30	32	04	40

B13	B14	B15	B16	B17	B18
32	04	50	32	04	60

4.1.1.8 EF_{UST} (USIM Service Table)

Logically:
Local Phone Book available
PLMN selector available
Fixed dialling numbers available
Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available

Coding:	B1	B2	B3	B4
binary	x1xx xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

4.1.1.9 EF_{EST} (Enable Service Table)

Logically:
Fixed Dialling Numbers (FDN) disabled.
Barred Dialling Numbers (BDN) disabled.
APN Control list (ACL) disabled

Coding: B1
binary 0000 0000

The coding of EF_{EST} shall conform with the capabilities of the USIM, unused Bits are set to '0'.

4.1.1.10 EF_{ADN} (Abbreviated Dialling Number)

Logically:
At least 10 records.
Record 1 to 10:
Length of alpha identifier: 32 characters;
Alpha identifier: "ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEF";
Length of BCD number: "03";
TON and NPI: Telephony and Unknown;
Dialled number: 123;
CCI: None;
Ext1: None.

Record 1:

Coding:	B1	B2	B3	...	B32	B33	B34	B35	B36	B37	B38	B39	...	B46
Hex	41	42	43	...	46	03	81	21	F3	FF	FF	FF	...	FF

4.1.1.11 $EF_{UPLMNsel}$ (UPLMN selector)

Besides of the 8 mandatory $EF_{PLMNwACT}$ 4 optional $EF_{PLMNwACT}$ are defined according to the TS 31.102 subclause 4.2.5. The Radio Access Technology identifier for the first two PLMN (1st PLMN and 2nd PLMN) are set to both UTRAN and GSM, all other PLMN to UTRAN only.

Logically: 1st PLMN: 244 081 (MCC MNC)
1st ACT: UTRAN
2nd PLMN: 244 081
2nd ACT: GSM
3rd PLMN: 244 082
3rd ACT: UTRAN
4th PLMN: 244 082
4th ACT: GSM
5th PLMN: 244 003
5th ACT: UTRAN
6th PLMN: 244 004
6th ACT: UTRAN
7th PLMN: 244 005
7th ACT: UTRAN
8th PLMN: 244 006
8th ACT: UTRAN
9th PLMN: 244 007
9th ACT: UTRAN
10th PLMN: 244 008
10th ACT: UTRAN
11th PLMN: 244 009
11th ACT: UTRAN
12th PLMN: 244 010
12th ACT: UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	04	18	80	00	42	04	18	00	80	42	04	28	80	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	04	28	00	80	42	04	30	80	00	42	04	40	80	00

B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
42	04	50	80	00	42	04	60	80	00	42	04	70	80	00

B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
42	04	80	80	00	42	04	90	80	00	42	04	01	80	00

4.1.1.12 $EF_{OPLMNsel}$ (OPLMN Selector)

Besides of the mandatory $EF_{OPLMNsel}$, an optional $EF_{OPLMNsel}$ is defined according to the TS 31.102 subclause 4.2.53. The Radio Access Technology identifier for the first PLMN is set to both UTRAN and GSM, the other PLMN to UTRAN only.

Logically: 1st PLMN: 254 001 (MCC MNC)
1st ACT: UTRAN
2nd PLMN: 254 001
2nd ACT: GSM

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Hex	52	04	10	80	00	52	04	10	00	80

4.1.1.13 CHV1 (PIN)

Logically: 2468

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	32	34	36	38	FF	FF	FF	FF

4.1.1.14 CHV2 (PIN2)

Logically: 3579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	33	35	37	39	FF	FF	FF	FF

4.1.1.15 Unblock CHV1 (PUK)

Logically: 13243546

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	31	33	32	34	33	35	34	36

4.1.1.16 Unblock CHV2 (PUK2)

Logically: 08978675

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	30	38	39	37	38	36	37	35

4.1.1.17 Other Values of the USIM

All other values of EFs provided by the USIM shall be set to the default values defined in the Annex E of TS 31.102. Some EFs (like the GSM Access files) may necessary for some tests and apply only to those test cases.

4.2 Definition of FDN UICC

The FDN test cases require a different configuration than the one described in subclause 4.1. For that purpose a default FDN UICC is defined. In general the values of the FDN UICC are identical to the default UICC, with the following exceptions:

4.2.1.1 EF_{UST} (USIM Service Table)

Logically:

Local Phone Book available
PLMN selector available
Fixed dialling numbers available
Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available.

Coding:	B1	B2	B3	B4
binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

4.2.1.2 EF_{EST} (Enable Service Table)

Logically:

Fixed Dialling Numbers enabled.
Barred Dialling Numbers disabled.
APN Control list (ACL) disabled.

Coding:	B1
binary	0000 0001

The coding of EF_{EST} shall conform with the capabilities of the USIM, unused Bits are set to ‘0’..

4.2.1.3 EF_{FDN} (Fixed Dialling Numbers)

Logically:
Record 1:

Length of alpha identifier:	6 characters;
Alpha identifier:	"FDN111";
Length of BCD number:	"06";
TON and NPI:	Telephony and International;
Dialled number:	+1357924680;
CCI:	None;
Ext2:	None.

Coding for record 1:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	46	44	4E	31	31	31	06	91	31	75	29	64	08

	B14	B15	B16	B17	B18	B19	B20
	FF	FF	FF	FF	FF	FF	FF

Record 2:

Length of alpha identifier:	6 characters;
Alpha identifier:	"FDN222";
Length of BCD number:	"04";

TON and NPI: Telephony and Unknown;
Dialled number: +24680;
CCI: None;
Ext2: None.

Coding for record 2:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	46	44	4E	32	32	32	04	81	42	86	F0	FF	FF

B14	B15	B16	B17	B18	B19	B20
FF	FF	FF	FF	FF	FF	FF

Record 3:
Length of alpha identifier: 6 characters;
Alpha identifier: "FDN333";
Length of BCD number: "0B";
TON and NPI: Telephony and International;
Dialled number: +12345678901234567890;
CCI: None;
Ext2: None.

Coding for record 3:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	46	44	4E	33	33	33	0B	91	21	43	65	87	09

B14	B15	B16	B17	B18	B19	B20
21	43	65	87	09	FF	FF

4.2.1.4 EF_{ECC} (Emergency Call Codes)

Logically:
Emergency call code: "122";
Emergency call code alpha identifier: "TEST";
Emergency call type indicator: RFU.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	21	1F	FF	54	45	53	54	00	00

4.2.1.5 Other Values of the USIM

All other values of EFs provided by the USIM shall be set to the default values defined in the Annex E of TS 31.102. Some EFs (like the GSM Access files) may necessary for some tests and apply only to those test cases.

4.3 Definition of BDN UICC

The BDN test cases require a different configuration than the one described in subclause 4.1. For that purpose a default BDN UICC is defined. In general the values of the BDN UICC are identical to the default UICC, with the following exceptions:

4.3.1.1 EF_{UST} (USIM Service Table)

Logically:
Local Phone Book available
PLMN selector available
Fixed dialling numbers available

Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available.

Coding:	B1	B2	B3	B4
binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

4.3.1.2 EF_{EST} (Enable Service Table)

Logically:
Fixed Dialling Numbers disabled.
Barred Dialling Numbers enabled.
APN Control list (ACL) disabled.

Coding:	B1
binary	0000 0010

The coding of EF_{EST} shall conform with the capabilities of the USIM, unused Bits are set to '0'..

4.3.1.3 EF_{BDN} (Barred Dialling Numbers)

Logically:
Record 1:
Length of alpha identifier: 6 characters;
Alpha identifier: "BDN111";
Length of BCD number: "06";
TON and NPI: Telephony and International;
Dialled number: +1357924680;
CCI: None;
Ext2: None.

Coding for record 1:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	42	44	4E	31	31	31	06	91	31	75	29	64	08

	B14	B15	B16	B17	B18	B19	B20
	FF	FF	FF	FF	FF	FF	FF

Record 2:
Length of alpha identifier: 6 characters;
Alpha identifier: "BDN222";
Length of BCD number: "03";
TON and NPI: Telephony and Unknown;
Dialled number: 122;
CCI: None;
Ext2: None.

Coding for record 2:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	42	44	4E	32	32	32	04	81	21	F3	FF	FF	FF

	B14	B15	B16	B17	B18	B19	B20
	FF	FF	FF	FF	FF	FF	FF

Record 3:

Length of alpha identifier: 6 characters;
Alpha identifier: "BDN333";
Length of BCD number: "03";
TON and NPI: Telephony and Unknown;
Dialled number: 112;
CCI: None;
Ext2: None.

Coding for record 3:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	42	44	4E	33	33	33	03	81	11	F2	FF	FF	FF

B14	B15	B16	B17	B18	B19	B20
FF	FF	FF	FF	FF	FF	FF

4.3.1.4 EF_{ECC} (Emergency Call Codes)

Logically:
Emergency call code: "122";
Emergency call code alpha identifier: "TEST";
Emergency call type indicator: RFU.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	21	1F	FF	54	45	53	54	00	00

4.3.1.5 Other Values of the USIM

All other values of EFs provided by the USIM shall be set to the default values defined in the Annex E of TS 31.102. Some EFs (like the GSM Access files) may necessary for some tests and apply only to those test cases.

5 Subscription related tests

5.1 IMSI / TMSI handling

5.1.1 UE identification by short IMSI

5.1.1.1 Definition and applicability

The IMSI is used for unique identification of the UE by UTRAN. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

This test applies to Terminals accessing UTRAN.

5.1.1.2 Conformance requirement

On the receipt of an IMMEDIATE ASSIGNTMENT message the UE shall send PAGING RESPONSE containing the IMSI of the USIM.

Reference:

TS 31.102, subclause 5.1.1 and 5.2.2

TS 24.008, subclause 10.5.1.4.

TS 31.101, subclause 14.1.1

5.1.1.3 Test purpose

1) To verify that the Terminal uses the IMSI of the USIM.

2) To verify that the Terminal can handle an IMSI of less than the maximum length.

3) To verify that the READ EF_{IMSI} command is performed correctly by the terminal

5.1.1.4 Method of test

5.1.1.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

The default UICC is installed into the Terminal and the UE is powered on.

5.1.1.4.2 Procedure

a) The USS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a PAGING RESPONSE from the UE, the USS sends CHANNEL RELEASE to the UE.

5.1.1.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE to the USS containing the IMSI stored in the USIM.

5.1.2 UE identification by short IMSI using a 2 digit MNC

5.1.2.1 Definition and applicability

In some networks the IMSI identifying the UTRAN can be consistence of a 2 digit MNC. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

This test applies to Terminals accessing UTRAN.

5.1.2.2 Conformance requirement

On the receipt of an IMMEDIATE ASSIGNTMENT message the UE shall send PAGING RESPONSE containing the IMSI of the USIM.

TS 31.102, subclause 4.2.18 and TS 24.008, subclause 10.5.1.4.

5.1.2.3 Test purpose

1) To verify that the Terminal can handle an IMSI consistence of a 2 digit MNC.

5.1.2.4 Method of test

5.1.2.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 246/81/0001
Access control: unrestricted.

The default UICC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 246813579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	05	29	64	18	53	97	FF	FF	FF

EF_{AD} (Administrative Data)

Logically: Normal operation
OFM to be deactivated by the Terminal
MNC: 2 digit

Coding:	B1	B2	B3	B4
Hex	00	00	00	02

The UICC is installed into the Terminal and the UE is powered on.

5.1.2.4.2 Procedure

a) The USS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a PAGING RESPONSE from the UE, the USS sends CHANNEL RELEASE to the UE.

5.1.2.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE to the USS containing the IMSI stored in the USIM.

5.1.3 UE identification by short TMSI

5.1.3.1 Definition and applicability

The TMSI is temporarily used for identification of the UE by UTRAN. It will have been previously assigned by the network. The TMSI is stored in the USIM by the Terminal and read during the USIM-Terminal initialisation procedure.

This test applies to Terminals accessing UTRAN.

5.1.3.2 Conformance requirement

On the receipt of an IMMEDIATE ASSIGNMENT message the UE shall send PAGING RESPONSE containing the TMSI stored in the USIM.

TS 31.102, subclause 5.1.1 and 5.2.2, TS 24.008, subclause 10.5.1.4.

5.1.3.3 Test purpose

1) To verify that the Terminal uses the TMSI stored in the USIM.

2) To verify that the Terminal can handle a TMSI of less than maximum length.

5.1.3.4 Method of test

5.1.3.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 246/081/0001
Access control: unrestricted.

The default UICC is used with the following exception:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 246
LAI-MNC: 081
LAI-LAC: 0001
TMSI: "2143"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	00	00	21	43	42	06	18	00	01	FF	00

The UICC is installed into the Terminal and the UE is powered on.

5.1.3.4.2 Procedure

a) The USS sends PAGING REQUEST to the UE using the TMSI stored in the USIM.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a PAGING RESPONSE from the UE, the USS sends CHANNEL RELEASE to the UE.

5.1.3.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE to the USS containing the TMSI stored in the USIM.

5.1.4 UE identification by long TMSI

5.1.4.1 Definition and applicability

The TMSI is temporarily used for identification of the UE by UTRAN. It will have been previously assigned by the network. The TMSI is stored in the USIM by the Terminal and read during the USIM-Terminal initialisation procedure.

This test applies to Terminals accessing UTRAN.

5.1.4.2 Conformance requirement

On the receipt of an IMMEDIATE ASSIGNMENT message the UE shall send PAGING RESPONSE containing the correct TMSI stored in the USIM.

Reference:

TS 31.102, subclause 5.1.1 and 5.2.2

TS 24.008, subclause 10.5.1.4.

5.1.4.3 Test purpose

1) To verify that the Terminal uses the TMSI stored in the USIM.

2) To verify that the Terminal can handle a TMSI of maximum length.

3) To verify that the Terminal does not respond to page requests containing a previous TMSI.

5.1.4.4 Method of test

5.1.4.4.1 Initial conditions

Prior to this test, the Terminal shall have been operated with a USIM containing TMSI "2143". This may be achieved by executing the previous test (5.1.3) prior to this test. Only under this condition will test purpose 3) be verified.

The USS transmits on the BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

The default UICC is used with the following exception:

EF_{LOCI} (Location Information)

Logically:	LAI-MCC:	246
	LAI-MNC:	081
	LAI-LAC:	0001
	TMSI:	"21430000"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	21	43	00	00	42	06	18	00	01	FF	00

The UICC is installed into the Terminal and the UE is powered on.

5.1.4.4.2 Procedure

a) The USS sends PAGING REQUEST to the UE using the TMSI "2143".

b) The USS sends PAGING REQUEST to the UE using the TMSI stored in the USIM.

c) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

d) After receipt of a PAGING RESPONSE from the UE, the USS sends CHANNEL RELEASE to the UE.

5.1.4.5 Acceptance criteria

1) After step a) the UE shall not respond to the PAGING REQUEST.

2) After step c) the UE shall send PAGING RESPONSE to the USS containing the TMSI stored in the USIM.

5.1.5 UE identification by long IMSI, TMSI updating and key set identifier assignment

5.1.5.1 Definition and applicability

The IMSI and TMSI are used for identification of the UE by UTRAN. They are read from the USIM during the USIM-Terminal initialisation procedure. Within the authentication procedure the network sends a key set identifier to the UE. In addition the network may allocate a new TMSI to the UE. Key set identifier and TMSI are stored in the USIM after call termination and/or at a 3G session termination.

This test applies to Terminals accessing UTRAN.

5.1.5.2 Conformance requirement

1. On the receipt of an IMMEDIATE ASSIGNMENT message, the UE shall send PAGING RESPONSE containing the correct IMSI stored in the USIM.

TS 31.102, subclause 5.1.1 and 5.2.2, TS 24.008, subclause 10.5.1.4.

2. After call termination the USIM shall contain the key set identifier and TMSI received by the UE during the authentication and TMSI reallocation procedures.

TS 31.102, sections 5.1.2, 5.2.5 and 5.2.6, TS 21.111 subclause 10.1

3. After call termination the Terminal shall have updated EF_{LOCI}.

TS 31.101, subclause 14.1.2

5.1.5.3 Test purpose

1) To verify that the Terminal uses the IMSI stored in the USIM.

2) To verify that the Terminal does not respond to page requests containing a previous IMSI.

3) To verify that the Terminal can handle an IMSI of maximum length.

4) To verify that the Terminal correctly updates the key set identifier at call termination.

5) To verify that the Terminal correctly updates the TMSI at call termination.

6) To verify that the UPDATE EF_{LOCI} command is performed correctly by the terminal

5.1.5.4 Method of test

5.1.5.4.1 Initial conditions

Prior to this test, the Terminal shall have been operated with a USIM containing IMSI "2460813579". This may be achieved by executing the previous test (5.1.4) prior to this test. Only under this condition will test purpose 2) be verified.

The USS transmits on the BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

The default UICC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 246081111111111

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	11	11	11	11	11

The UICC is installed into the Terminal and the UE is powered on.

5.1.5.4.2 Procedure

a) The USS sends PAGING REQUEST to the UE using the IMSI "2460813579".

b) The USS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.

c) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

d) After receipt of a PAGING RESPONSE from the UE, the USS sends AUTHENTICATION REQUEST to the UE containing Key Set Identifier KSI set to binary 010.

e) After receipt of AUTHENTICATION RESPONSE from the UE, the USS sends TMSI REALLOCATION to the UE containing TMSI "32547698".

f) Within 5 seconds after receipt of TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

g) To allow examination of the values in the USIM after call termination the UE shall not be soft powered down. If the test is performed with a USIM simulator, the simulation is stopped. If the test is performed with a USIM, the UICC is removed without soft powering down the UE. If this is not possible, the power supply of the Terminal is removed and then the UICC removed.

5.1.5.5 Acceptance criteria

1) After step a) the UE shall not respond to the PAGING REQUEST.

2) After step c) the UE shall send PAGING RESPONSE to the USS containing the IMSI stored in the USIM.

3) After step e) the UE shall send TMSI REALLOCATION COMPLETE to the USS.

4) After step g) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 246
LAI-MNC: 081
TMSI: "32547698"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	32	54	76	98	42	06	18	xx	xx	xx	00

EF_{Key} (Ciphering and Integrity Key)

Logically: Key Set Identifier KSI: 02
Ciphering Keys CK: xx (result of the authentication algorithm)
Integrity Keys IK: xx (result of the authentication algorithm)

Coding:	B1	B2	B3	...	B16	B17	B18	...	B30	B31	B32
Hex	02	xx	xx	...	xx	xx	xx	...	xx	xx	xx

5.2 Access Control handling

5.2.1 Access Control information handling

5.2.1.1 Definition and applicability

Access Control allows restriction of call access attempts. All mobile stations are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special Categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

In addition, there is a separate mechanism for control of network access for emergency call attempts.

This test applies to Terminals accessing UTRAN.

5.2.1.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

   TS 31.102, subclause 5.1.1.

2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network, the UE may make call attempts. Otherwise call access attempts are not allowed.

3. If access class 10 is barred, then the UEs of classes 0 - 9 and the Terminals without UICCs shall not make emergency call attempts.

4. UE of classes 11 - 15 are not allowed to make emergency call attempts if access class 10 and the relevant access class(es) between 11 and 15 are barred. Otherwise, emergency call attempts are allowed irrespective of the conditions of access class 10.

All options are shown in figure 8-1 and are referenced to the tests.

TS 22.011, subclause 4.3 and 4.4.

5.2.1.3 Test purpose

1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

Tests (a) and (b)	No UICC in Terminal.
Tests (c) to (e)	UE with access class 0 to 9.
Test (f)	UE with access class 11 and 15 not in HPLMN, and UE with access class 12,13 and 14 not in HPLMN country.
Test (g) and (h)	UE with access class 11 and 15 in HPLMN, and UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control and emergency call bits signalled by the network, as shown in table 8-1.

5.2.1.4 Method of test

5.2.1.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	see table 8-1
Access control:	see table 8-1
RACH:	see table 8-1

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 8-1 and the UE is powered on.

NOTE: Depending on the initial value of the EF_{LOCI}, the UE may perform a location update. This will be accepted by the USS.

5.2.1.4.2 Coding details

USIM IMSI EF_{IMSI}: Data Field "6F 07"

Logically: IMSI: "2460813579"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	75	F9	FF	FF

Logically: IMSI: "24608135x9"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	x5	F9	FF	FF

Access Control class EF_{ACC}: Data field "6F 78"

See TS 31.102.

NETWORK (USS)

RACH: As defined in GSM 4.08 subclause 10.5.2.29.

octet 1 0111 1000
octet 2 0000 1000
octet 3 }
octet 4 } as table 8-1

5.2.1.4.3 Procedure

a) Using the MMI or EMMI a normal call set-up is attempted.

b) Using the MMI or EMMI an emergency call set-up is attempted.

c) The test is repeated for each set of values in table 8-1.

5.2.1.5 Acceptance criteria

After steps a) and b) the UE shall access the network, or shall make no access attempt, in accordance with table 8-1.

NOTE: For conformance testing, to limit testing, in tests (c), (d) and (e) it is only necessary that one of the access classes is tested. This access class may randomly chosen.

Table 8-1

	USIM IMSI		Network RACH	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Test Results Emergency Call
		Access Class	Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (a)	No UICC in Terminal	N/A	0000 0100 0000 0000	Yes No	234 001	No	No
Test (b)	No UICC in Terminal	N/A	0000 0000 0000 0000	No No	234 001	No	Yes
Test (c)	"246813579"	0	0000 0100 0000 0001	Yes No, except for ACC	246 081	No	No
	"246813579"	1	0000 0100 0000 0010	Yes No, except for ACC	246 081	No	No
	"246813579"	2	0000 0100 0000 0100	Yes No, except for ACC	246 081	No	No
	"246813579"	3	0000 0100 0000 1000	Yes No, except for ACC	246 081	No	No
	"246813579"	4	0000 0100 0001 0000	Yes No, except for ACC	246 081	No	No
	"246813579"	5	0000 0100 0010 0000	Yes No, except for ACC	246 081	No	No
	"246813579"	6	0000 0100 0100 0000	Yes No, except for ACC	246 081	No	No
	"246813579"	7	0000 0100 1000 0000	Yes No, except for ACC	246 081	No	No
	"246813579"	8	0000 0101 0000 0000	Yes No, except for ACC	246 081	No	No
	"246813579"	9	0000 0110 0000 0000	Yes No, except for ACC	246 081	No	No

Table 8-1 (continued)

USIM			Network			Test Results	
	IMSI		RACH	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Emergency Call
		Access Class	Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (d)	"246813579"	0	0000 0000 0000 0001	No None, except for ACC	246 081	No	Yes
	"246813579"	1	0000 0000 0000 0010	No None, except for ACC	246 081	No	Yes
	"246813579"	2	0000 0000 0000 0100	No None, except for ACC	246 081	No	Yes
	"246813579"	3	0000 0000 0000 1000	No None, except for ACC	246 081	No	Yes
	"246813579"	4	0000 0000 0001 0000	No None, except for ACC	246 081	No	Yes
	"246813579"	5	0000 0000 0010 0000	No None, except for ACC	246 081	No	Yes
	"246813579"	6	0000 0000 0100 0000	No None, except for ACC	246 081	No	Yes
	"246813579"	7	0000 0000 1000 0000	No None, except for ACC	246 081	No	Yes
	"246813579"	8	0000 0001 0000 0000	No None, except for ACC	246 081	No	Yes
	"246813579"	9	0000 0010 0000 0000	No None, except for ACC	246 081	No	Yes

Table 8-1 (continued)

USIM			Network			Test Results	
	IMSI		RACH	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Emergency Call
		Access Class	Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (e)	"246813579"	0	1111 1011 1111 1110	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	1	1111 1011 1111 1101	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	2	1111 1011 1111 1011	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	3	1111 1011 1111 0111	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	4	1111 1011 1110 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	5	1101 1011 1101 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	6	1111 1011 1011 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	7	1111 1011 0111 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	8	1111 1010 1111 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"246813579"	9	1111 1001 1111 1111	No All, except ACC on USIM	246 081	Yes	Yes

Table 8-1 (continued)

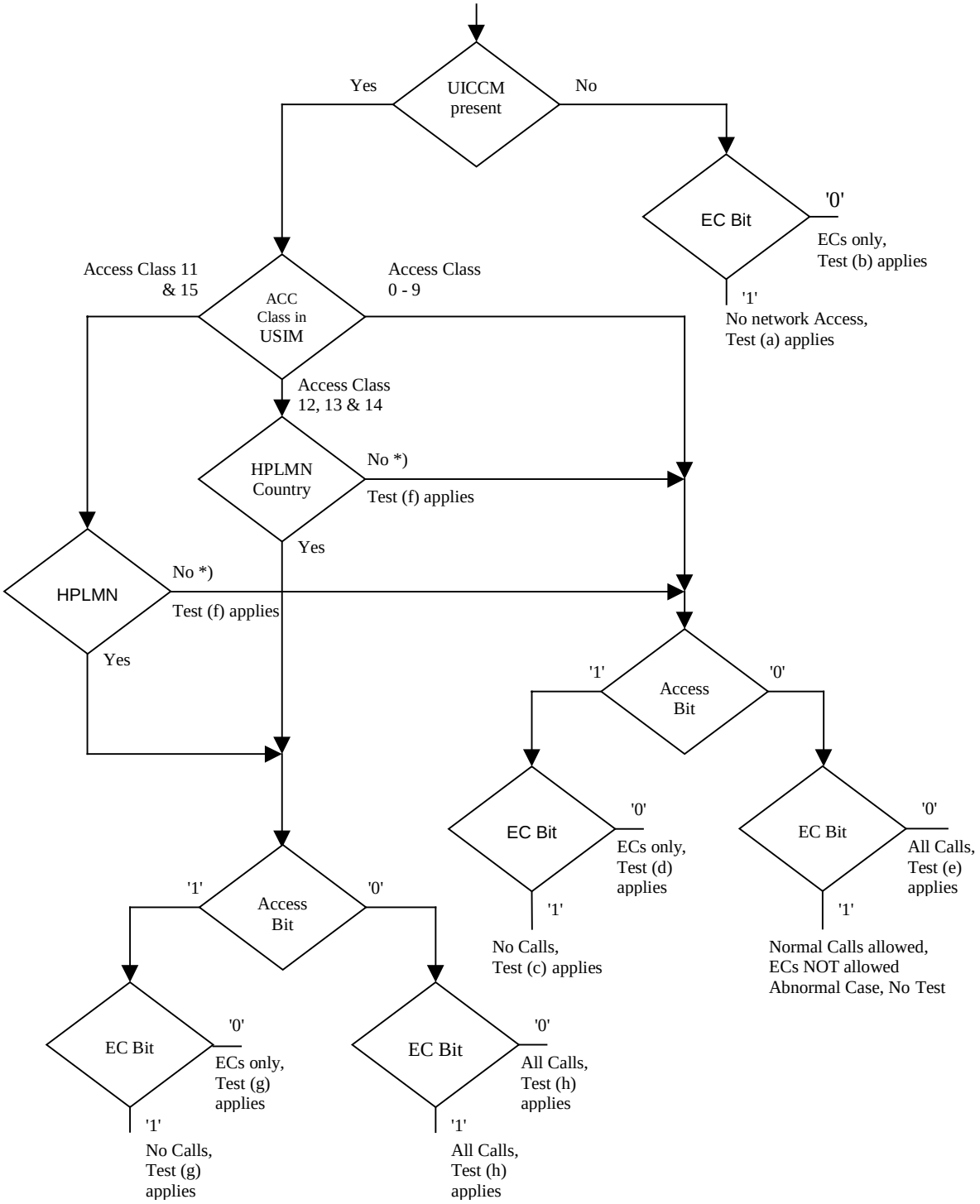
	USIM		Network			Test Results	
	IMSI		RACH	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Emergency Call
		Access Class	Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (f)	"2468135x9"	11 & x	0000 0111 1111 1111	Yes All, except ACC greater then 11	246 082	No	No
	"	11 & x	0000 0011 1111 1111	No All, except ACC greater then 11	246 082	No	Yes
	"	11 & x	0000 0000 0000 0000	No None	246 082	Yes	Yes
	"2468135x9"	12 & x	0000 0111 1111 1111	Yes All, except ACC greater then 11	244 001	No	No
	"	12 & x	0000 0011 1111 1111	No All, except ACC greater then 11	244 001	No	Yes
	"	12 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"2468135x9"	13 & x	0000 0111 1111 1111	Yes All, except ACC greater then 11	244 001	No	No
	"	13 & x	0000 0011 1111 1111	No All, except ACC greater then 11	244 001	No	Yes
	"	13 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"2468135x9"	14 & x	0000 0111 1111 1111	Yes All, except ACC greater then 11	244 001	No	No
	"	14 & x	0000 0011 1111 1111	No All, except ACC greater then 11	244 001	No	Yes
	"	14 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"2468135x9"	15 & x	0000 0111 1111 1111	Yes All, except ACC greater then 11	246 082	No	No
	"	15 & x	0000 0011 1111 1111	No All, except ACC greater then 11	246 082	No	Yes
	" Set "x" to an arbitrary value in the range 0 to 9	15 & x	0000 0000 0000 0000	No None	246 082	Yes	Yes

Table 8-1 (continued)

USIM			Network			Test Results	
	IMSI		RACH	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Emergency Call
		Access Class	Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (g)	"246813579"	11 & x	0000 1111 1111 1111	Yes All normal ACC and ACC on USIM	246 081	No	No
	"	11 & x	0000 1011 1111 1111	No All normal ACC and ACC on USIM	246 081	No	Yes
	"246813579"	12 & x	0001 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	12 & x	0001 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"246813579"	13 & x	0010 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	13 & x	0010 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"246813579"	14 & x	0100 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	14 & x	0100 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"246813579"	15 & x	1000 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 081	No	No
	" Set "x" to an arbitrary value in the range 0 to 9	15 & x	1000 0011 1111 1111	No All normal ACC and ACC on USIM	246 081	No	Yes

Table 8-1 (continued)

USIM			Network			Test Results	
	IMSI		RACH	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Emergency Call
		Access Class	Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (h)	"246813579"	11 & x	1111 0011 1111 1111	No All, except "special" ACC on USIM	246 081	Yes	Yes
	"	11 & x	1111 0111 1111 1111	Yes All, except "special" ACC on USIM	246 081	Yes	Yes
	"246813579"	12 & x	1110 1011 1111 1111	No All, except "special" ACC on USIM	246 082	Yes	Yes
	"	12 & x	1110 1111 1111 1111	Yes All, except "special" ACC on USIM	246 082	Yes	Yes
	"246813579"	13 & x	1101 1011 1111 1111	No All, except "special" ACC on USIM	246 082	Yes	Yes
	"	13 & x	1101 1011 1111 1111	Yes All, except "special" ACC on USIM	246 082	Yes	Yes
	"246813579"	14 & x	1011 1111 1111 1111	No All, except "special" ACC on USIM	246 082	Yes	Yes
	"	14 & x	1011 1011 1111 1111	Yes All, except "special" ACC on USIM	246 082	Yes	Yes
	"246813579"	15 & x	0111 1011 1111 1111	No All, except "special" ACC on USIM	246 081	Yes	Yes
	" Set "x" to an arbitrary value in the range 0 to 9	15 & x	0111 1111 1111 1111	Yes All, except "special" ACC on USIM	246 081	Yes	Yes



*): UE adopts Access Class 0-9, based on IMSI, See TS 22.011

Access Class in SIM, See TS 31.102 EF ACC, "6F 78"

ECs: Emergency Calls

EC Bit: Bit 3 of Octet3 of RACH Control Parameters, See GSM 04.08 Section 10.5.2.29

AC Bit: See Bytes 3 & 4 of the RACH Control Parameters

HPLMN Country means that the MCC of the VPLMN is the same as the MCC of the HPLMN

Figure 8-1: Access control information

5.3 Cipher and Integrity Key handling

5.4 Hyperframe number and START handling

5.5 Authentication algorithms computation

5.6 GSM Cipher key

5.7 GPRS Cipher key

5.8 APN Control List

6 Security related Tests

6.1 PIN / PUK handling

6.2 Fixed Dialling Numbers (FDN) handling

6.2.1 Terminal and USIM with FDN enabled, EF_{ADN} readable and updateable

6.2.1.1 Definition and applicability

Fixed Dialling Numbers (FDN) is a service defined for the USIM. An enabled FDN service results in call restrictions for the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of FDN the UE runs the FDN capability request procedure during UICC-Terminal initialisation. During the initialisation the Terminal shall requests the Emergency call codes of the USIM $EF_{ECC.}$

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting FDN.

6.2.1.2 Conformance requirement

1. Recognising the state of the USIM (FDN enabled) the UE shall perform the UICC initialisation procedure as specified.

2. The UE allows call set-up to a directory number as stored in EF_{FDN}.
3. The UE allows call set-up to a directory number as stored in EF_{FDN} and extended by digits in the end.
4. The UE does not allow call set-up to a directory number stored in EF_{FDN} but with missing digits at the end.
5. The UE does not allow call set-up to a directory number having no reference in EF_{FDN}.
5. The UE allows call set-up of an emergency call using the emergency number stored in the Terminal.
6. The UE allows call set-up of an emergency call using the emergency number stored in the USIM.

Reference:

GSM 11.11, subclauses 9.3 and 10.2.7;

TS 22.101, clause 8 and annex A.24;

TS 31.102, subclause 4.4.2, 5.1.1 and 5.3.2;

6.2.1.3 Test purpose

1. To verify that the Terminal allows call set-up to a FDN number.
2. To verify that the Terminal allows call set-up to a FDN number extended by some digits in the end.
3. To verify that the Terminal rejects call set-up to number having a reference in EF_{FDN}.
4. To verify that the Terminal rejects call set-up to a FDN number not completely corresponding to an entry in EF_{FDN}.
5. To verify that the Terminal allows emergency call set-up using the emergency number stored in the Terminal.
6. To verify that the Terminal allows emergency call set-up using the emergency number stored in the UISM.

6.2.1.4 Method of test

6.2.1.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted

The default FDN UICC with FDN service enabled and EF_{ADN} readable and updateable is installed into the Terminal.

6.2.1.4.2 Procedure

a) The UE is powered on and PIN1 is entered.

b) Using the MMI a call set-up to the fixed dialling number 1 (record 1) is attempted.

c) Using the MMI a call set-up to the fixed dialling number 2 (record 2) extended by "123" in the end is attempted.

d) Using the MMI a call set-up to a number which is equal to the fixed dialling number 3 (record 3) without the last digit is attempted, e.g. by recalling the fixed dialling number 3 and deleting the last digit (only in display).

e) Using the MMI a call set-up to the number "1234567" is attempted.

f) Using the MMI an emergency call set-up is attempted using the emergency call code stored in the Terminal.

g) Using the MMI an emergency call set-up is attempted using the emergency call code stored in the USIM (i.e. "122").

NOTE: For step f) one of the emergency call codes according to 22.101, subclause 8.1 shall be used (i.e. 000, 08, 112, 110, 911 or 999)

6.2.1.5 Acceptance criteria

1) After step a) the UE is registered and in idle state.

2) After steps b) and c) the UE shall allow call set-up and send the requested number across the air interface.

3) After steps d) and e) the UE shall prevent call set-up.

4) After steps f) and g) the UE shall allow emergency call by indicating the call setup as "Emergency Call".

6.2.2 Terminal and USIM with FDN disabled

6.2.2.1 Definition and applicability

Fixed Dialling Numbers (FDN) is a service defined for the USIM. An enabled FDN service results in call restrictions for the UE. Only directory numbers which are stored in the EF_{FDN} may be dialled by the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of FDN the UE runs the FDN capability request procedure during UICC-Terminal initialisation. Deactivation of the service by the subscriber is possible under the control of PIN2 and switches the USIM into a "normal", non restrictive USIM.

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting FDN.

6.2.2.2 Conformance requirement

1. Recognising the state of the USIM (FDN disabled) the UE correctly performs the UICC initialisation procedure.

2. The UE allows call set-up to a directory number as stored in EF_{FDN}.

3. The UE allows call set-up to a directory number as stored in EF_{ADN}.

4. The UE allows call set-up to a directory number given in manually.

Reference:

GSM 11.11, clauses 9.3, 10.2.7;

TS 22.101, clause 8 and annex A.24;

TS 31.102, subclause 4.4.2, 5.1.1 and 5.3.2;

6.2.2.3 Test purpose

1. To verify that the Terminal as a result of the state of the USIM correctly performs the UICC-Terminal initialisation procedure.

2. To verify that the Terminal allows call set-up to a FDN number.

3. To verify that the Terminal allows call set-up to a ADN number.

4. To verify that the Terminal allows call set-up to manually given number.

6.2.2.4 Method of test

6.2.2.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters

Attach/detach: disabled
LAI (MCC/MNC/LAC): 246/081/0001
Access control: unrestricted

The default FDN UICC is used with the following exception:

EF_{EST} (Enable Service Table)

Logically:
Fixed Dialling Numbers disabled.
Barred Dialling Numbers disabled.
APN Control list (ACL) disabled.

Coding: B1
binary 0000 0000

The UICC is installed into the Terminal and the UE is powered on.

6.2.2.4.2 Procedure

a) Using the MMI a call set-up to the fixed dialling number 1 is attempted.

b) Using the MMI a call set-up to the abbreviated dialling number 1 is attempted.

c) Using the MMI a call set-up to the number "1234567" is attempted.

6.2.2.5 Acceptance criteria

After steps a), b) and c) the UE shall allow call set-up and send the requested number across the air interface.

6.2.3 Enabling, disabling and updating of FDN

6.2.3.1 Definition and applicability

FDN may be enabled and disabled by the subscriber under control of PIN2. Fixed dialling numbers are read with PIN and updated under control of PIN2.

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting FDN.

6.2.3.2 Conformance requirement

1. Recognising the state of the USIM (FDN enabled) the UE shall perform the UICC initialisation procedure as specified.

2. The UE shall allow updating of EF_{FDN} by the use of PIN2.

3. The UE provides means to disable the FDN service by the use of PIN2.

4. The UE shall allow the use of EF_{ADN} after disabling of FDN.

Reference:
GSM 11.11, subclauses 9.3 and 10.2.7;

TS 22.101, clause 8;

TS 31.102, subclause 4.4.2, 5.1.1 and 5.3.2;

6.2.3.3 Test purpose

1. To verify that the Terminal correctly performs the update of a number in EF_{FDN}.
2. To verify that the Terminal correctly disables FDN service.
3. To verify that the Terminal recognises disabling of FDN and allows access to EF_{ADN}.

6.2.3.4 Method of test

6.2.3.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted

The default FDN UICC with FDN service enabled is installed into the Terminal.

6.2.3.4.2 Procedure

a) The UE is powered on and PIN1 is entered.

b) Using the MMI the directory number "+876543210" is stored in EF_{FDN} as fixed dialling number 1 (record 1). The alpha identifier is not changed. On request of the UE PIN2 is entered.

c) Using the MMI the FDN disabling procedure is performed. On request of the UE PIN2 is entered.

d) Using the MMI a call set-up to the abbreviated dialling number 1 (record 1) is attempted.

e) The UE is soft-powered down.

6.2.3.5 Acceptance criteria

1) After step a) the UE is registered and in idle state.

2) After step c) the UE shall indicate that the FDN disabling procedure has been successful.

3) After step d) the UE shall allow call set-up and send the requested number across the air interface.

4) After step e) record 1 in EF_{FDN} , shall contain the following values:

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	46	44	4E	31	31	31	06	91	78	56	34	12	F0

	B14	B15	B16	B17	B18	B19	B20
	FF	FF	FF	FF	FF	FF	FF

6.3 Barred Dialling numbers (BDN) handling

6.3.1 Terminal and USIM with BDN enabled

6.3.1.1 Definition and applicability

Barred Dialling Numbers (BDN) is a service defined for the USIM. An enabled BDN service results in call restrictions for the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of BDN the UE runs the BDN capability request procedure during UICC-Terminal initialisation.

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting BDN.

6.3.1.2 Conformance requirement

1. Recognising the state of the USIM (BDN enabled) the UE shall perform the UICC initialisation procedure as specified.
2. The UE prevent call set-up to a any number stored in EF_{BDN}.
3. The UE allows call set-up of an emergency call, even if this number is stored in the USIM.

Reference:
GSM 11.11, subclauses 9.3 and 10.2.7;

TS 22.101, Annex 19;

TS 31.102, subclause 5.1.1 and 5.3.2;

6.3.1.3 Test purpose

1. To verify that the Terminal rejects call set-up to any number that has an entry in EF_{BDN}.
2. To verify that the Terminal allows call set-up to any number other number not stored in EF_{BDN}.
3. To verify that the Terminal allows emergency call set-up even if the number is stored in EF_{BDN}.

6.3.1.4 Method of test

6.3.1.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted

The default BDN UICC with BDN service enabled is installed into the Terminal.

6.3.1.4.2 Procedure

a) The UE is powered on and PIN1 is entered.

b) Using the MMI a call set-up to the barred dialling number 1 (record 1) is attempted.

c) Using the ADN entry a call set-up to the abbreviated dialling number 1 (record 1) end is attempted.

d) Using the MMI a call set-up to the number "123456" is attempted.

e) Using the MMI an emergency call set-up is attempted using the emergency call code stored in the Terminal

f) Using the MMI an emergency call set-up is attempted using the emergency call code stored in the USIM (i.e. "122").

NOTE: For step e) one of the emergency call codes according to 22.101, subclause 8.1 is used (i.e. 000, 08, 112, 110, 911 or 999)

6.3.1.5 Acceptance criteria

1) After step a) the UE is registered and in idle state.

3) After steps b) and c) the UE shall prevent call set-up.

2) After step d) the UE shall allow call set-up and send the requested number across the air interface.

4) After step f) and g) the UE shall allow emergency call by indicating the call setup as "Emergency Call.

6.3.2 Terminal and USIM with BDN disabled

6.3.2.1 Definition and applicability

Barred Dialling Numbers (BDN) is a service defined for the USIM. An enabled BDN service results in call restrictions for the UE. No numbers which are stored in the EF_{BDN} may be dialled by the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of FDN the UE runs the FDN capability request procedure during UICC-Terminal initialisation. Deactivation of the service by the subscriber is possible under the control of PIN2 and switches the USIM into a "normal", non restrictive USIM. When the BDN is disabled no special controls are specified. The BDN may be read as if they were normal ADN. However a modification or deletion of the a BDN is under PIN2 control.

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting BDN.

6.3.2.2 Conformance requirement

1. Recognising the state of the USIM (FDN disabled) the UE correctly performs the UICC initialisation procedure.
2. The UE allows call set-up to a directory number as stored in EF_{BDN}.
3. Any change to the EF_{BDN} does requests PIN2.

Reference:

GSM 11.11, subclauses 9.3 and 10.2.7;

TS 22.101, clause 8 and annex A.19;

TS 31.102, subclause 5.1.1 and 5.3.2;

6.3.2.3 Test purpose

1. To verify that the Terminal as a result of the state of the USIM correctly performs the UICC-Terminal initialisation procedure.
2. To verify that the Terminal allows call set-up to a BDN number.
3. The UE shall allow updating of EF_{BDN} by the use of PIN2.

6.3.2.4 Method of test

6.3.2.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters

Attach/detach: disabled
LAI (MCC/MNC/LAC): 246/081/0001
Access control: unrestricted

The default FDN UICC is used with the following exception:

EF_{EST} (Enable Service Table)

Logically:
Fixed Dialling Numbers disabled.
Barred Dialling Numbers disabled.
APN Control list (ACL) disabled.

Coding: B1
binary 0000 0000

The UICC is installed into the Terminal and the UE is powered on.

6.3.2.4.2 Procedure

a) Using the MMI a call set-up to the barred dialling number 1 is attempted.

b) Using the MMI the directory number "+876543210" is stored in EF_{BDN} as fixed dialling number 1 (record 1). The alpha identifier is not changed. On request of the UE PIN2 is entered.

6.3.2.5 Acceptance criteria

1) After step a) the UE shall allow call set-up and send the requested number across the air interface.

4) After step b) record 1 in EF_{BDN} , shall contain the following values:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	42	44	4E	31	31	31	06	91	78	56	34	12	F0
	B14	B15	B16	B17	B18	B19	B20						
	FF	FF	FF	FF	FF	FF	FF						

6.4 Advice of charge (AoC) handling

6.4.1 AoC not supported by USIM

6.4.1.1 Definition and applicability

If the Terminal under test supports Advice of Charge Charging, it shall still look at the capability of the USIM, before responding to any AoCC information from the network.

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting AoCC.

6.4.1.2 Conformance requirement

1. An UE not supporting AoCC and in the outgoing call / U4 call delivered state, on receipt of a CONNECT message containing AoCC information shall acknowledge the CONNECT message but ignore and not acknowledge the AoCC information sent within the CONNECT.

2. An UE not supporting AoCC and in the outgoing call / U4 call delivered state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.

3. An UE not supporting AoCC and in the incoming call / U9 call confirmed state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.

4. An UE not supporting AoCC and in the U10 call active state, on receipt of a FACILITY message containing AoCC information, shall ignore and not acknowledge the AoCC information sent within the FACILITY.

References:

TS 24.008, subclause 5.1.2.1;

TS 23.086, subclause 1.2, 1.3, 2.2 and 2.3;

TS 24.086, clause 2.

6.4.1.3 Test purpose

1. To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the outgoing call / U4 call delivered state, on receipt of a CONNECT message containing AoCC information shall acknowledge the CONNECT message but ignore and not acknowledge the AoCC information sent within the CONNECT.

2. To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the outgoing call / U4 call delivered state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.

3. To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the incoming call / U9 call confirmed state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.

4. To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the U10 call active state, on receipt of a FACILITY message containing AoCC information, shall ignore and not acknowledge the AoCC information sent within the FACILITY.

6.4.1.4 Method of test

6.4.1.4.1 Initial conditions

The Terminal shall be installed with a UICC or USIM simulator, with all elementary files coded as for the default UICC, with the exception of:

EF_{UST} (USIM Service Table)
Logically:
Local Phone Book available;
PLMN selector available;
Fixed dialling numbers available;
The GSM Access available;
The Group Identifier level 1 and level 2 not available;
AoC not available.

Coding: B1 B2 B3 B4

binary xxxx xx11 xxx0 xxxx xxxx 1x00 xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

The generic call set up procedures are followed up to and including the reception, or transmission of the ALERTING message by the UE.

6.4.1.4.2 Procedure

a) For an MO call in the U4 state the USS transmits CONNECT containing AoCC information.

b) For an MO call in the U4 state the USS transmits FACILITY containing AoCC information.

c) For an MT call in the U9 state the USS transmits FACILITY containing AoCC information.

d) For an MO call in the U10 state the USS transmits FACILITY containing AoCC information.

6.4.1.5 Acceptance criteria

In all cases, the UE shall ignore the AoCC information sent to it in the Facility information elements as part of the CONNECT/FACILITY messages and not send any AoCC information acknowledgement. It shall be checked for 15 seconds that the UE does not transmit any AoCC information acknowledgement after the receipt of AoCC information.

6.4.2 Maximum frequency of ACM updating

6.4.2.1 Definition and applicability

The ACM shall be updated at the end of every interval, where the interval length is given by parameter e2. The Terminal shall update the ACM not more frequently than once every 5 seconds, even if the interval is less than 5 seconds. More frequent updating may affect the USIMs read/write cycles.

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting AoCC.

6.4.2.2 Conformance requirement

The ACM shall be incremented when the CCM is incremented or once every 5 seconds, whichever is the longer period.

Reference:

TS 22.024, subclause 4.3, part h.

6.4.2.3 Test purpose

To verify that the interval between increments is 5 seconds.

6.4.2.4 Method of test

6.4.2.4.1 Initial conditions

The Terminal shall be connected to the USIM simulator, with all elementary files coded as default with the exception of:

EF_{UST} (USIM Service Table)
Logically:
Local Phone Book available;
PLMN selector available;
Fixed dialling numbers available;
The GSM Access available;

The Group Identifier level 1 and level 2 not available;
AoC available.

Coding:	B1	B2	B3	B4
binary	xxxx xx11	xxx1 xxxx	xxxx 1x00	xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{ACM} (Accumulated call meter)
Logically: 50 units

EF_{ACMmax} (Accumulated call meter maximum)
Logically: 150 units

The USS transmits on the BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

Mobile Station:
The UE is in MM-state "idle, updated".

6.4.2.4.2 Procedure

a) The UE is made to initiate a call. The call is established with AoCC e-parameters sent in a Facility IE in the CONNECT message, as given below. The UE returns the AoCC acknowledgement within 1 second of the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent by the UE before or after the CONNECT ACKNOWLEDGE.

b) The call is maintained for 90 seconds, then terminated by the USS. During the call, the USIM-simulator monitors the time intervals between successive INCREMENT commands.

Maximum Duration of Test:
2 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> USS	CHANNEL REQUEST	
3	USS -> UE	IMMEDIATE ASSIGNMENT	
4	UE -> USS	CM SERVICE REQUEST	
5	USS -> UE	CM SERVICE ACCEPT	
6	UE -> USS	SETUP	
7	USS -> UE	CALL PROCEEDING	
8	USS -> UE	ASSIGNMENT COMMAND	To a supported channel type
9	UE -> USS	ASSIGNMENT COMPLETE	
10	USS -> UE	ALERTING	
11	USS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A12	UE -> USS	CONNECT ACKNOWLEDGE	
A13	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B12	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B13	UE -> USS	CONNECT ACKNOWLEDGE	
14			call duration 90 seconds after CAI information sent by USS,
15	USS -> UE	DISCONNECT	
16	UE -> USS	RELEASE	
17	USS -> UE	RELEASE COMPLETE	
18	USS -> UE	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:
i) FACILITY Information Element with **Invoke = ForwardChargeInformation** component type as defined in TS 24.080 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.1.3.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

e-parameters:

parameter:	e1	e2	e3	e4	e5	e6	e7
value	1	1	1	0	0	0	0

Values shown in table are in the format and have units as in TS 22.024 clause 3.

ii) FACILITY Information Element with **Return Result** component type as defined in TS 24.080 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.1.3.

6.4.2.5 Acceptance criteria

The UE shall send INCREMENT commands to the USIM every 5 seconds.

6.4.3 Call terminated when ACM greater than ACMmax

6.4.3.1 Definition and applicability

ACMmax gives the maximum value of ACM, at which the current chargeable calls shall be terminated and no further calls may be made (except emergency calls).

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting AoCC.

6.4.3.2 Conformance requirement

ACM shall be incremented by the value of CCM.

If the ACMmax is valid, and the ACM becomes equal to or exceeds the value of the ACMmax, then all calls in progress, chargeable to the user, shall be terminated by the UE, once the chargeable interval determined by the CAI has elapsed, (except emergency calls).

Reference:

TS 22.024, subclause 4.2.2 and subclause 4.3 part h.

TS 31.101, subclause 14.1.3

6.4.3.3 Test purpose

1. To verify that the Terminal increments the ACM by the correct number of units, even though this may take ACM above ACMmax.
2. To verify that the Terminal terminates the call.
3. To verify that the INCREMENT EF_{ACM} command is performed correctly by the terminal.

6.4.3.4 Method of test

6.4.3.4.1 Initial conditions

The Terminal shall be connected to a UICC or the USIM simulator, with all elementary files coded as default with the exception of:

EF_{UST} (USIM Service Table)
Logically:
Local Phone Book available;
PLMN selector available;
Fixed dialling numbers available;
The GSM Access available;
The Group Identifier level 1 and level 2 not available;
AoC available.

Coding:	B1	B2	B3	B4
binary	xxxx xx11	xxx1 xxxx	xxxx 1x00	xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{ACM} (Accumulated call meter)
Logically: 80 units

Coding:	B1	B2	B3
binary	0000 0000	0000 0000	0101 0000

EF_{ACMmax} (Accumulated call meter maximum)
Logically: 94 units

Coding:	B1	B2	B3
binary	1111 1111	1111 1111	0101 1110

The USS transmits on the BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

Mobile Station:
The UE is in MM-state "idle, updated".

6.4.3.4.2 Procedure

a) The UE is made to initiate a call. The call is established with AoCC e-parameters sent in a Facility IE in the CONNECT message, as given below. The UE returns the AoCC acknowledgement within 1 second of the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent by the UE before or after the CONNECT ACKNOWLEDGE.

b) The call is maintained until cleared by the UE (after 20 seconds).

c) The contents of ACM are checked.

Maximum Duration of Test:
2 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> USS	CHANNEL REQUEST	
3	USS -> UE	IMMEDIATE ASSIGNMENT	
4	UE -> USS	CM SERVICE REQUEST	
5	USS -> UE	CM SERVICE ACCEPT	
6	UE -> USS	SETUP	
7	USS -> UE	CALL PROCEEDING	
8	USS -> UE	ASSIGNMENT COMMAND to a supported channel type	
9	UE -> USS	ASSIGNMENT COMPLETE	
10	USS -> UE	ALERTING	
11	USS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A12	UE -> USS	CONNECT ACKNOWLEDGE	
A13	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B12	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B13	UE -> USS	CONNECT ACKNOWLEDGE	
14			call duration 20 seconds after CAI information sent by USS
15	UE -> USS	DISCONNECT	
16	USS -> UE	RELEASE	
17	UE -> USS	RELEASE COMPLETE	
18	UE -> USS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:
i) FACILITY Information Element with **Invoke = ForwardChargeInformation** component type as defined in TS 24.080 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.1.3.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

e-parameters:

parameter:	e1	e2	e3	e4	e5	e6	e7
value	10	10	1	0	0	0	0

Values shown in table are in the format and have units as in TS 22.024 clause 3.

ii) FACILITY Information Element with **Return Result** component type as defined in TS 24.080 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.1.3.

6.4.3.5 Acceptance criteria

1) The UE shall terminate the call correctly 20 seconds after CAI was sent.

2) The value of ACM shall be 100 units.

6.4.4 Response codes of increase command of ACM

6.4.4.1 Definition and applicability

ACM has a maximum value in terms of coding, and an attempt by the Terminal to exceed that value by sending an INCREASE command shall result in an error message from the USIM. As the maximum of the ACM is equal to the maximum value of ACMmax, all current chargeable calls shall be terminated and no further calls may be made (except emergency calls).

This test applies to Terminals accessing UTRAN. Besides of that, this test is applicable only to those Terminals supporting AoCC.

6.4.4.2 Conformance requirement

The Terminal shall perform the increasing procedure, sending the amount to be increased.

The running accumulated charge shall be stored in the ACM of the USIM.

Where this charge cannot be stored in the UE, use of the telecommunications service shall be prevented.

At the time ACM exceeds it's maximum value, then all calls in progress, chargeable to the user, shall be terminated by the UE, once the chargeable interval determined by the CAI has elapsed, (except emergency calls).

References:
TS 31.102, subclause 5.3.4; TS 22.086, clauses 2.1 and 2.2.1.

6.4.4.3 Test purpose

To verify that the Terminal clears a charged call if the USIM indicates that the ACM cannot be increased.

6.4.4.4 Method of test

6.4.4.4.1 Initial conditions

The Terminal shall be connected to the USIM simulator, with all elementary files coded as default with the exception of:

EF_{UST} (USIM Service Table)

Logically:
Local Phone Book available;
PLMN selector available;
Fixed dialling numbers available;
The GSM Access available;
The Group Identifier level 1 and level 2 not available;
AoC available.

Coding:	B1	B2	B3	B4
binary	xxxx xx11	xxx1 xxxx	xxxx 1x00	xxxx x1xx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{ACM} (Accumulated call meter)
Logically: (Maximum value - 10) units

Coding:	B1	B2	B3
binary	1111 1111	1111 1111	1111 0101

EF_{ACMmax} (Accumulated call meter maximum)
Logically: (Maximum value - 2) units

Coding:	B1	B2	B3
binary	1111 1111	1111 1111	1111 1101

The USS transmits on the BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 246/081/0001
Access control: unrestricted.

Mobile Station:

The UE is in MM-state "idle, updated".

6.4.4.4.2 Procedure

a) The UE is made to initiate a call. The call is established with AoCC e-parameters sent in a Facility IE in the CONNECT message, as given below. The UE returns the AoCC acknowledgement within 1 second of the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent by the UE before or after the CONNECT ACKNOWLEDGE.

b) After an interval has elapsed, the Terminal increments the ACM. When an INCREASE command is received, the USIM-simulator sends back the error "98 50".

c) Conditions are reset to those described in the initial conditions. Steps a) and b) of the test are repeated, except that the error code sent by the USIM simulator at step b) is now "6F xx".

d) Conditions are reset to those described in the initial conditions. Steps a) and b) of the test are repeated, except that the error code sent by the USIM simulator at step b) is now "65 81".

References:

TS 31.101, subclause 10.2.1.

Maximum Duration of Test:
3 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> USS	CHANNEL REQUEST	
3	USS -> UE	IMMEDIATE ASSIGNMENT	
4	UE -> USS	CM SERVICE REQUEST	
5	USS -> UE	CM SERVICE ACCEPT	
6	UE -> USS	SETUP	
7	USS -> UE	CALL PROCEEDING	
8	USS -> UE	ASSIGNMENT COMMAND to a supported channel type	
9	UE -> USS	ASSIGNMENT COMPLETE	
10	USS -> UE	ALERTING	
11	USS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A12	UE -> USS	CONNECT ACKNOWLEDGE	
A13	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B12	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B13	UE -> USS	CONNECT ACKNOWLEDGE	
14			call duration 10s after CAI information sent by USS
15	UE -> USS	DISCONNECT	
16	USS -> UE	RELEASE	
17	UE -> USS	RELEASE COMPLETE	
18	UE -> USS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

i) FACILITY Information Element with **Invoke = ForwardChargeInformation** component type as defined in TS 24.080 subclause 3.6.1 table 3.3.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

e-parameters:

parameter:	e1	e2	e3	e4	e5	e6	e7
value	20	10	1	0	0	0	0

Values shown in table are in the format and have units as in TS 22.024 clause 3.

ii) FACILITY Information Element with **Return Result** component type as defined in TS 24.080 subclause 3.6.1 table 3.4.

6.4.4.5 Acceptance criteria

1) The UE shall terminate the call correctly 10 seconds after CAI was sent.

2) In each of the three cases, as described in steps b), c) and d) of the procedure, the UE shall terminate the call correctly when it receives an indication from the USIM that the ACM cannot be incremented.

7 PLMN related tests

7.1 FPLMN handling

7.1.1 Adding FPLMN to the Forbidden PLMN list

7.1.1.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls location updating attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a location update reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

After a location update, which is not followed by an authentication procedure, the Key Set Identifier indicates that the Key Set Identifier is undefined.

This test applies to Terminals accessing UTRAN.

7.1.1.2 Conformance requirement

1. In automatic PLMN selection mode the UE shall only attempt a LOCATION UPDATE if it receives a BCCH containing a LAI that is not indicated in the EF_{FPLMN} in the USIM.

   TS 22.011, subclause 2.3, TS 31.102, sections 5.1.1 and 5.2.7

2. After receipt of a LOCATION UPDATE REJECT message with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

   TS 22.011, subclause 2.3, TS 31.102, sections 5.1.1 and 5.2.7

3. After call termination the USIM shall contain the correct Key Set Identifier.

   TS 31.102, subclause 5.1.2, 5.2.5 and 5.2.6, TS 21.111 subclause 10.1

4. After call termination the USIM shall contain the correct TMSI and location information received by the UE.

   TS 31.102, subclause 5.1.2, 5.2.5 and 5.2.6, TS 21.111 subclause 10.1

7.1.1.3 Test purpose

1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.

2) To verify that the EF_{FPLMN} is correctly updated by the Terminal after receipt of a LOCATION UPDATE REJECT message with cause "PLMN not allowed".

3) To verify that the EF_{Key} has been correctly updated by the Terminal.

4) To verify that the EF_{LOCI} has been correctly updated by the Terminal.

7.1.1.4 Method of test

7.1.1.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 234/002/0001

Access control: unrestricted.

The default UICC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 246081111111111

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	11	11	11	11	11

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 234
LAI-MNC: 007
LAI-LAC: 0000
TMSI: "32547698"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	32	54	76	98	32	04	10	00	00	FF	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

EF_{Key} (Ciphering and Integrity Key)

Logically: Key Set Identifier KSI: 02
Ciphering Keys CK: undefined
Integrity Keys IK: undefined

Coding:	B1	B2	B3	...	B16	B17	B18	...	B30	B31	B32
Hex	02	xx	xx	...	xx	xx	xx	...	xx	xx	xx

7.1.1.4.2 Procedure

a) The UE is powered on.

b) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC): 234/003

The USS then resumes RF output on the BCCH.

c) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC): 234/004

The USS then resumes RF output on the BCCH.

d) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC): 234/005

The USS then resumes RF output on the BCCH.

e) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC): 234/007

The USS then resumes RF output on the BCCH.

f) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

g) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE REJECT to the UE with cause "PLMN Not Allowed", followed by CHANNEL RELEASE.

The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC): 234/008

The USS then resumes RF output on the BCCH.

h) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

i) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 234/008
TMSI: "43658709"

to the UE.

j) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

k) The UE is soft powered down.

7.1.1.5 Acceptance criteria

1) After each of the steps a) to d) the UE shall not attempt a LOCATION UPDATE.

2) After step f) the UE shall send LOCATION UPDATE REQUEST to the USS.

3) After step h) the UE shall send LOCATION UPDATE REQUEST to the USS.

4) After step i) the UE shall respond with TMSI REALLOCATION COMPLETE.

5) After step k) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 234
LAI-MNC: 008
TMSI: "43658709"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	43	65	87	09	32	04	80	xx	xx	xx	00

EF_{Key} (Ciphering and Integrity Key)

Logically: Key Set Identifier KSI: 07 (not available)
Ciphering Keys CK: xx
Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B30	B31	B32

Hex	07	xx	xx	...	xx	xx	xx	...	xx	xx	xx

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 002 (MCC MNC)
PLMN2: 234 003
PLMN3: 234 004
PLMN4: 234 005
PLMN5: 234 006
PLMN6: 234 007

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	04	20	32	04	30	32	04	40	32	04	50

	B13	B14	B15	B16	B17	B18
	32	04	60	32	04	70

7.1.2 UE updating forbidden PLMNs

7.1.2.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM provides storage for at least 4 entries, and is managed by the UE. In automatic PLMN selection mode the UE controls location updating attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a location update reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

This test applies to Terminals accessing UTRAN.

7.1.2.2 Conformance requirement

After the receipt of a LOCATION UPDATE REJECT message with the cause "PLMN not allowed" the UE shall update the EF_{FPLMN} in the USIM.

TS 22.011, subclause 3.2.2.4.

7.1.2.3 Test purpose

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.2.4 Method of test

7.1.2.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 234/002/0001
Access control: unrestricted.

The default UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 001 (MCC MNC)
PLMN2: empty

PLMN3: 234 003
PLMN4: 234 004
PLMN5: 234 005
PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	04	10	FF	FF	FF	32	04	30	32	04	40

B13	B14	B15	B16	B17	B18
32	04	50	32	04	60

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.1.2.4.2 Procedure

a) The UE is powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE REJECT to the UE with the cause "PLMN not allowed", followed by CHANNEL RELEASE.

d) The UE is soft powered down.

7.1.2.5 Acceptance criteria

1) After step b) the UE shall send LOCATION UPDATE REQUEST to the USS.

2) After step d) the USIM shall contain:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 001 (MCC MNC)
PLMN2: 234 002
PLMN3: 234 003
PLMN4: 234 004
PLMN5: 234 005
PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	04	10	32	04	20	32	04	30	32	04	40

B13	B14	B15	B16	B17	B18
32	04	50	32	04	60

or

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 001 (MCC MNC)
PLMN2: 234 003
PLMN3: 234 004
PLMN4: 234 005
PLMN5: 234 006
PLMN6: 234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12

Hex	32	04	10	32	04	30	32	04	40	32	04	50

	B13	B14	B15	B16	B17	B18
	32	04	60	32	04	20

7.1.3 UE deleting forbidden PLMNs

7.1.3.1 Definition and applicability

In manual PLMN selection mode the UE allows location update attempts to all available PLMNs, including forbidden PLMNs (as indicated by the forbidden PLMN list on the USIM). As a result of a successful location update procedure onto a PLMN which is in the forbidden PLMN list, the forbidden PLMN list is automatically updated by the UE.

This test applies to Terminals accessing UTRAN.

7.1.3.2 Conformance requirement

1. In manual PLMN selection mode the UE shall be able to perform a LOCATION UPDATE attempt to a PLMN which is in the forbidden PLMN list.

   TS 22.011, subclause 3.2.2.2.

2. After receipt of LOCATION UPDATE ACCEPT the UE shall delete the forbidden PLMN from the forbidden PLMN list.

   TS 22.011, subclause 3.2.2.4.

7.1.3.3 Test purpose

1) To verify that the UE is able to perform a LOCATION UPDATE on a forbidden PLMN in manual PLMN selection mode.

2) To verify that the UE after a successful LOCATION UPDATE deletes the PLMN in the EF_{FPLMN} on the USIM.

7.1.3.4 Method of test

7.1.3.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 234/005/0001
Access control: unrestricted.

The default UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: empty
PLMN2: empty
PLMN3: empty
PLMN4: empty
PLMN5: 234 005 (MCC MNC)
PLMN6: empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12

Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

B13	B14	B15	B16	B17	B18
32	04	50	FF	FF	FF

The UICC is installed into the Terminal and the UE is set to manual PLMN selection mode.

7.1.3.4.2 Procedure

a) The UE is powered on.

b) PLMN with MCC/MNC of 234/005 is manually selected.

c) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

d) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 234/005
TMSI: "12345678"

to the UE.

e) After receipt of TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE.

f) The UE is soft powered down.

7.1.3.5 Acceptance criteria

1) After step c) the UE shall send LOCATION UPDATE REQUEST to the USS.

2) After step d) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) After step f) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 234
LAI-MNC: 005
TMSI: "12345678"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	32	04	50	xx	xx	xx	00

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: empty
PLMN2: empty
PLMN3: empty
PLMN4: empty
PLMN5: empty
PLMN6: empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

B13	B14	B15	B16	B17	B18
FF	FF	FF	FF	FF	FF

7.2 UPLMN selector handling

7.2.1 UE updating the UPLMN selector list

7.2.1.1 Definition and applicability

The UPLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{UPLMNsel}$. Update and deletion of PLMNs may be performed by the subscriber.

This test applies to Terminals accessing UTRAN.

7.2.1.2 Conformance requirement

The UE shall correctly replace the selected UPLMN in the UPLMN selector list.

TS 31.102, subclause 5.3.6.

7.2.1.3 Test purpose

To verify that the UE correctly updates the $EF_{UPLMNsel}$

7.2.1.4 Method of test

7.2.1.4.1 Initial conditions

No USS is required for this test.

The default UICC is used.

The UICC is installed into the Terminal and the UE is powered on.

7.2.1.4.2 Procedure

a) The user shall initiate an MMI dependent procedure to change the second UPLMN in the UPLMN selector list to MCC/MNC of 567/002, the ACT identifier shall set to UTRAN only.

b) The UE is soft powered down.

7.2.1.5 Acceptance criteria

After step b) the USIM shall contain the following values:

$EF_{UPLMNsel}$ (UPLMN Selector)

Logically:
1st PLMN:	244 081 (MCC MNC)
1st ACT:	UTRAN
2nd PLMN:	567 002
2nd ACT	UTRAN
3rd PLMN:	244 082
3rd ACT	UTRAN
4th PLMN:	244 082
4th ACT	GSM
5th PLMN:	244 003
5th ACT	UTRAN

6th PLMN: 244 004
6th ACT UTRAN
7th PLMN: 244 005
7th ACT UTRAN
8th PLMN: 244 006
8th ACT UTRAN
9th PLMN: 244 007
9th ACT UTRAN
10th PLMN: 244 008
10th ACT UTRAN
11th PLMN: 244 009
11th ACT UTRAN
12th PLMN: 244 010
12th ACT UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	04	18	80	00	65	07	20	80	00	42	04	28	80	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	04	28	00	80	42	04	30	80	00	42	04	40	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	04	50	80	00	42	04	60	80	00	42	04	70	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	04	80	80	00	42	04	90	80	00	42	04	01	80	00

7.2.2 UE recognising the priority order of the UPLMN selector list with the same access technology.

7.2.2.1 Definition and applicability

The UPLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{UPLMNsel}$. Update and deletion of UPLMNs may be performed by the subscriber by the use of the PIN.

This test applies to Terminals accessing UTRAN.

7.2.2.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority order of the UPLMNs in the preferred list on the USIM.

TS 22.011, subclause 3.2.2.

7.2.2.3 Test purpose

To verify that the UPLMN with the higher priority (defined by its position in $EF_{UPLMNsel}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection.

7.2.2.4 Method of test

7.2.2.4.1 Initial conditions

The USS transmits on two BCCHs, with the following network parameters:

Attach/detach: disabled

LAI (MCC/MNC/LAC): 244/033/0001
Access control: unrestricted.

Attach/detach: disabled
LAI (MCC/MNC/LAC): 244/034/0001
Access control: unrestricted.

The default UICC is used with the following exception:

$EF_{UPLMNsel}$ (UPLMN Selector with Access Technology)

Logically: 1st PLMN: 244 081 (MCC MNC)
1st ACT: UTRAN
2nd PLMN: 244 081
2nd ACT GSM
3rd PLMN: 244 082
3rd ACT UTRAN
3rd PLMN: 244 082
3rd ACT GSM
.....
.....
10th PLMN: 244 008
10th ACT UTRAN
11th PLMN: 244 034
11th ACT UTRAN
12th PLMN: 244 033
12th ACT UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	04	18	80	00	42	04	18	00	80	42	04	28	80	00

	B16	B17	B18	B19	B20	.....	.....	.....	.....
	42	04	28	00	80	.....	.....	.....	.....

	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	04	80	80	00	42	04	43	80	00	42	04	33	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.2.4.2 Procedure

a) The UE is powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 244/034
TMSI: "34567890"

to the UE

d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

e) The UE is soft powered down.

7.2.2.5 Acceptance criteria

1) After step b) the UE shall send LOCATION UPDATE REQUEST containing an MCC/MNC of 234/034 to the USS.

2) After step c) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) After step e) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 244
LAI-MNC: 034
TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	42	04	43	xx	xx	xx	00

7.2.3 UE recognising the priority order of the UPLMN selector list using a ACT preference.

7.2.3.1 Definition and applicability

The UPLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{UPLMNsel}$. Update and deletion of UPLMNs may be performed by the subscriber by the use of the PIN.

This test applies to a GSM/UMTS dual mode UE accessing both UMTS and GSM using either ID-1 or Plug-in UICC

7.2.3.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

Note (RA): The following sentence: "After the successful registration the Registered PLMN last used ACcess Technology field $EF_{RPLMNACT}$ shall be updated" has removed from the conformance requirement, as the CR defining this EF ($EF_{RPLMNACT}$) was postponed at the TSG#9. If the CR will be approved later, the sentence will be added again

TS 22.011, subclause 3.2.2 and TS 31.102, subclause 4.2.5, subclause 5.1.2

7.2.3.2.1 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{UPLMNsel}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection.

Note (RA): The following sentence: " and that the $EF_{RPLMNACT}$ is correct updated." has removed from the test purpose, as the CR defining this EF ($EF_{RPLMNACT}$) was postponed at the TSG#9. If the CR will be approved later, the sentence will be added again

7.2.3.3 Method of test

7.2.3.3.1 Initial conditions

For this test both a GSM SS and a UTRAN USS is needed.

The GSM SS transmit on BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 244/081/0001
Access control: unrestricted.

The UMTS USS transmit on BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 244/082/0001
Access control: unrestricted.

The default UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode..

Note (RA): The following sentences: "The default UICC is used with the following exception:"
"$EF_{RPLMNACT}$ (Registered PLMN last used ACcess Technology)"
"Logically: RPLMNACT: UTRAN"

"The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode." has removed from the test purpose, as the CR defining this EF ($EF_{RPLMNACT}$) was postponed at the TSG#9. If the CR will be approved later, the sentence will be added again

7.2.3.3.2 Procedure

a) The UE is powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the SS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 244/081
TMSI: "34567890"

to the UE

d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.

e) The UE is soft powered down.

7.2.3.4 Acceptance criteria

1) After step b) the UE shall send LOCATION UPDATE REQUEST containing an MCC/MNC of 244/081 to the SS.

2) After step c) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) After step e) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 244
LAI-MNC: 081
TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	42	04	18	Xx	xx	xx	00

Note (RA): The following sentences: "$EF_{RPLMNACT}$ (Registered PLMN last used ACcess Technology)
Logically: RPLMNACT: GSM" has removed from the test purpose, as the CR defining this EF ($EF_{RPLMNACT}$) was postponed at the TSG#9. If the CR will be approved later, the sentence will be added again

7.3 OPLMN selector handling

7.3.1 UE recognising the priority order of the OPLMN selector list.

7.3.1.1 Definition and applicability

The OPLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the UPLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{OPLMNsel}$. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

This test applies to Terminals accessing UTRAN.

7.3.1.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

TS 22.011, subclause 3.2.2 and TS 31.102, subclause 4.2.53

7.3.1.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in $EF_{OPLMNsel}$) takes precedence over the OPLMN with the lower priority when the UE performs a network selection.

7.3.1.4 Method of test

7.3.1.4.1 Initial conditions

For this test a USS is needed.

The USS transmits on two BCCHs, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	254/011/0001
Access control:	unrestricted.

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	244/012/0001
Access control:	unrestricted.

The default UICC is used with the following exception:

$EF_{OPLMNsel}$ (OPLMN Selector)

Logically:	1st PLMN:	254 012 (MCC MNC)
	1st ACT	UTRAN
	2nd PLMN:	254 011
	2nd ACT	UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Hex	52	04	12	80	00	52	04	11	00	80

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.1.4.2 Procedure

a) The UE is powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 254/012
TMSI: "34567890"

to the UE

d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

e) The UE is soft powered down.

7.3.1.5 Acceptance criteria

1) After step b) the UE shall send LOCATION UPDATE REQUEST containing an MCC/MNC of 254/012 to the USS.

2) After step c) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) After step e) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 254
LAI-MNC: 012
TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	42	04	21	xx	xx	xx	00

7.3.2 UE recognising the priority order of the UPLMN selector over the OPLMN selector list.

7.3.2.1 Definition and applicability

The UPLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{UPLMNsel}$.

This test applies to Terminals accessing UTRAN.

7.3.2.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

TS 22.011, subclause 3.2.2.2 and TS 31.102, subclause 4.2.5, 4.2.53

7.3.2.3 Test purpose

To verify that the UPLMN with a lower priority (defined by its position in $EF_{OPLMNsel}$) takes precedence over the OPLMN with a higher priority when the UE performs a network selection.

7.3.2.4 Method of test

7.3.2.4.1 Initial conditions

For this test a USS is needed.

The USS transmits on two BCCHs, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 254/001/0001
Access control: unrestricted.

Attach/detach: disabled
LAI (MCC/MNC/LAC): 244/010/0001
Access control: unrestricted.

The default UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.2.4.2 Procedure

a) The UE is powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 244/010
TMSI: "34567890"

to the UE

d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

e) The UE is soft powered down.

7.3.2.5 Acceptance criteria

1) After step b) the UE shall send LOCATION UPDATE REQUEST containing an MCC/MNC of 244/010 to the USS.

2) After step c) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) After step e) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 244

LAI-MNC: 010
TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
	34	56	78	90	42	04	21	xx	xx	xx	00

7.4 HPLMN search handling

7.4.1 UE recognising the search period of the HPLMN

7.4.1.1 Definition and applicability

The HPLMN list gives in priority order the Home PLMN on which the UE shall register first.. The HPLMN search period gives the time interval in which the UE shall search for a possible HPLMN registration.

This test applies to Terminals accessing UTRAN.

7.4.1.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the HPLMN search period timer and the priority order of the HPLMNs in the preferred list on the USIM.

TS 22.011, subclause 3.2.2. and 3.2.2.5

7.4.1.3 Test purpose

To verify that the HPLMN timer is read and the HPLMN takes precedence over the VPLMN in which the UE is currently registered in.

7.4.1.4 Method of test

7.4.1.4.1 Initial conditions

For this test a UTRAN USS is needed.

The USS transmits on BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 244/081/0001
Access control: unrestricted.

After the registration of UE the USS transmits on a second BCCH, with the following network parameters:

Attach/detach: disabled
LAI (MCC/MNC/LAC): 246/081/0001
Access control: unrestricted.

The default UICC shall be used with the following exception:

EF_{HPLMN} (HPLMN Search period)

Logically: set to 6minutes
Coding: B1
Hex 01

The UICC shall be installed into the Terminal and the UE shall be set to automatic PLMN selection mode.

7.4.1.4.2 Procedure

a) The UE shall be powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the USS shall send IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 244/081
TMSI: "34567890"

to the UE

d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

e) The USS starts to send on the second BCCH with the MCC/MNC 246/081. An internal timer shall start to run.

f) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE. The internal timer is stopped.

g) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 246/081
TMSI: "12345678"

to the UE.

h) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

i) The UE is soft powered down.

7.4.1.5 Acceptance criteria

1) After step e) the UE shall send LOCATION UPDATE REQUEST containing an MCC/MNC of 246/081 to the USS.

2) After step g) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) The value of the internal timer shall not exceed 6 minutes.

Note: To take the systems processing time into account, the value of the internal timer may allowed to be a guard time of 1 second greater than the required 6 seconds.

4) After step i) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 246
LAI-MNC: 081
TMSI: "12345678"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	42	06	18	xx	xx	xx	00

7.4.2 GSM/UMTS dual mode UEs recognising the search period of the HPLMN

7.4.2.1 Definition and applicability

The HPLMN list gives in priority order the Home PLMN on which the UE shall register first. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{PHPLMNAT}$. The HPLMN search period gives the time interval in which the UE shall search for a possible HPLMN registration. To avoid a duplication of a test,

This test applies to a GSM/UMTS dual mode UE accessing both UMTS and GSM using either ID-1 or Plug-in UICC.

To avoid a duplication of tests, this test supersede the previous test case (7.4.1).

7.4.2.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the HPLMN search period timer and the priority order of the HPLMNs in the preferred list on the USIM including the Access Technology Identifier.

TS 22.011, subclause 3.2.2. and 3.2.2.5

7.4.2.3 Test purpose

To verify that the HPLMN timer is read and the HPLMN with the higher priority (defined by its position in $EF_{HPLMNACT}$) takes precedence over the VPLMN in which the UE is currently registered in.

7.4.2.4 Method of test

7.4.2.4.1 Initial conditions

For this test both a GSM SS and a UTRAN USS is needed.

The GSM SS transmits on BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	244/081/0001
Access control:	unrestricted.

After the registration of UE the GSM SS transmits on a second BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

At the same time as the SS sends on a second BCCH, the UMTS USS transmit on BCCH, with the following network parameters:

Attach/detach:	disabled
LAI (MCC/MNC/LAC):	246/081/0001
Access control:	unrestricted.

The default UICC is used with the following exception:

$EF_{PHPLMNAT}$ (PHPLMN Access Technology)

Logically: Set to UTRAN

Coding: B1 B2
Hex 80 00

EF_{HPLMN} (HPLMN Search period)

Logically: set to 6minutes
Coding: B1
Hex 01

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.4.2.4.2 Procedure

a) The UE is powered on.

b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a LOCATION UPDATE REQUEST from the UE, the SS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 244/081
TMSI: "34567890"

to the UE

d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.

e) The SS starts to send on the second BCCH with the MCC/MNC 246/081 and the USS starts to send with the Same MCC/MNC. An internal timer shall start to run.

f) After receipt of a CHANNEL REQUEST from the UE, the USS sends IMMEDIATE ASSIGNMENT to the UE. The internal timer is stopped.

g) After receipt of a LOCATION UPDATE REQUEST from the UE, the USS sends LOCATION UPDATE ACCEPT with:

LAI (MCC/MNC): 246/081
TMSI: "12345678"

to the UE

h) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the USS sends CHANNEL RELEASE to the UE.

i) The UE is soft powered down.

7.4.2.5 Acceptance criteria

1) After step e) the UE shall send LOCATION UPDATE REQUEST containing an MCC/MNC of 246/081 to the USS.

2) After step g) the UE shall respond with TMSI REALLOCATION COMPLETE.

3) The value of the internal timer shall not exceed 6 minutes.

Note: To take the systems processing time into account, the value of the internal timer may allowed to be a guard time of 1 second greater than the required 6 seconds.

4) After step i) the USIM shall contain the following values:

EF_{LOCI} (Location Information)

Logically: LAI-MCC: 246
LAI-MNC: 081
TMSI: "12345678"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	42	06	18	xx	xx	xx	00

8 Subscription independent tests

8.1 Phone book procedures

8.2 Short message handling report

8.3 Cell broadcast message identifier handling

History

Document history		
V 0.1.0	2000-08	First draft proposed by rapporteur
V 0.2.0	2000-08	Draft presented at T3#15 in T3-000441
V 1.0.0	2000-09	Presented to TSG-T #9 for information (identical in content to v0.2.0)

Rapporteur for 3G TS 31.121:

Ramin Afchar

CETECOM GmbH

Tel: +49 2054 9519 ext. 977

Fax: +49 2054 9519 ext. 21

Email: ramin.afchar@cetecom.de

This document is written in Microsoft Word 97.

The present document is an draft of the USIM Conformance Test Specification. It is being elaborated during 2000 by 3GPP MCC task 162 under the guidance of 3GPP TSG-T WG3. It is expected to be complete by late November 2000 and then submitted for approval to 3GPP TSG-T #10 (6 - 8 December, Bangkok). For further information, please contact the T3 secretary (Michael.Sanders@etsi.fr) or the 31.121 rapporteur as listed above.