Agenda Item: 7.16

Source: CT6

Title: TEI test specs CRs

Document for: Approval

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This document contains the following change requests that are agreed by 3GPP TSG CT WG6 and forwarded to 3GPP TSG CT plenary for approval:

Table of TEI Test Spec CRs

CT doc	CT6 Doc	Spec	CR	Rev	Rel	Title	Source	Cat	WI	Agenda	Status
CP-050142	C6-050354	11.10-4	A106		R99	Correction of coding in MT Call Event	CT6	F	TEI	14.3.1	Agreed
CP-050142	C6-050381	11.10-4	A107		R99	Essential corrections	CT6	F	TEI	14.3.1	Agreed
CP-050142	C6-050387	11.10-4	A109		R99	Essential Corrections	CT6	F	TEI	14.3.1	Agreed
CP-050142	C6-050382	11.10-4	A108		R99	Too many digits in PCS 1900 for the Called Party BCD number	CT6	F	TEI	14.3.1	Agreed
CP-050142	C6-050386	51.017	001		Rel-4	Update of references	CT6	A	TEI	14.2.1	Agreed
CP-050142	C6-050385	11.17	A003		R99	Update of references	CT6	F	TEI	14.2.1	Agreed

CR-Form-v7.1

CHANGE REQUEST

⌘ **11.10-4** CR **A106** ⌘**rev** **-** ⌘ Current version: **8.11.0** ⌘

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

Proposed change affects: UICC apps⌘ **X** ME **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Correction of coding in MT Call Event	
Source: ⌘	CT6	
Work item code: ⌘	TEI	**Date:** ⌘ 26/04/2005
Category: ⌘ **F**		**Release:** ⌘ R99

Use <u>one</u> of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change: ⌘	The coding of Byte 15 in Event Download – MT CALL 1.1.2 is not inline with the logical description.
Summary of change:⌘	Correction of coding in EVENT DOWNLOAD – MT CALL from '90' (TON: international number NPI: unknown) to '81' (TON: unkown NPI: ISDN / telephone numbering plan) to be align with the logical description.
Consequences if not approved: ⌘	MEs will fail the test due to incorrect coding

Clauses affected: ⌘	27.22.7.1.1.4.2.

	Y	N		
Other specs ⌘		X	Other core specifications ⌘	
Affected:		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

27.22.7   EVENT DOWNLOAD

27.22.7.1   MT Call Event

27.22.7.1.1   MT Call Event (normal)

27.22.7.1.1.1   Definition and applicability

[…]

27.22.7.1.1.4   Method of test

[…]

27.22.7.1.1.4.2   Procedure

Expected Sequence 1.1 (EVENT DOWNLOAD -MT Call event)

Step	Direction	Message / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.1.1	
4	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.1.1	
5	SS → ME	CALL SET UP without CLI	[MT Call Set Up Without CLI]
6	ME → SIM	ENVELOPE: EVENT DOWNLOAD - MT Call 1.1.1	
7	SS → ME	CALL DISCONNECT	
8	SS → ME	CALL SET UP with CLI	[MT Call Set Up With CLI]
9	ME → SIM	ENVELOPE: EVENT DOWNLOAD - MT Call 1.1.2	
10	SS → ME	CALL DISCONNECT	

PROACTIVE COMMAND: SET UP EVENT LIST 1.1.1

Logically:

    Command details
        Command number: 1
        Command type: SET UP EVENT LIST
        Command qualifier: '00'
    Device identities
        Source device: SIM
        Destination device: ME
    Event list
        Event 1:   MT call

Coding:

BER-TLV:	D0	0C	81	03	01	05	00	82	02	81	82	99
	01	00										

TERMINAL RESPONSE: SET UP EVENT LIST 1.1.1

Logically:

Command details
    Command number: 1
    Command type: SET UP EVENT LIST
    Command qualifier: '00'
Device identities
    Source device: ME
    Destination device: SIM
Result
    General Result: Command performed successfully

Coding:

BER-TLV:	81	03	01	05	00	82	02	82	81	83	01	00

EVENT DOWNLOAD - MT CALL 1.1.1

Logically:

Event list: MT call event
Device identities
    Source device: Network
    Destination device: SIM
Transaction identifier:
    Ti value: 0 (bit 5-7)
    Ti flag: 0 (bit 8)

Coding:

BER-TLV:	D6	0A	19	01	00	82	02	83	81	1C	01	00

EVENT DOWNLOAD - MT CALL 1.1.2

Logically:

Event list: MT call event
Device identities
    Source device: Network
    Destination device: SIM
Transaction identifier:
    Ti value: 0 (bit 5-7)
    Ti flag: 0 (bit 8)
Address:
    TON   Unknown
    NPI   "ISDN / telephone numbering plan"
    Dialling number string   "9876"

Coding:

BER-TLV:	D6	0F	19	01	00	82	02	83	81	1C	01	00
	86	03	~~90~~81	89	67							

27.22.7.1.1.5   Test requirement

The behaviour of the test is as defined in 'Expected Sequence 1.1'.

CR-Form-v7.1

CHANGE REQUEST

⌘ **11.10-4 CR** A107 ⌘**rev** **-** ⌘ Current version: **8.11.0** ⌘

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

Proposed change affects: UICC apps⌘ **X**   ME☐   Radio Access Network☐   Core Network☐

Title:	⌘	CR 11.10-4, R99: Essential corrections
Source:	⌘	CT6

Work item code:⌘	TEI	***Date:*** ⌘	27/04/2005

Category: ⌘ **F**   ***Release:*** ⌘ R99

Use one of the following categories:	*Use one of the following releases:*
F *(correction)*	*Ph2* *(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	*R96* *(Release 1996)*
B *(addition of feature),*	*R97* *(Release 1997)*
C *(functional modification of feature)*	*R98* *(Release 1998)*
D *(editorial modification)*	*R99* *(Release 1999)*
Detailed explanations of the above categories can	*Rel-4* *(Release 4)*
be found in 3GPP TR 21.900.	*Rel-5* *(Release 5)*
	Rel-6 *(Release 6)*
	Rel-7 *(Release 7)*

Reason for change: ⌘	1)	Incorrect step numbering in Expected Sequence 1.5 (GET INPUT, digits only, SMS default alphabet, ME to echo text, ME supporting 8 bit data Message), Expected Sequence 1.1(RUN AT COMMAND, no alpha identifier presented, request IMSI), Expected Sequence 1.2 (RUN AT COMMAND, null data alpha identifier presented, request IMSI), Expected Sequence 1.3 (RUN AT COMMAND, alpha identifier presented, request IMSI), Expected Sequence 2.3A (RUN AT COMMAND, basic icon non self-explanatory, request IMSI, successful)
	2)	Logical descriptions of the SS string in 27.22.4.11 are incorrect
	3)	Sequence tables of icon related Send SS tests are not in line with other icon test, e.g. the Display Text with icon tests. Furthermore a mandatory requirement in step 5 of expected sequence table 2.2A is not tested
	4)	Incorrect alpha identifier coding in PROACTIVE COMMAND: LAUNCH BROWSER 4.2.1
	5)	Incorrect Device Identity coding in TERMINAL RESPONSE: SEND DATA 1.3.2

Summary of change:⌘	1)	Step numbering corrected
	2)	Logical descriptions of the SS string in 27.22.4.11 corrected
	3)	Sequence tables of icon related Send SS tests ajusted corresponding to other icon test, e.g. the Display Text with icon tests

		4) Codings corrected
Consequences if not approved:	⌘	1) Incorrect logical SS string descriptions
		2) A mandatory requirement in step 5 of expected sequence table 2.2A would not be tested
		3) MEs will fail tests due to incorrect codings

Clauses affected:	⌘	27.22.4.3.1.4.2, 27.22.4.11.1.4.2, 27.22.4.11.2.4.2, 27.22.4.11.3.4.2, 27.22.4.23.1.4.2, 27.22.4.23.2.4.2, 27.22.4.26.4.4.2, 27.22.4.30.4.2

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change reques

27.22.4.3.1.4.2

[..]

Expected Sequence 1.5 (GET INPUT, digits only, SMS default alphabet, ME to echo text, ME supporting 8 bit data Message)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: GET INPUT 1.5.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: GET INPUT 1.5.1	[digits only, SMS default alphabet, ME to echo text, packing not required, no help information available]
4	ME → USER	Display "Enter 1..9,0..9,0(1)"	Range of expected length is 1-20 Text string coding in unpacked format
5	USER → ME	Completion without input	
6	ME → USER	The ME MMI takes action to manage the entry of correct numbers of characters.	
7	USER → ME	Enter "12345678901234567890" and completion	
86	ME → SIM	TERMINAL RESPONSE: GET INPUT 1.5.1	[command performed successfully]

[..]

27.22.4.11.1.4.2   Procedure

Expected Sequence 1.1 (SEND SS, call forward unconditional, all bearers, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 1.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 1.1.1	
4	ME → USER	Display "Call Forward"	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 1.1.1	

PROACTIVE COMMAND: SEND SS 1.1.1

Logically:

    Command details
        Command number: 1
        Command type: SEND SS
        Command qualifier: "00"
    Device identities
        Source device: SIM
        Destination device: Network
        Alpha identifier: "Call Forward"
    SS String
        TON: International
        NPI: "ISDN / telephone numbering plan"
        SS string: "**21*+0123456789012 3456789#"

Coding:

BER-TLV:	D0	27	81	03	01	11	00	82	02	81	83	85
	0C	43	61	6C	6C	20	46	6F	72	77	61	72
	64	89	0E	91	AA	12	0A	21	43	65	87	09
	21	43	65	87	B9							

[..]

Expected Sequence 1.4 (SEND SS, call forward unconditional, all bearers, successful, SS request size limit)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 1.4.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 1.4.1	
4	ME → USER	Display "Call Forward"	
5	ME → SS	REGISTER 1.2	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.2	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 1.4.1	

PROACTIVE COMMAND: SEND SS 1.4.1

Logically:

```
    Command details
        Command number:       1
        Command type:         SEND SS
        Command qualifier:    "00"
    Device identities
        Source device:        SIM
        Destination device:   Network
        Alpha identifier:     "Call Forward"
    SS String
        TON:                  International
        NPI:                  "ISDN / telephone numbering plan"
        SS string:            "**21*+0123456789012345678901234567890123456 7*11#"
```

Coding:

BER-TLV:	D0	32	81	03	01	11	00	82	02	81	83	85
	0C	43	61	6C	6C	20	46	6F	72	77	61	72
	64	89	19	91	AA	12	0A	21	43	65	87	09
	21	43	65	87	09	21	43	65	87	09	21	43
	65	A7	11	FB								

[..]

Expected Sequence 1.6 (SEND SS, call forward unconditional, all bearers, successful, null data alpha identifier)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 1.6.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 1.6.1	
4	ME	Should not give any information to the user on the fact that the ME is sending an SS request	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 1.1.1	

PROACTIVE COMMAND: SEND SS 1.6.1

Logically:

    Command details
        Command number: 1
        Command type: SEND SS
        Command qualifier: "00"
    Device identities
        Source device: SIM
        Destination device: Network
        Alpha identifier: null data object
    SS String
        TON: International
        NPI: "ISDN / telephone numbering plan"
        SS string: "**21*+0123456789012345 6789#"

Coding:

BER-TLV:	D0	1B	81	03	01	11	00	82	02	81	83	85
	00	89	0E	91	AA	12	0A	21	43	65	87	09
	21	43	65	87	B9							

[..]

27.22.4.11.2.4.2   Procedure

Expected Sequence 2.1A (SEND SS, call forward unconditional, all bearers, successful, basic icon self explanatory, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.1.1	[BASIC-ICON, self-explanatory]
4	ME → USER	Display the basic icon without the alpha identifier	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 2.1.1A	[Command performed successfully]

PROACTIVE COMMAND: SEND SS 2.1.1

Logically:

    Command details
        Command number: 1
        Command type: SEND SS
        Command qualifier: "00"
    Device identities
        Source device: SIM
        Destination device: Network
        Alpha identifier: "Basic Icon"
    SS String
        TON: International
        NPI: "ISDN / telephone numbering plan"
        SS string: "**21*+0123456789012345 6789#"
    Icon Identifier:
        Icon qualifier: icon is self-explanatory
        Icon Identifier: record 1 in $EF_{(IMG)}$

Coding:

BER-TLV:	D0	29	81	03	01	11	00	82	02	81	83	85
	0A	42	61	73	69	63	20	49	63	6F	6E	89
	0E	91	AA	12	0A	21	43	65	87	09	21	43
	65	87	B9	9E	02	00	01					

Expected Sequence 2.1B (SEND SS, call forward unconditional, all bearers, successful, basic icon self explanatory, requested icon could not be displayed)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.1.1	[BASIC-ICON, self-explanatory]
4	ME → USER	Display "Basic Icon" without the icon	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 2.1.1B	[Command performed successfully, but requested icon could not be displayed]

TERMINAL RESPONSE: SEND SS 2.1.1B

Logically:

Command details
    Command number: 1
    Command type: SEND SS
    Command qualifier: "00"
Device identities
    Source device: ME
    Destination device: SIM
Result
    General Result: Command performed successfully, but requested icon could not be displayed
    Additional information: Operation Code and SS Parameters

Coding:

BER-TLV:	81	03	01	11	00	82	02	82	81	03	1E
	04	0A	A0	1A	04	01	21	30	15	30	13
	83	01	00	84	01	07	85	0B	91	10	32
	54	76	98	10	32	54	76	98			

Expected Sequence 2.2A (SEND SS, call forward unconditional, all bearers, successful, colour icon self explanatory, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.2.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.2.1	[COLOUR-ICON, self-explanatory]
4	ME → USER	Display the colour icon without the alpha identifier	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 2.1.1A	[Command performed successfully]

PROACTIVE COMMAND: SEND SS 2.2.1

Logically:

```
    Command details
        Command number:        1
        Command type:          SEND SS
        Command qualifier:     "00"
    Device identities
        Source device:         SIM
        Destination device:    Network
        Alpha identifier:      "Colour Icon"
    SS String
        TON:                   International
        NPI:                   "ISDN / telephone numbering plan"
        SS string:             "**21*+01234567890123456789#"
    Icon Identifier:
        Icon qualifier:        icon is self-explanatory
        Icon Identifier:       record 2 in EF(IMG)
```

Coding:

BER-TLV:	D0	2A	81	03	01	11	00	82	02	81	83	85
	0B	43	6F	6C	6F	75	72	20	49	63	6F	6E
	89	0E	91	AA	12	0A	21	43	65	87	09	21
	43	65	87	B9	9E	02	00	02				

Expected Sequence 2.2B (SEND SS, call forward unconditional, all bearers, successful, colour icon self explanatory, requested icon could not be displayed)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.2.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.2.1	[COLOUR-ICON, self-explanatory]
4	ME → USER	Display "Colour Icon" without the icon	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 2.1.1B	[Command performed but requested icon could not be displayed]

Expected Sequence 2.3A (SEND SS, call forward unconditional, all bearers, successful, basic icon non self-explanatory, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.3.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.3.1	[BASIC-ICON, non self-explanatory]
4	ME → USER	Display "Basic Icon" and the basic icon	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 2.1.1A	[Command performed successfully]

PROACTIVE COMMAND: SEND SS 2.3.1

Logically:

Command details
    Command number: 1
    Command type: SEND SS
    Command qualifier: "00"
Device identities
    Source device: SIM
    Destination device: Network
Alpha Identifier
    Text: "Basic Icon"
SS String
    TON: International
    NPI: "ISDN / telephone numbering plan"
    SS string: "**21*+01234567890123456789#"
Icon Identifier
    Icon qualifier: icon is non self-explanatory
    Icon Identifier: record 1 in EF$_{(IMG)}$

Coding:

BER-TLV:	D0	29	81	03	01	11	00	82	02	81	83	85
	0A	42	61	73	69	63	20	49	63	6F	6E	89
	0E	91	AA	12	0A	21	43	65	87	09	21	43
	65	87	B9	9E	02	01	01					

Expected Sequence 2.3B (SEND SS, call forward unconditional, all bearers, successful, basic icon non self-explanatory)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.3.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.3.1	[BASIC-ICON, non self-explanatory]
4	ME → USER	Display "Basic Icon" without the icon	
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 2.1.1B	[Command performed but requested icon could not be displayed]

Expected Sequence 2.4 (SEND SS, call forward unconditional, all bearers, successful, basic icon non self-explanatory, no alpha identifier presented)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 2.4.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 2.4.1	[BASIC-ICON, non self-explanatory]
4	ME → SIM	TERMINAL RESPONSE: SEND SS 2.4.1	[Command data not understood by ME]

PROACTIVE COMMAND: SEND SS 2.4.1

Logically:

```
Command details
      Command number:        1
      Command type:          SEND SS
      Command qualifier:     "00"
Device identities
      Source device:         SIM
      Destination device:    Network
SS String
      TON:                   International
      NPI:                   "ISDN / telephone numbering plan"
      SS string:             "**21*+01234567890123456789#"
Icon Identifier
      Icon qualifier:        icon is non self-explanatory
      Icon Identifier:       record 1 in EF(IMG)
```

Coding:

BER-TLV:	D0	1D	81	03	01	11	00	82	02	81	83	89
	0E	91	AA	12	0A	21	43	65	87	09	21	43
	65	87	B9	9E	02	01	01					

[..]

27.22.4.11.3.4.2   Procedure

Expected Sequence 3.1 (SEND SS, call forward unconditional, all bearers, successful, UCS2 text)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SEND SS 3.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SEND SS 3.1.1	
4	ME → USER	Display "ЗДРАВСТВУЙТЕ"	["Hello" in Russian]
5	ME → SS	REGISTER 1.1	
6	SS → ME	RELEASE COMPLETE (SS RETURN RESULT) 1.1	[Successful]
7	ME → SIM	TERMINAL RESPONSE: SEND SS 1.1.1	[Command performed successfully]

PROACTIVE COMMAND: SEND SS 3.1.1

Logically:

```
Command details
      Command number:        1
      Command type:          SEND SS
```

```
        Command qualifier:      "00"
Device identities
        Source device:          SIM
        Destination device:     Network
        Alpha Identifier
        Data coding scheme:     UCS2 (16bit)
        Text:                   "ЗДРАВСТВУЙТЕ"
SS String
        TON:                    International
        NPI:                    "ISDN / telephone numbering plan"
        SS string:              "**21*~~+~~0123456789012345678 9#"
```

Coding:

BER-TLV:	D0	34	81	03	01	11	00	82	02	81	83	85
	19	80	04	17	04	14	04	20	04	10	04	12
	04	21	04	22	04	12	04	23	04	19	04	22
	04	15	89	0E	91	AA	12	0A	21	43	65	87
	09	21	43	65	87	B9						

[..]

27.22.4.23.1.4.2   Procedure

Expected Sequence 1.1(RUN AT COMMAND, no alpha identifier presented, request IMSI)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: RUN AT COMMAND 1.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: RUN AT COMMAND 1.1.1	[no alpha identifier, request IMSI]
4	ME (→ User)	The ME may give information to the user concerning what is happening	
~~7~~5	ME → SIM	TERMINAL RESPONSE: RUN AT COMMAND 1.1.1	[Command performed successfully, AT Response containing IMSI]

[..]

Expected Sequence 1.2 (RUN AT COMMAND, null data alpha identifier presented, request IMSI)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: RUN AT COMMAND 1.2.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: RUN AT COMMAND 1.2.1	[null data alpha identifier, request IMSI]
4	ME	The ME should not give any information to user on the fact that the ME is performing an AT command	
~~7~~5	ME → SIM	TERMINAL RESPONSE: RUN AT COMMAND 1.1.1	[Command performed successfully, AT Response containing IMSI]

[..]

Expected Sequence 1.3 (RUN AT COMMAND, alpha identifier presented, request IMSI)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: RUN AT COMMAND 1.3.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: RUN AT COMMAND 1.3.1	[alpha identifier, request IMSI]
4	ME → USER	Display "Run AT Command"	
5~~7~~	ME → SIM	TERMINAL RESPONSE: RUN AT COMMAND 1.1.1	[Command performed successfully, AT Response containing IMSI]

[..]

27.22.4.23.2.4.2   Procedure

[..]

Expected Sequence 2.3A (RUN AT COMMAND, basic icon non self-explanatory, request IMSI, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: RUN AT COMMAND 2.3.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: RUN AT COMMAND 2.3.1	[BASIC-ICON, non self-explanatory, request IMSI]
4	ME → USER	Display "Basic Icon" and BASIC-ICON	
~~7~~5	ME → SIM	TERMINAL RESPONSE: RUN AT COMMAND 2.1.1A	[Command performed successfully, AT response containing IMSI]

[..]

27.22.4.26.4.4.2   Procedure

[..]

Expected Sequence 4.2A (LAUNCH BROWSER, use the existing browser, icon self explanatory, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: LAUNCH BROWSER 4.2.1	[Browser is in use, the current session is not secured]]
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: LAUNCH BROWSER 4.2.1	[connect to the default URL, "use the existing browser", alpha id. In UCS2]
4	ME → USER	ME displays only the icon	["Self explan."]
5	USER → ME	The user confirms the launch browser.	[user confirmation]
6	ME → SIM	TERMINAL RESPONSE: LAUNCH BROWSER 4.2.1 A	[Command performed successfully]
7	ME→SS	The ME does not close the existing session and attempts to connect the default URL.	
8	SIM → ME	PROACTIVE SIM SESSION ENDED	

9	USER → ME	The user verifies that the default URL is connected; and the previous URL can be retrieved. Then he/she ends the navigation with the default URL.	

PROACTIVE COMMAND: LAUNCH BROWSER 4.2.1

Logically:

Command details
    Command number: 1
    Command type: LAUNCH BROWSER
    Command qualifier: use the existing browser
Device identities
    Source device: SIM
    Destination device: ME
    URL   empty
Alpha Identifier   "Self explan."
Icon identifier:
    Icon qualifier: self-explanatory
    Icon identifier: record 1 in $EF_{(IMG)}$

Coding:

BER-TLV:	D0	1D	81	03	01	15	02	82	02	81	82	31
	00	05	0C	73~~53~~	65	6C	66	20	65	78	70	6C
	61	6E	2E	1E	02	00	01					

[..]

27.22.4.30.4.2   Procedure

[..]

TERMINAL RESPONSE: SEND DATA 1.3.2

Logically:

Command details
    Command number: 1
    Command type: SEND DATA
    Command qualifier: Store mode
Device identities
    Source device: ME
    Destination device: SIM
Result
    General Result: Command performed successfully
    Channel data length: More than 255 bytes of space available in the Tx buffer

Coding:

BER-TLV:	81	03	01	43	00	82	02	21~~82~~	82~~1~~	83	01	00
	B7	01	FF									

[..]

CR-Form-v7.1

CHANGE REQUEST

⌘ **11.10-4** CR **A108** ⌘ **rev** **-** ⌘ Current version: **8.11.0** ⌘

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

Proposed change affects: UICC apps⌘ **X**   ME **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	CR 11.10-4, R99: Too many digits in PCS 1900 for the Called Party BCD number
Source: ⌘	CT6
Work item code:⌘ TEI	***Date:*** ⌘ 27/04/2005

Category: ⌘ **F**	***Release:*** ⌘ R99

Use one of the following categories:
  F *(correction)*
  A *(corresponds to a correction in an earlier release)*
  B *(addition of feature),*
  C *(functional modification of feature)*
  D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
  Ph2   *(GSM Phase 2)*
  R96   *(Release 1996)*
  R97   *(Release 1997)*
  R98   *(Release 1998)*
  R99   *(Release 1999)*
  Rel-4 *(Release 4)*
  Rel-5 *(Release 5)*
  Rel-6 *(Release 6)*
  Rel-7 *(Release 7)*

Reason for change: ⌘	According to TS 24.008, clause 10.5.4.7 "Called party BCD number", the called party BCD number is a type 4 information element with a minimum length of 3 octets and a maximum length of 43 octets. For PCS 1900 the maximum length is 19 octets.

Therefore the number of digits specified in Expected Sequence 1.9 of test case 27.22.4.13.1 cannot be accommodated in the Called Party BCD Number information element for PCS 1900 |
| ***Summary of change:***⌘ | The expected sequence 1.9 has been extended to support also the handling for the maximum number of octets for the dialling number string for PCS 1900 and a new PROACTIVE COMMAND SET UP CALL 1.9.1B has been defined for PCS 1900 in test case 27.22.4.13.1.

The extension in the sequence and the new proactive command is to use 32 digits for the Called Party BCD number for PCS 1900. |
| ***Consequences if not approved:*** ⌘ | A correctly implemented MS will fail the test case. |

Clauses affected: ⌘	27.22.4.13.1.4.2

Other specs		Y	N	
	⌘		X	Other core specifications ⌘

affected:		**X**	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

27.22.4.13.1.4.2   Procedure

[..]

Expected Sequence 1.9 (SET UP CALL, max dialling number string, no alpha identifier)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SET UP CALL 1.9.1	
2	ME → SIM	FETCH	
3	SIM → ME		[dialling number string, no alpha identifier]
		PROACTIVE COMMAND:SET UP CALL 1.9.1A or	[Option A shall apply for GSM parameters]
		PROACTIVE COMMAND:SET UP CALL 1.9.1B	[Option B shall apply for PCS1900 parameters]
4	USER → ME	The user confirms the set up call	[user confirmation]
5	ME→SS	Option A: The ME attempts to set up a call to "0123456789012345678901234567 89*#*#*#*#*#0123456789012345 67890123456789*#*#*#*#*#" or Option B: The ME attempts to set up a call to "0123456789012345678901234567 89*#*#*#*#*#0123"	[Option A shall apply for GSM parameters] [Option B shall apply for PCS1900 parameters]
6	SS → ME	The ME receives the CONNECT message from the system simulator.	
7	ME → SIM	TERMINAL RESPONSE 1.9.1	[Command performed successfully]
8	USER → ME	The user ends the call The ME returns in idle mode.	

PROACTIVE COMMAND: SET UP CALL 1.9.1A

Logically:

Command details
    Command number: 1
    Command type: SET UP CALL
    Command qualifier: only if not currently busy on another call with redial
Device identities
    Source device: SIM
    Destination device: Network
Address
    TON: International
    NPI: ISDN / telephone numbering plan
Dialling number string: "0123456789012345678901234567 89*#*#*#*#*#0123456789012345678901234567 89*#*#*#*#*#"

Coding:

BER-TLV:	D0	34	81	03	01	10	01	82	02	81	83	86
	29	91	10	32	54	76	98	10	32	54	76	98
	10	32	54	76	98	BA	BA	BA	BA	BA	10	32
	54	76	98	10	32	54	76	98	10	32	54	76
	98	BA	BA	BA	BA	BA						

PROACTIVE COMMAND: SET UP CALL 1.9.1B

Logically:

Command details
 Command number: 1
 Command type: SET UP CALL
 Command qualifier: only if not currently busy on another call with redial
Device identities
 Source device: SIM
 Destination device: Network
Address
 TON: International
 NPI: ISDN / telephone numbering plan
Dialling number string: "012345678901234567*#*#*#*#*#0123"

Coding:

BER-TLV:	D0	1C	81	03	01	10	01	82	02	81	83	86
	11	91	10	32	54	76	98	10	32	54	76	BA
	BA	BA	BA	BA	10	32						

TERMINAL RESPONSE: SET UP CALL 1.9.1

Logically:

Command details
 Command number: 1
 Command type: SET UP CALL
 Command qualifier: only if not currently busy on another call with redial
Device identities
 Source device: ME
 Destination device: SIM
Result
 General Result: Command performed successfully

Coding:

BER-TLV:	81	03	01	10	01	82	02	82	81	83	01	00

[..]

CR-Form-v7.1

CHANGE REQUEST

⌘	**11.17** CR	**A003**	⌘**rev**	**-**	⌘	Current version:	**8.1.0**	⌘

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

Proposed change affects: UICC apps⌘ **X**   ME☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	CR to 11.17: Update of references
Source:	⌘	CT6
Work item code:⌘	TEI	***Date:*** ⌘ 27/04/2005

Category:	⌘ **F**	***Release:*** ⌘ R99
	Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	*Use one of the following releases:* *Ph2* *(GSM Phase 2)* *R96* *(Release 1996)* *R97* *(Release 1997)* *R98* *(Release 1998)* *R99* *(Release 1999)* *Rel-4* *(Release 4)* *Rel-5* *(Release 5)* *Rel-6* *(Release 6)* *Rel-7* *(Release 7)*

Reason for change:	⌘	References need to be updated due to changes to the referenced documents
Summary of change:⌘		References to DRAFT EN 301.116 specification have been removed References to ISO/IEC specifications of the 7816 series have been replaced by references to GSM 11.11 exept for references to ISO/IEC 7816-3 Editorial corrections have been performed
Consequences if not approved:	⌘	References to ISO/IEC specifications would not be compliant to the refrenced versions of these documents.

Clauses affected:	⌘	2.1, 6.2.1, 6.2.2, 6.2.3, 6.2.4

		Y	**N**		
Other specs	⌘		**X**	Other core specifications	⌘
Affected:			**X**	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:

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Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2.1 Normative references

[1] GSM 11.11: "Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[2] Void.

[3] ~~Void~~ISO/IEC 7816-1 (1987): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Physical characteristics".

[4] ~~Void~~ISO/IEC 7816-2 (1988): "Information technology - Identification cards - Integrated circuit(s) cards with contacts, Part 2: Dimensions and location of the contacts".

[5] ISO/IEC 7816-3 (19~~97~~89): "Information technology - Identification cards - Integrated circuit(s) cards with contacts, Part 3: Electronic signals and transmission protocols".

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

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

[8] GSM 11.12: "Digital cellular telecommunications system (Phase 2); Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[9] GSM 11.18: "Digital cellular telecommunications system (Phase 2+); Specification of the 1.8 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[10] ETSI ETS 300 641: "Digital cellular telecommunications system (Phase 2); Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.12)".

[…]

6.1.1   Format and layout

6.1.1.1   ID-1 SIM

6.1.1.1.1   Definition and applicability

The format and layout characteristics shall be adhered to, in order to ensure proper operation in the GSM environment.

This test applies to ID-1 SIM cards.

Currents defined as positive are flowing into the SIM.

Voltages declared as V_O are delivered by the ME (ME Simulator) V_I is generated by the SIM.

6.1.1.1.2   Conformance requirement

- CR1: Format and layout of the ID-1 card shall be in accordance with GSM 11.11 [1] ISO/IEC 7816-1 [3] and ISO/IEC 7816-2 [4], unless otherwise specified.

- CR2: The information on the exterior of the ID-1 SIM card shall include at least the individual account identifier and the check digit.

- CR3: The card may have a polarization mark which indicates how the user should insert the card into the ME.

- CR4: Any embossing on the card shall be in accordance with GSM 11.11 [1]ISO 7811-1 [6] and ISO/IEC 7811-3 [7] (conditional).

- CR5: The contacts shall be located on the front (embossed face) of the card.

Reference: GSM 11.11 [1], clause 4, subclauses 4.1 and 4.1.1.

Test Group Reference (TGR): TGR_SIM_PHY_FMT_ID1.

Test Procedure Reference (TPR): TPR_SIM_PHY_FMT_ID1.

6.1.1.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

NOTE 1: The testing of CR1 is outside the scope of the present document. Please refer to the TS for ISO/IEC 7816-1 [3] and ISO/IEC 7816-2 [4].

NOTE 2: The testing of CR4 is outside the scope of the present document. Please refer to the TS for ISO/IEC 7811-1 [6] and ISO/IEC 7811-3 [7].

6.1.1.1.4   Method of test

Initial conditions

None.

Test procedure

a) The card is examined for the following:

- identification number;

- polarization mark;

- contact location.

The card shall have been observed to exhibit the following [CR2,3]:

- *identification number located on the exterior of the card;*

- *polarization mark indicating how the user should insert the card into the ME;*

- *contact location on the front or the back of the card.*

b) The SIM is connected to an ME simulator.

c) The ME simulator resets the SIM.

d) The ME simulator sends a SELECT command to the SIM to select EF_{ICCID}.

e) The ME simulator sends a READ BINARY command to the SIM to read the identification number.

The individual account identifier read from the SIM shall be identical with that on the exterior of the card [CR2].

6.1.1.2 Plug-in SIM

6.1.1.2.1 Definition and applicability

The format and layout characteristics shall be adhered to, in order to ensure proper operation in the GSM environment.

This test applies to plug-in SIM cards.

6.1.1.2.2 Conformance requirement

- CR1: Format and layout of the plug-in card shall be in accordance with GSM 11.11 [1], ISO/IEC 7816-1 [3] and ISO/IEC 7816-2 [4] unless otherwise specified.

- CR2: The information on the exterior of the plug-in card shall include at least the individual account identifier and the check digit.

- CR3: The dimensions of the plug-in SIM shall be in accordance with annex A of GSM 11.11 [1].

Reference: GSM 11.11 [1], clause 4, subclauses 4.1 and 4.1.2.

Test Group Reference (TGR): TGR_SIM_PHY_FMT_PIC.

Test Procedure Reference (TPR): TPR_SIM_PHY_FMT_PIC.

6.1.1.2.3 Test purpose

To verify that the SIM conforms to the above requirements.

NOTE: The testing of CR1 is outside the scope of the present document. Please refer to the TS for ISO/IEC 7816-1 [3] and ISO/IEC 7816-2 [4].

6.1.1.2.4 Method of test

Initial conditions

None.

Test procedure

a) The card is examined for the following:

- individual account identifier and check digit;

- width;

- height;

- thickness;

- feature for orientation.

The card shall have been observed to exhibit the following [CR2]:

- *at least the individual account identifier and check digit located on the exterior of the card;*

- *correct width, height and thickness;*

- *feature for orientation.*

b) The SIM is connected to an ME simulator.

c) The ME simulator resets the SIM.

d) The ME simulator sends a SELECT command to the SIM to select EF_{ICCID}.

e) The ME simulator sends a READ BINARY command to the SIM to read the identification number.

The account identifier and check digit read from the SIM shall be present and identical with that on the exterior of the card [CR2].

$[\dots]$

6.2 Electronic signals and transmission protocols

The tests in this subclause ensure that the IUT conforms to the electrical specification for each of the contacts and also the protocol.

6.2.1 Supply voltage Vcc (contact C1)

6.2.1.1 Voltage limits

6.2.1.1.1 Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the SIM shall operate within the following supply voltage conditions to ensure proper operation in the GSM environment.

This test applies to all SIM implementations with 1.8 V, 3 V and 5 V interfaces.

6.2.1.1.2 Conformance requirement

CR1: The SIM shall operate when the supply voltage on contact C1 (Vcc) is in the following ranges:

Card Type	Vmin /V	Vmax /V
5 V type	4.5	5.5
3 V type	2.7	3.3
1.8 V type ~~(see note)~~	1.62	1.98
~~NOTE: Draft EN 301 116 (V0.2.0).~~		

Reference: GSM 11.11 [1], subclause 5.1.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_V.

6.2.1.1.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) The CHV1 value is 4 zeros.

Test procedure

(Tthe voltage Vcc min/max depends on the voltage class the SIM provides)

a) The voltage source for contact C1 (Vcc) is set to ~~-~~Vcc min, and the SIM interface signals are powered from a Vcc min, source.

b) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1].

c) The ME simulator sends a~~n~~ CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

d) The ME simulator sends a~~n~~ CHANGE CHV command to the SIM to return the CHV1 to its original value.

e) The voltage source for contact C1 (Vcc) is set to ~~-~~Vcc max.

f) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1].

g) The ME simulator sends an CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

h) The ME simulator sends an CHANGE CHV command to the SIM to return the CHV1 to its original value.

i) Repeat the test for every voltage class the SIM provides.

6.2.1.2   Current limits

6.2.1.2.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under normal operating conditions to ensure proper operation in the GSM environment.

Table 1: Current consumption on VCC

Card Type	Imax /mA under normal conditions (average value (see note 2))	f_{max} /Mhz (max CLK-frequency under normal conditions)	Vcc_{max} voltage on VCC during testing
5 V type	10	5	5,5V
3 V type	6	4	3,3V
1.8 V type (see note 1)	4	4	1,98V
NOTE 1: Draft EN 301 116 (V0.2.0).			
NOTE 2: Imax is the average value of the Vcc Current including the current spikes!.			

Table 2: Current spikes on VCC

Card Type	I_{max} /mA	max charge /nAs	max duration /ns
5 V type	200	40	400
3 V type	60	12	400
1.8 V type (see note)	60	12	400
NOTE: Draft EN 301 116 (V0.2.0).			

6.2.1.2.2   Conformance requirement

- CR1: The current consumption of the SIM shall not exceed the max currents values (I_{max}) as defined in tables 1 and 2 at the max. frequency ($f_{max;}$) and the max. allowed voltage level V_{max}.

Reference: GSM 11.11 [1], subclause 5.1.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_I.

6.2.1.2.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.2.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to the SIM.

3) The CHV1 value is 4 zeros.

Test procedure

a) The frequency of the clock source is set to 1 MHz.

b) The ME simulator resets the SIM.

c) The ME simulator performs the SIM initialization procedure during which time the current consumption is measured.

d) The ME simulator sends an CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

e) The ME simulator sends an CHANGE CHV command to the SIM to return the CHV1 to its original value.

f) The frequency of the clock source is set to 3.25 MHz.

g) The ME simulator resets the SIM.

h) The ME simulator performs the SIM initialization procedure during which time the current consumption is measured.

i) The ME simulator sends an CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

j) The ME simulator sends an CHANGE CHV command to the SIM to return the CHV1 to its original value.

k) The frequency of the clock source is set to f_{max}

l) The ME simulator resets the SIM.

m) The ME simulator performs the SIM initialization procedure during which time the current consumption is measured.

n) The ME simulator sends an CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

o) The ME simulator sends an CHANGE CHV command to the SIM to return the CHV1 to its original value.

p) Rrepeat tests a-) to o) for all voltage classes the SIM delivers.

The current consumption of the SIM shall not exceed- the max.current -values given in tables 1 and 2 according to the SIM class excluding spikes up to the defined maximum charges, durations and amplitudes during the whole test.

6.2.1.3   Idle current limits

6.2.1.3.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under idle conditions to ensure proper operation in the GSM environment.

Table 3: Current consumption in idle mode

Card Type	Imax /uA in idle state clk frequency 1 MHz	Vcc$_{max}$ /V max. voltage on VCC during testing
5 V type	200	5,5
3 V type	200	3,3
1.8 V type (see note)	200	1,98
NOTE: Draft EN 301 116 (V0.2.0).		

6.2.1.3.2   Conformance requirement

-   CR1: The idle current consumption of the SIM shall not exceed I_{max} at 1 MHz , +25°C and V_{max}.

Reference: GSM 11.11 [1], clause 5 and subclause 5.1.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_IDLE.

6.2.1.3.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.3.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) The frequency of the clock source is set to 1 MHz.

3) The temperature of the SIM is +25°C.

4) The voltage on VCC is set to VCC_{max}

Test procedure

a) The ME simulator resets the SIM.

b) The idle current consumption is measured after receiving the ATR over a period of 10 s.

c) Repeat test for all voltage classes the SIM supports.

6.2.1.3.5   Test requirement

1) During step b), the current consumption of the SIM shall not exceed I_{max}

6.2.1.4   Current limits at all frequencies

6.2.1.4.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under idle conditions to ensure proper operation in the GSM environment.

Table 4: Current consumption in idle mode at max frequency

Card Type	Imax /uA in idle state (average value)	Vcc_{max} /V max. voltage on VCC during testing	f_{max} /Mhz max CLK frequency in idle mode
5 V type	1 000	5.5	5
3 V type	1 000	3.3	4
1.8 V type (see note)	1 000	1.98	4
NOTE: Draft EN 301 116 (V0.2.0), clause 5.			

6.2.1.4.2   Conformance requirement

1) The idle current consumption of the SIM shall not exceed Imax at any frequency fmax.

Reference: GSM 11.11 [1], subclause 5.1.

Reference: ETS 300 641 [10], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_IF.

6.2.1.4.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.4.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The frequency of the clock source is set to 1 MHz.

b) The ME simulator resets the SIM.

c) The current consumption is measured after receiving the ATR over a period of 10 s.

d) The frequency of the clock source is set to 3.25 MHz.

e) The ME simulator resets the SIM.

f) The current consumption is measured after receiving the ATR over a period of 10 s.

g) The frequency of the clock source is set to f_{max}.

h) The ME simulator resets the SIM.

i) The current consumption is measured after receiving the ATR over a period of 10 s.

   The current consumption of the SIM shall not exceed 1mA [CR1in average -over the whole test.

6.2.1.5 Current limits in clk-stop-mode

6.2.1.5.1 Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under clk-stop conditions to ensure proper operation in the GSM environment.

Table 5: Current consumption in clk stop mode

Card Type	Imax /uA in clk-stop mode (average value)	Vcc_{max} /V max. voltage on VCC during testing
5 V type	200	5.5
3 V type	100	3.3
1.8 V type (see note)	100	1.98
NOTE: Draft EN 301 116 (V0.2.0), clause 5.		

6.2.1.5.2 Conformance requirement

1) The clk stop mode current consumption of the SIM shall not exceed I_{max} if clk stop mode is delivered by the SIM.

Reference: GSM 11.11 [1], subclause 5.1.

Reference: ETS 300 641 [10], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_CLKSTOP.

6.2.1.5.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.5.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to the SIM to select the MF.

c) The ME simulator sends a GET RESPONSE command to the SIM using the SW2 returned by the SIM following step b).

d) The ME simulator stops the clock at least 744 clk according to the clock stop mode read in step c).

f) The current consumption is measured during clk stop for min 10 s.

The current consumption of the SIM shall not exceed I_{max} in average during clk stop.

6.2.2   Reset RST (contact C2)

6.2.2.1   Static operation

6.2.2.1.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the reset RST signal to ensure proper operation in the GSM environment.

6.2.2.1.2   Conformance requirement

- CR1: The SIM shall operate within the following limits for RST:

Table 6

Card Type	V_{OL} min/V	V_{OL} max/V	I_{OL} max/uA	V_{OH} min/V	V_{OH} max/V	I_{OH} max/uA
5 V type	-0.3	0.6	-200	0.7 x Vcc	Vcc + 0.3 V	+20
3 V type	-0.3	0.2 x VCC	-200	0.8 x VCC	Vcc + 0.3 V	+20
1.8 V type (see note)	-0.3	0.2 x VCC	-200	0.8 x VCC	Vcc + 0.3 V	+200
NOTE: Draft EN 301 116 (V0.2.0), clause 5.						

- t_R and t_F shall not exceeding 400 µs, with C_{out} and C_{in} equal to 30 pF.

Reference: GSM 11.11 [1], subclause 5.2.

Reference: ETS 300 641 [10], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_RST.

Test Procedure Reference (TPR): TPR_SIM_ELEC_RST_ST.

6.2.2.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.2.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to RST (contact C2) of the SIM.

3) The capacitance, C_{in}, of RST (contact C2) is measured to be 30 pF.

Test procedure

a) The following parameters are set for RST:

- V_{OH} of the RST signal is set to V_{OH} min.

- V_{OL} of the RST signal is set to V_{OL} min.

- t_R and t_F are set to 400 µS.

b) The ME simulator resets the SIM.

c) The following parameters are set for RST:

- VOH of the RST signal is set to VOH_{max}.

- VOL of the RST signal is set to VOL_{max}.

- tR and tF are set to 400 µS.

d) The ME simulator resets the SIM.

e) Repeat the test for all voltage classes the card supports.

The following shall be true for all tests:

- *I_{OLmax} is measured to be less than or equal to I_{OL} max -[CR1b,c].*

- *I_{OHmax} is measured to be less than or equal to I_{OH} max -[CR1a,c].*

6.2.3 Clock CLK (contact C3)

6.2.3.1 Frequency and duty cycle

6.2.3.1.1 Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the reset RST signal to ensure proper operation in the GSM environment.

This test applies to all SIM implementations with 5 V interface.

6.2.3.1.2 Conformance requirement

- CR1: The SIM shall **not** support an internal clock.

- CR2: The SIM shall support a duty cycle between 40 % and 60 % of the period during stable operation.

- CR3: The SIM shall operate within the following limits for CLK:

Table 7

Card Type	V_{OL} min/V	V_{OL} max/V	V_{OH} min/V	V_{OH} max/V	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.5	0.7 x Vcc	Vcc + 0.3 V	9 % with a max. of 0.5 us	5
3 V type	-0.3	0,2 x VCC	0.8 x VCC	Vcc + 0.3 V	50 ns	4
1.8 V type ~~(see note 1)~~	-0.3	0,2 x VCC	0.8 x VCC	Vcc + 0.3 V	50 ns	4
~~NOTE 1: Draft EN 301 116 (V0.2.0).~~						
NOTE ~~2~~: T_R and T_F has to be measured between 10 % and 90 % of V_{OL} and V_{OH}; C_{in} is equal to 30 pF.						

Reference: GSM 11.11 [1], subclause 5.4.

Reference: ETS 300 641 [10], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_CLK.

Test Procedure Reference (TPR): TPR_SIM_ELEC_CLK_FREQ.

6.2.3.1.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.3.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The frequency of the clock source is set to 1MHz.

b) The duty cycle of the clock source is set to 40 % high.

   - V_{OH} is set to V_{OH}max.; V_{OL} is set to V_{OL}min.

c) The ME simulator resets the SIM.

d) The duty cycle of the clock source is set to 60% high.

e) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1,3].

f) The frequency of the clock source is set to $f_{max.}$

g) The duty cycle of the clock source is set to 40 % high.

h) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1,3].

i) The duty cycle of the clock source is set to 60 % high.

j) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1,3].

k) Repeat a) to i) with V_{OH} set to V_{OH}min; V_{OL} set to V_{OL}max.

l) Repeat a) to j) for all voltage classes supported by the SIM.

6.2.3.2   Voltage and current

6.2.3.2.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the CLK signal to ensure proper operation in the GSM environment.

6.2.3.2.2   Conformance requirement

- CR1: The SIM shall operate within the following limits for CLK:

Table 8

Card Type	V_{OL} min/V	V_{OL} max/V	I_{OL} max/uA	V_{OH} min/V	V_{OH} max/V	I_{OH} max/uA	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.5	-200	0.7 x Vcc	Vcc + 0.3 V	+20	9 % with a max. of 0.5 us	5
3 V type	-0.3	0.2 x VCC	-20	0.7 x VCC	Vcc + 0.3 V	+20	50 ns	4
1.8 V type (see note)	-0.3	0.2 x VCC	-20	0.8 x VCC	Vcc + 0.3 V	+20	50 ns	4
NOTE: Draft EN 301 116 (V0.2.0), clause 5.								

Reference: GSM 11.11 [1], subclause 5.4.

Reference: ETS 300 641 [10], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_CLK.

Test Procedure Reference (TPR): TPR_SIM_ELEC_CLK_VI.

6.2.3.2.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.3.2.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to CLK (contact C3) of the SIM.

3) The capacitance of CLK (contact C3) is measured to be $\leq$ 30 pF.

Test procedure

a) The clock signal is set to 1 MHz.

b) The following parameters are set for CLK:

- V_{OH} at V_{OH}max.

- V_{OL} at V_{OL}min.

- t_R and t_F is set to $t_R$max and $t_F$max.

c) The ME simulator resets the SIM.

The following shall be true:

The SIM shall provide an ATR

d) The following parameters are set for CLK:

- V_{OH} at V_{OH}min.

- V_{OL} at V_{OL}max.

e) The ME simulator resets the SIM.

   The following shall be true:

   - *The SIM shall provide an ATR.*

f) Repeat -test a) to e) with $f_{clk} = f_{max}$, $T_R = T_R$max and $T_F = T_f$max.

g) Repeat -test a) to f) for all voltage classes delivered by the SIM.

The following shall be true for all tests:

- *I_{OHmax} is measured to be less than or equal to $+20\mu A$ [CR1a].*

- *I_{OLmax} is measured to be less than or equal to $-200\mu A$ [CR1b].*

- *The SIM shall provide an ATR after a reset*

6.2.4   I/O (contact C7)

6.2.4.1   Voltage and current

6.2.4.1.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the I/O signal to ensure proper operation in the GSM environment.

6.2.4.1.2   Conformance requirement

- CR1: The SIM shall operate within the following limits for I/O:

Table 9

Card Type	V_{OL} min/V	V_{OL} max/V	I_{OL} max/uA	V_{OH} min/V	V_{OH} max/V	I_{OH} max/uA	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.5	-1 000	3.8	Vcc + 0.3 V	+20	1 us	5
3 V type	-0.3	0.4	-1 000	0.7 x VCC	Vcc + 0.3 V	+20	1 us	4
1.8 V type (see note)	-0.3	0.3	-1 000	0.7 x VCC	Vcc + 0.3 V	+20	1 us	4
NOTE: Draft EN 301 116 (V0.2.0), clause 5.								

Table 10

Card Type	V_{IL} min/V	V_{IL} max/V	I_{IL} max/uA	V_{IH} min/V	V_{IH} max/V	I_{IH} min/max /uA	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.8	+1 000	0.7 x VCC	Vcc + 0.3 V	±20	1 us	5
3 V type	-0.3	0.2 x VCC	+1 000	0.7 x VCC	Vcc + 0.3 V	±20	1 us	4
1.8 V type (see note)	-0.3	0.2 x VCC	+1 000	0.7 x VCC	Vcc + 0.3 V	±20	1 us	4
NOTE: Draft EN 301 116 (V0.2.0), clause 5.								

Reference: GSM 11.11 [1], subclause 5.5.

Reference: ETS 300 641 [10], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_IO.

Test Procedure Reference (TPR): TPR_SIM_ELEC_IO_VI.

6.2.4.1.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.4.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to I/O (contact C7) of the SIM.

3) The capacitance, C_{out} and C_{in}, of I/O (contact C7) is measured to be 30pF.

Test procedure

a) The ME simulator are set to the following max. ranges allowed by the SIM:

   - Vcc to Vcc max.

   - V_{OL} to V_{OL} min, V_{OH} to V_{OH} max.

   - I_{IL} to I_{IL} max, I_{IH} to I_{IH} max.

   - T_R to T_R max and T_F to T_F maxb)

   The ME simulator resets the SIM.

c) The ME simulator sends a STATUS command to the SIM.

d) The ME simulator ~~are~~ is set to the minimum ranges allowed by the SIM with V_{OH} ~~inaktiv~~inactive:

   - V_{cc} to V_{cc} min.

   - V_{OL} to V_{OL} max, V_{OH} to V_{OH} min.

   - I_{IL} to I_{IL} max, I_{IH} to I_{IH} min.

   - T_R to T_R max and T_F to T_F max.

e) The ME simulator resets the SIM.

f) The ME simulator sends a STATUS command to the SIM.

g) *Repeat test a) to l) for all voltage classes:*

   Acceptance criterium for all tests:

   - *I_{OL} has to be between 0 mA and I_{OL} max.*

   - *I_{OH} has to be $\leq I_{OH}$ max.*

   - *V_{IL} has to be between V_{IL} min and V_{IL} max.*

   - *V_{IH} has to be between V_{IH} min and V_{IH} max.*

   - *T_R and T_R generated by the SIM have to be $\leq T_R$ and T_F max.*

[...]

3GPP TSG-CT6 Meeting #35   *Tdoc* ⌘*C6-050386*
Cancun, Mexico, 26-29 April 2005   (revised C6-050245)

CR-Form-v7.1

<table>
<tr><td colspan="6" align="center">CHANGE REQUEST</td></tr>
<tr><td>⌘</td><td>51.017 CR 001</td><td>⌘rev</td><td>-</td><td>⌘ Current version:</td><td>4.0.0 ⌘</td></tr>
</table>

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

Proposed change affects: UICC apps⌘ **X**   ME ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	CR to 51.017: Corrections and update of references	
Source:	⌘	CT6	
Work item code: ⌘	TEI-4	**Date:** ⌘	27/04/2005

Category:	⌘ **F**	**Release:** ⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
Ph2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change:	⌘	A mistake in a pictogram (due to an incorrect implementation of a previous CR) could lead to misinterpretation. References need to be updated due to changes to the referenced documents Some references pointed to documents that do not exist
Summary of change: ⌘		References to DRAFT EN 301.116 specification have been removed References to ISO/IEC specifications of the 7816 series have been replaced by references to 3GPP TS 51.011 exept for references to ISO/IEC 7816-3 References to TS 51.012 and TS 51.018 have been replaced by references to TS 11.012 and 11.018 respectively because the previously referenced documents do not exist Unused reference to ETS 300 641 has been removed Reference indicators have been reintroduced
Consequences if not approved:	⌘	Obsolet references and invalid references to draft specifications would be still be included in this document. References to ISO/IEC specifications would not be compliant to the referenced versions of these documents. Some references would refer to not existing specifications A wrong pictogram could lead to misinterpretation
Clauses affected:	⌘	1, 2.1, 3.1, 4.1.2, 5.1, 5.2, 5.3, 5.4, 5.5, 5.7, 5.8, 5.9, 6.1.1, 6.1.2, 6.1.3, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.2.7, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.4.2, 6.6.1, 6.6.2.1, 6.6.2.2, 6.6.2.3, 6.6.2.4, 6.6.2.5, 6.6.2.6, 6.6.2.7, 6.6.2.8, 6.6.2.9, 6.6.2.10,

		6.6.2.11, 6.6.2.12, 6.6.2.1.3, 6.6.2.14, 6.6.2.15, 6.6.2.16, 6.6.2.17, 6.6.2.18, 6.6.3, 6.6.4.1, 6.6.4.2, 6.7.1, 6.7.2, 6.7.3, 6.7.4, 6.8.1			
	Y	**N**			
Other specs ⌘ ***affected:***		**X**	Other core specifications ⌘		
		X	Test specifications		
		X	O&M Specifications		
Other comments: ⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3GPP

1 Scope

The present document provides the Conformance Test Specification for the Subscriber Identity Module defined in 3GPP TS 51.011TS 51.011 [1], 3GPP TS 51.012TS 11.012 [8] and 3GPP TS 51.018TS 11.018 [9].

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

2.1 Normative references

[1] 3GPP TS 51.011: " Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[2] Void.

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

[4] VoidISO/IEC 7816-2 (1988): "Information technology - Identification cards - Integrated circuit(s) cards with contacts, Part 2: Dimensions and location of the contacts".

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

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

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

[8] 3GPP TS 5111.012: "Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[9] 3GPP TS 5111.018: "Specification of the 1.8 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[10] ETSI ETS 300 641: "Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.12)".Void

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given 3GPP TS 51.0113GPP TS 51.011 [1] and the following apply:

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented
The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

ICS proforma: document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

[…]

4.1.2.4 IO

The equipment shall be able to generate IO-Signals according to ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

The voltage levels for high and low states shall be adjustable between -0.5 V and 6 V to an accuracy of 1 % of the nominal VCC voltage. The IO line in transmission mode (high bit) shall be programmable between state A (active driven output) and state Z (IO-voltage-driver inactive, current source I-IO-high active).

It shall also provide control over the rise and fall time of 100 ns to 1000 ns with an accuracy of 50 ns.

The ME simulator shall be able to source and sink currents on the IO contact in the range -20 uA to +20 uA in state high and 0 mA -1 mA in state low (receiving mode) and shall be able to switch in transmission mode (outputting a high Bit) between voltage and current driving mode.

The timing of the bitstream (jitter, guardtime, etu-value, etc.) on the IO-Line shall be programmable with an accuracy of ≤ 0,01 etu or 2 clk-cycles whichever is the worst.

[...]

5.1 Test groups under SIM
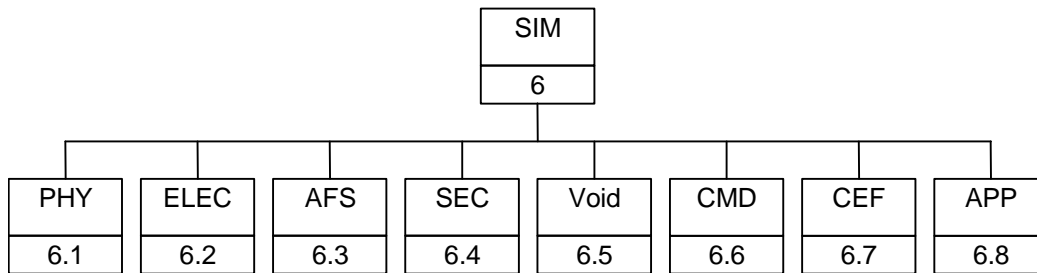
Figure 1: Top Level Test Group Hierarchy

The mnemonics chosen for this test group are as follows:

PHY: Physical characteristics - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 4.
ELEC: Electronic signals and transmission protocols - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 5.
AFS: Application and File structure - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 6.
SEC: Security features - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 7.
CMD: Description of the commands - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 9.
CEF: Contents of the elementary files - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 10.
APP: Application Protocol - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 11.

The Test Groups "PHY", "ELEC", "AFS", "SEC", "CMD", "CEF" and "APP", shown in figure 1, are broken down further, as shown in the following diagrams.
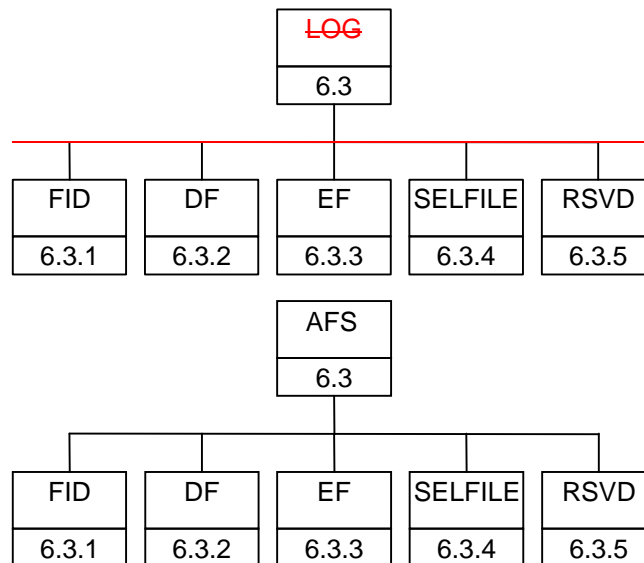
5.2 Test groups under PHY
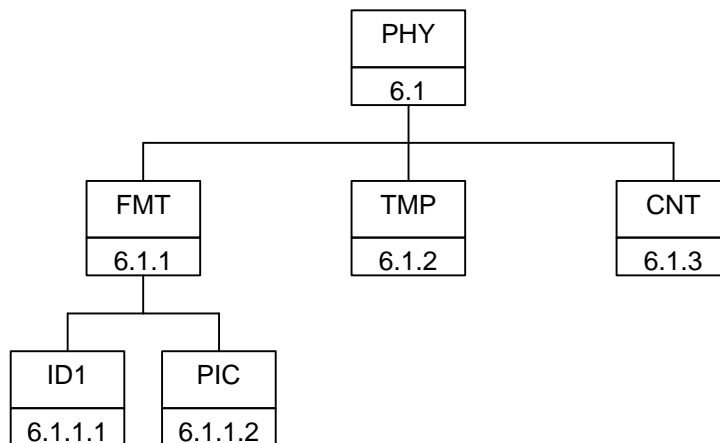
Figure 2: Breakdown of "PHY" Test Group

The mnemonics chosen for this test group are as follows:

FMT: Format and layout - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 4.
ID1: ID-1 card - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 4.
PIC: Plug-in card - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 4.
TMP: Temperature range for card operation - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 4.
CNT: Contacts - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 4.

5.3 Test groups under ELEC
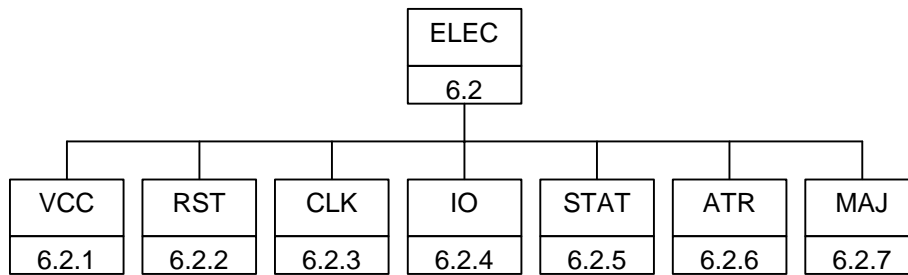
Figure 3: Breakdown of "ELEC" Test Group

The mnemonics chosen for this test group are as follows:

VCC: Supply voltage Vcc (contact C1) - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.
RST: Reset RST (contact C2) - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.
CLK: Clock CLK (contact C3) - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.
IO: I/O (contact C7) - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.
STAT: States - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.
ATR: Answer To Reset (ATR) - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.
MAJ: Major Capabilities - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 5.

5.4 Test groups under AFS

Figure 4: Breakdown of "AFS" Test Group

The mnemonics chosen for this test group are as follows:

FID: File identifier - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 6.
DF: Dedicated Files - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 6.4.1.
EF: Elementary Files - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 6.4.2.
SELFILE: Methods for selecting a file - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 6.5.
RSVD: Reservation of file IDs - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 6.

5.5 Test groups under SEC
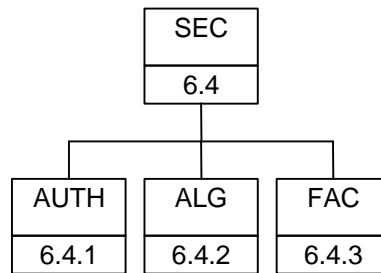
Figure 5: Breakdown of "SEC" Test Group

The mnemonics chosen for this test group are as follows:

AUTH: Authentication and cipher key generation procedures - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 7.1.

ALG: Algorithms and processes - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 7.2.

FAC: File access conditions - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 7.3.
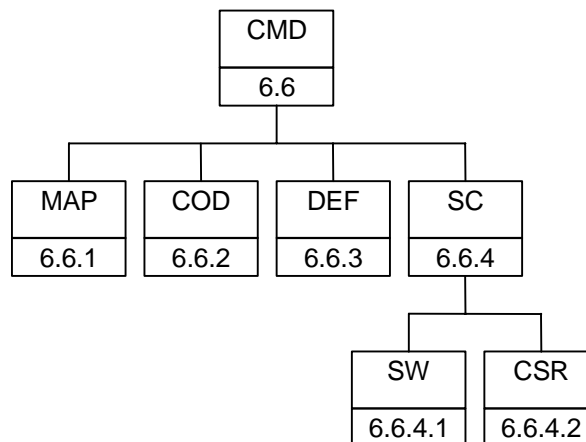
5.6 Void

5.7 Test groups under CMD

Figure 7: Breakdown of "CMD" Test Group

The mnemonics chosen for this test group are as follows:

MAP: Mapping principles - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.1.

COD: Coding of the commands - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.

DEF: Definitions and coding - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.3.

SC: Status conditions returned by the Card - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.4.

SW: Coding of the status words- ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.4.1 to 9.4.6.

CSR: Commands versus possible status responses - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.4.7.

5.8 Test groups under CEF

```
              ┌─────────┐
              │   CEF   │
              ├─────────┤
              │   6.7   │
              └────┬────┘
        ┌──────────┼──────────┐
   ┌────┴───┐ ┌────┴───┐ ┌────┴───┐
   │   MF   │ │  GSM   │ │  TEL   │
   ├────────┤ ├────────┤ ├────────┤
   │  6.7.1 │ │  6.7.2 │ │  6.7.3 │
   └────────┘ └────────┘ └────────┘
```
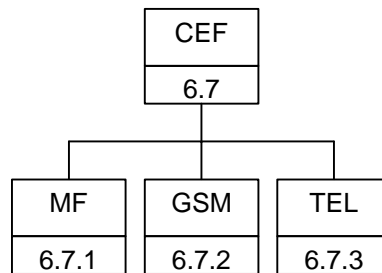
Figure 8: Breakdown of "CEF" Test Group

The mnemonics chosen for this test group are as follows:

MF: Contents of the EFs at the MF level - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 10.1.

GSM: Contents of EFs at the GSM application level - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 10.3.

TEL: Contents of the EFs at the Telecom level - ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 10.5.

5.9 Test groups under APP

[TBD]

Figure 9: Breakdown of "APP" Test Group

All of the tests in the "APP" test group relate to ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 11.

6 Test Procedure

This clause details each of the tests in each of the test groups within the Test Group Hierarchy. This test suite allows testing of the IUT against the base specification with respect to:

- Physical characteristics.

- Electronic signals and transmission protocols.

- Logical model.

- Security services and facilities.

- Functions.

- Commands.

- Contents of the elementary files.

The numbering of this clause correlates with the numbering of the accompanying ICS to allow for referencing between the documents.

6.1 Physical characteristics

The tests in this subclause ensure that the IUT conforms to the specification for both format and layout and contacts.

6.1.1   Format and layout

6.1.1.1   ID-1 SIM

6.1.1.1.1   Definition and applicability

The format and layout characteristics shall be adhered to, in order to ensure proper operation in the GSM environment.

This test applies to ID-1 SIM cards.

Currents defined as positive are flowing into the SIM.

Voltages declared as V_O are delivered by the ME (ME Simulator) V_I is generated by the SIM.

6.1.1.1.2   Conformance requirement

CR1:   Format and layout of the ID-1 card shall be in accordance with 3GPP TS 51.011 [1] ISO/IEC 7816-1 and ISO/IEC 7816-2, unless otherwise specified.

CR2:   The information on the exterior of the ID-1 SIM card shall include at least the individual account identifier and the check digit.

CR3:   The card may have a polarization mark which indicates how the user should insert the card into the ME.

CR4:   Any embossing on the card shall be in accordance with 3GPP TS 51.011 [1]ISO 7811-1 and ISO/IEC 7811-3 (conditional).

CR5:   The contacts shall be located on the front (embossed face) of the card.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], clause 4.

Test Group Reference (TGR):   TGR_SIM_PHY_FMT_ID1.

Test Procedure Reference (TPR):   TPR_SIM_PHY_FMT_ID1.

6.1.1.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

NOTE 1:   The testing of CR1 is outside the scope of the present document. Please refer to the TS for ISO/IEC 7816-1 and ISO/IEC 7816-2.

NOTE 2:   The testing of CR4 is outside the scope of the present document. Please refer to the TS for ISO/IEC 7811-1 and ISO/IEC 7811-3.

6.1.1.1.4   Method of test

Initial conditions

None.

Test procedure

a) The card is examined for the following:

  - identification number;

  - polarization mark;

  - contact location.

  The card shall have been observed to exhibit the following [CR2,3]:

  - *identification number located on the exterior of the card;*

  - *polarization mark indicating how the user should insert the card into the ME;*

- *contact location on the front or the back of the card.*

b) The SIM is connected to an ME simulator.

c) The ME simulator resets the SIM.

d) The ME simulator sends a SELECT command to the SIM to select EF_{ICCID}.

e) The ME simulator sends a READ BINARY command to the SIM to read the identification number.

   The individual account identifier read from the SIM shall be identical with that on the exterior of the card [CR2].

6.1.1.2   Plug-in SIM

6.1.1.2.1   Definition and applicability

The format and layout characteristics shall be adhered to, in order to ensure proper operation in the GSM environment.

This test applies to plug-in SIM cards.

6.1.1.2.2   Conformance requirement

CR1:   Format and layout of the plug-in card shall be in accordance with 3GPP TS 51.011 [1], ~~ISO/IEC 7816-1 and ISO/IEC 7816-2~~ unless otherwise specified.

CR2:   The information on the exterior of the plug-in card shall include at least the individual account identifier and the check digit.

CR3:   The dimensions of the plug-in SIM shall be in accordance with annex A of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 4.

Test Group Reference (TGR):   TGR_SIM_PHY_FMT_PIC.

Test Procedure Reference (TPR):   TPR_SIM_PHY_FMT_PIC.

6.1.1.2.3   Test purpose

To verify that the SIM conforms to the above requirements.

NOTE: The testing of CR1 is outside the scope of the present document. ~~Please refer to the TS for ISO/IEC 7816-1 and ISO/IEC 7816-2.~~

6.1.1.2.4   Method of test

Initial conditions

None.

Test procedure

a) The card is examined for the following:

   - individual account identifier and check digit;

   - width;

   - height;

   - thickness;

   - feature for orientation.

   The card shall have been observed to exhibit the following [CR2]:

- *at least the individual account identifier and check digit located on the exterior of the card;*

- *correct width, height and thickness;*

- *feature for orientation.*

b) The SIM is connected to an ME simulator.

c) The ME simulator resets the SIM.

d) The ME simulator sends a SELECT command to the SIM to select EF$_{ICCID}$.

e) The ME simulator sends a READ BINARY command to the SIM to read the identification number.

The account identifier and check digit read from the SIM shall be present and identical with that on the exterior of the card [CR2].

6.1.2 Temperature range for card operation

6.1.2.1 Definition and applicability

The temperature range for full operational use shall be adhered to, in order to ensure proper operation in the GSM environment.

6.1.2.2 Conformance requirement

CR1: The temperature range for full operational use shall be between -25°C and +70°C with occasional peaks of up to +85°C, where "occasional" means not more than 4 hours each time and not over 100 times during the life time of the card.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 4.

Test Group Reference (TGR): TGR_SIM_PHY_TMP.

Test Procedure Reference (TPR): TPR_SIM_PHY_TMP.

6.1.2.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.1.2.4 Method of test

Initial conditions

1) The SIM is placed in a temperature-controllable environment and connected to an ME simulator.

2) A temperature measuring device is connected to the surface of the SIM.

3) The SIM shall have passed the Format and Layout tests in subclause 6.1.1.

Test procedure

a) The temperature of the SIM is set to +25°C.

b) The ME simulator resets the SIM.

c) The ME simulator performs the SIM initialization procedure, as defined in 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 11.2.1.

The SIM shall operate successfully [CR1].

d) The temperature of the SIM is reduced to -25°C.

e) Steps b) and c) are repeated.

The SIM shall operate successfully [CR1].

f) The temperature of the SIM is increased to +70°C.

g) Steps b) and c) are repeated.

The SIM shall operate successfully [CR1].

h) The temperature of the SIM is increased to +85°C.

i) Steps b) and c) are repeated continually for a period of 4 hours.

The SIM shall operate successfully [CR1].

The SIM shall have satisfied the test requirements of subclause 6.1.1.

j) The temperature of the SIM is reduced to +25°C.

k) Steps h), i) and j) are repeated a further 99 times.

The SIM shall operate successfully [CR1].

l) Carry out the tests in subclause 6.1.1 again.

6.1.3   Contacts

6.1.3.1   Definition and applicability

The shape, robustness and provision of contacts shall be adhered to, in order to maintain good electrical contact with the ME, ensuring proper operation in the GSM environment.

6.1.3.2   Conformance requirement

CR2:   Contact C6 shall not be bonded in the SIM for any function other than supplying Vpp.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], clause 4.

Test Group Reference (TGR):   TGR_SIM_PHY_CNT.

Test Procedure Reference (TPR):   TPR_SIM_PHY_CNT.

6.1.3.3   Test purpose

To verify that the SIM conforms to the above requirements.

NOTE: As the contacts specified in CR1 and CR3 are optional, the tests specified here shall only be performed on those contacts when the contacts are present.

6.1.3.4   Method of test

Initial conditions

1) The SIM shall have passed the Format and Layout tests in subclause 6.1.1.

Test procedure

a) Contact C6 is connected to ground by the ME simulator.

b) VCC is applied to contact C1.

c) Contact C2 (RST) is kept at low level, ground.

   d) A valid clock signal is applied to Contact C3.

       The dc power consumption on Contact C1 shall not exceed 10 mA under any condition [CR2].

   NOTE: This test ensures that VPP and VCC are not bonded together in the SIM, if this would be the case VPP
               would also supply the SIM with current for its operation.

   e) The SIM is connected to an ME simulator.

   f) The ME simulator resets the SIM.

       The SIM shall have been reset successfully [CR4].

6.2   Electronic signals and transmission protocols

The tests in this subclause ensure that the IUT conforms to the electrical specification for each of the contacts and also
the protocol.

6.2.1   Supply voltage Vcc (contact C1)

6.2.1.1   Voltage limits

6.2.1.1.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3ISO/IEC 7816-3 [5], the SIM
shall operate within the following supply voltage conditions to ensure proper operation in the GSM environment.

This test applies to all SIM implementations with 1.8 V, 3 V and 5 V interfaces.

6.2.1.1.2   Conformance requirement

CR1: The SIM shall operate when the supply voltage on contact C1 (Vcc) is in the following ranges:

Card Type	Vmin /V	Vmax /V
5 V type	4.5	5.5
3 V type	2.7	3.3
1.8 V type (see note)	1.62	1.98
NOTE: Draft EN 301 116 (V0.2.0).		

Reference: 3GPP TS 51.0113GPP TS 51.011 [1], subclause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_V.

6.2.1.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.1.4   Method of test

Initial conditions

   1) The SIM is connected to an ME simulator.

   2) The CHV1 value is 4 zeros.

Test procedure

(The voltage Vcc min/max depends on the voltage class the SIM provides)

   a) The voltage source for contact C1 (Vcc) is set to Vcc min, and the SIM interface signals are powered from a Vcc min, source.

   b) The ME simulator resets the SIM.

      The SIM shall send the correct ATR sequence [CR1].

   c) The ME simulator sends a CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

   d) The ME simulator sends a CHANGE CHV command to the SIM to return the CHV1 to its original value.

   e) The voltage source for contact C1 (Vcc) is set to Vcc max.

   f) The ME simulator resets the SIM.

      The SIM shall send the correct ATR sequence [CR1].

   g) The ME simulator sends a CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

   h) The ME simulator sends a CHANGE CHV command to the SIM to return the CHV1 to its original value.

   i) Repeat the test for every voltage class the SIM provides.

6.2.1.2   Current limits

6.2.1.2.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under normal operating conditions to ensure proper operation in the GSM environment.

Table 1: Current consumption on VCC

Card Type	Imax /mA under normal conditions (average value (see note ~~2~~))	f_{max} /Mhz (max CLK-frequency under normal conditions)	Vcc_{max} voltage on VCC during testing
5 V type	10	5	5,5V
3 V type	6	4	3,3V
1.8 V type ~~(see note 1)~~	4	4	1,98V
~~NOTE 1: Draft EN 301 116 (V0.2.0).~~			
NOTE~~2~~: Imax is the average value of the Vcc Current including the current spikes.			

Table 2: Current spikes on VCC

Card Type	I_{max} /mA	max charge /nAs	max duration /ns
5 V type	200	40	400
3 V type	60	12	400
1.8 V type ~~(see note)~~	60	12	400
~~NOTE: Draft EN 301 116 (V0.2.0).~~			

6.2.1.2.2   Conformance requirement

CR1:   The current consumption of the SIM shall not exceed the max currents values (I_{max}) as defined in tables 1 and 2 at the max. frequency ($f_{max;}$) and the max. allowed voltage level V_{max}.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.1.

Test Group Reference (TGR):   TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR):   TPR_SIM_ELEC_VCC_I.

6.2.1.2.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.2.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to the SIM.

3) The CHV1 value is 4 zeros.

Test procedure

a) The frequency of the clock source is set to 1 MHz.

b) The ME simulator resets the SIM.

c) The ME simulator performs the SIM initialization procedure during which time the current consumption is measured.

d) The ME simulator sends a CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

e) The ME simulator sends a CHANGE CHV command to the SIM to return the CHV1 to its original value.

f) The frequency of the clock source is set to 3.25 MHz.

g) The ME simulator resets the SIM.

h) The ME simulator performs the SIM initialization procedure during which time the current consumption is measured.

i) The ME simulator sends a CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

j) The ME simulator sends a CHANGE CHV command to the SIM to return the CHV1 to its original value.

k) The frequency of the clock source is set to f_{max}

l) The ME simulator resets the SIM.

m) The ME simulator performs the SIM initialization procedure during which time the current consumption is measured.

n) The ME simulator sends a CHANGE CHV command to the SIM with new CHV1 value 8 zeros.

o) The ME simulator sends a CHANGE CHV command to the SIM to return the CHV1 to its original value.

p) Repeat tests a) to o) for all voltage classes the SIM delivers.

The current consumption of the SIM shall not exceed the max.current values given in tables 1 and 2 according to the SIM class excluding spikes up to the defined maximum charges, durations and amplitudes during the whole test.

6.2.1.3   Idle current limits

6.2.1.3.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under idle conditions to ensure proper operation in the GSM environment.

Table 3: Current consumption in idle mode

Card Type	Imax /uA in idle state clk frequency 1 MHz	Vcc$_{max}$ /V max. voltage on VCC during testing
5 V type	200	5,5
3 V type	200	3,3
1.8 V type ~~(see note)~~	200	1,98
~~NOTE: Draft EN 301 116 (V0.2.0).~~		

6.2.1.3.2   Conformance requirement

CR1:   The idle current consumption of the SIM shall not exceed I$_{max}$ at 1 MHz , +25°C and V$_{max}$.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 5 and subclause 5.1.

   ~~NOTE: Reference: Draft EN 301 126 (V0.2.0), clause 5.~~

Test Group Reference (TGR):   TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR):   TPR_SIM_ELEC_VCC_IDLE.

6.2.1.3.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.3.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) The frequency of the clock source is set to 1 MHz.

3) The temperature of the SIM is +25°C.

4) The voltage on VCC is set to VCC$_{max}$

Test procedure

a) The ME simulator resets the SIM.

b) The idle current consumption is measured after receiving the ATR over a period of 10 s.

c) repeat test for all voltage classes the SIM supports.

6.2.1.3.5   Test requirement

1) During step b), the current consumption of the SIM shall not exceed I$_{max}$

6.2.1.4   Current limits at all frequencies

6.2.1.4.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under idle conditions to ensure proper operation in the GSM environment.

Table 4: Current consumption in idle mode at max frequency

Card Type	Imax /uA in idle state (average value)	Vcc$_{max}$ /V max. voltage on VCC during testing	f$_{max}$ /Mhz max CLK frequency in idle mode
5 V type	1 000	5.5	5
3 V type	1 000	3.3	4
1.8 V type ~~(see note)~~	1 000	1.98	4
~~NOTE: Draft EN 301 116 (V0.2.0), clause 5.~~			

6.2.1.4.2   Conformance requirement

1) The idle current consumption of the SIM shall not exceed Imax at any frequency fmax.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.1.

Reference: ETS 300 641, clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_IF.

6.2.1.4.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.4.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The frequency of the clock source is set to 1 MHz.

b) The ME simulator resets the SIM.

c) The current consumption is measured after receiving the ATR over a period of 10 s.

d) The frequency of the clock source is set to 3.25 MHz.

e) The ME simulator resets the SIM.

f) The current consumption is measured after receiving the ATR over a period of 10 s.

g) The frequency of the clock source is set to f$_{max}$.

h) The ME simulator resets the SIM..

i) The current consumption is measured after receiving the ATR over a period of 10 s.

   The current consumption of the SIM shall not exceed 1mA [CR1in average over the whole test.

6.2.1.5   Current limits in clk-stop-mode

6.2.1.5.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5], the current consumption shall not exceed the specified limit under clk-stop conditions to ensure proper operation in the GSM environment.

Table 5: Current consumption in clk stop mode

Card Type	Imax /uA in clk-stop mode (average value)	Vcc$_{max}$ /V max. voltage on VCC during testing
5 V type	200	5.5
3 V type	100	3.3
1.8 V type (see note)	100	1.98
NOTE: Draft EN 301 116 (V0.2.0), clause 5.		

6.2.1.5.2 Conformance requirement

1) The clk stop mode current consumption of the SIM shall not exceed I$_{max}$ if clk stop mode is delivered by the SIM.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 5.1.

Reference: ETS 300 641, clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_VCC.

Test Procedure Reference (TPR): TPR_SIM_ELEC_VCC_CLKSTOP.

6.2.1.5.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.1.5.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to the SIM to select the MF.

c) The ME simulator sends a GET RESPONSE command to the SIM using the SW2 returned by the SIM following step b).

d) The ME simulator stops the clock at least 744 clk according to the clock stop mode read in step c).

f) The current consumption is measured during clk stop for min 10 s.

The current consumption of the SIM shall not exceed I$_{max}$ in average during clk stop.

6.2.2 Reset RST (contact C2)

6.2.2.1 Static operation

6.2.2.1.1 Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3 ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the reset RST signal to ensure proper operation in the GSM environment.

6.2.2.1.2 Conformance requirement

CR1: The SIM shall operate within the following limits for RST:

Table 6

Card Type	V$_{OL}$ min/V	V$_{OL}$ max/V	I$_{OL}$ max/uA	V$_{OH}$ min/V	V$_{OH}$ max/V	I$_{OH}$ max/uA
5 V type	-0.3	0.6	-200	0.7 x Vcc	Vcc + 0.3 V	+20
3 V type	-0.3	0.2 x VCC	-200	0.8 x VCC	Vcc + 0.3 V	+20
1.8 V type ~~(see note)~~	-0.3	0.2 x VCC	-200	0.8 x VCC	Vcc + 0.3 V	+200
~~NOTE: Draft EN 301 116 (V0.2.0), clause 5.~~						

- t$_R$ and t$_F$ shall not exceeding 400 µs, with C$_{out}$ and C$_{in}$ equal to 30 pF.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.

Reference: ETS 300 641, clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_RST.

Test Procedure Reference (TPR): TPR_SIM_ELEC_RST_ST.

6.2.2.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.2.1.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to RST (contact C2) of the SIM.

3) The capacitance, C$_{in}$, of RST (contact C2) is measured to be 30 pF.

Test procedure

a) The following parameters are set for RST:

   - V$_{OH}$ of the RST signal is set to V$_{OH}$ min.

   - V$_{OL}$ of the RST signal is set to V$_{OL}$ min.

   - t$_R$ and t$_F$ are set to 400 µS.

b) The ME simulator resets the SIM.

c) The following parameters are set for RST:

   - VOH of the RST signal is set to VOH$_{max}$.

   - VOL of the RST signal is set to VOL$_{max}$.

   - tR and tF are set to 400 µS.

d) The ME simulator resets the SIM.

e) Repeat the test for all voltage classes the card supports.

   The following shall be true for all tests:

   - *I$_{OLmax}$ is measured to be less than or equal to I$_{OL}$ max [CR1b,c].*

   - *I$_{OHmax}$ is measured to be less than or equal to I$_{OH}$ max [CR1a,c].*

6.2.3   Clock CLK (contact C3)

6.2.3.1   Frequency and duty cycle

6.2.3.1.1   Definition and applicability

In addition to the electronic signals and transmission protocols defined in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the reset RST signal to ensure proper operation in the GSM environment.

This test applies to all SIM implementations with 5 V interface.

6.2.3.1.2   Conformance requirement

CR1:   The SIM shall **not** support an internal clock.
CR2:   The SIM shall support a duty cycle between 40 % and 60 % of the period during stable operation.
CR3:   The SIM shall operate within the following limits for CLK:

Table 7

Card Type	V_{OL} min/V	V_{OL} max/V	V_{OH} min/V	V_{OH} max/V	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.5	0.7 x Vcc	Vcc + 0.3 V	9 % with a max. of 0.5 us	5
3 V type	-0.3	0,2 x VCC	0.8 x VCC	Vcc + 0.3 V	50 ns	4
1.8 V type ~~(see note 1)~~	-0.3	0,2 x VCC	0.8 x VCC	Vcc + 0.3 V	50 ns	4
~~NOTE 1: Draft EN 301 116 (V0.2.0).~~						
NOTE ~~2~~: T_R and T_F has to be measured between 10 % and 90 % of V_{OL} and V_{OH}; C_{in} is equal to 30 pF.						

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.4.

Reference: ETS 300 641, clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_CLK.

Test Procedure Reference (TPR): TPR_SIM_ELEC_CLK_FREQ.

6.2.3.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.3.1.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The frequency of the clock source is set to 1MHz.

b) The duty cycle of the clock source is set to 40 % high.

   - V_{OH} is set to V_{OH}max, V_{OL} is set to V_{OL}min.

c) The ME simulator resets the SIM.

d) The duty cycle of the clock source is set to 60% high.

e) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1,3].

f) The frequency of the clock source is set to $f_{max.}$

g) The duty cycle of the clock source is set to 40 % high.

h) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1,3].

i) The duty cycle of the clock source is set to 60 % high.

j) The ME simulator resets the SIM.

   The SIM shall send the correct ATR sequence [CR1,3].

k) Repeat a) to i) with V_{OH} set to V_{OHmin}; V_{OL} set to V_{OL}max.

l) Repeat a) to j) for all voltage classes supported by the SIM.

6.2.3.2 Voltage and current

6.2.3.2.1 Definition and applicability

In addition to the electronic signals and transmission protocols defined in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the CLK signal to ensure proper operation in the GSM environment.

6.2.3.2.2 Conformance requirement

CR1:   The SIM shall operate within the following limits for CLK:

Table 8

Card Type	V_{OL} min/V	V_{OL} max/V	I_{OL} max/uA	V_{OH} min/V	V_{OH} max/V	I_{OH} max/uA	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.5	-200	0.7 x Vcc	Vcc + 0.3 V	+20	9 % with a max. of 0.5 us	5
3 V type	-0.3	0.2 x VCC	-20	0.7 x VCC	Vcc + 0.3 V	+20	50 ns	4
1.8 V type ~~(see note)~~	-0.3	0.2 x VCC	-20	0.8 x VCC	Vcc + 0.3 V	+20	50 ns	4
~~NOTE: Draft EN 301 116 (V0.2.0), clause 5.~~								

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 5.4.

Reference: ETS 300 641, clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_CLK.

Test Procedure Reference (TPR): TPR_SIM_ELEC_CLK_VI.

6.2.3.2.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.3.2.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to CLK (contact C3) of the SIM.

3) The capacitance of CLK (contact C3) is measured to be ≤ 30 pF.

Test procedure

a) The clock signal is set to 1 MHz.

b) The following parameters are set for CLK:

- V_{OH} at V_{OH}max.

- V_{OL} at V_{OL}min.

- t_R and t_F is set to $t_R$max and $t_F$max.

c) The ME simulator resets the SIM.

The following shall be true:

The SIM shall provide an ATR

d) The following parameters are set for CLK:

- V_{OH} at V_{OH}min.

- V_{OL} at V_{OL}max.

e) The ME simulator resets the SIM.

The following shall be true:

- *The SIM shall provide an ATR.*

f) Repeat test a) to e) with $f_{clk} = f_{max}$, $T_R = T_R$max and $T_F = T_f$max.

g) Repeat test a) to f) for all voltage classes delivered by the SIM.

The following shall be true for all tests:

- *I_{OHmax} is measured to be less than or equal to +20µA [CR1a].*

- *I_{OLmax} is measured to be less than or equal to -200µA [CR1b].*

- *The SIM shall provide an ATR after a reset*

6.2.4 I/O (contact C7)

6.2.4.1 Voltage and current

6.2.4.1.1 Definition and applicability

In addition to the electronic signals and transmission protocols defined in ISO/IEC 7816-3ISO/IEC 7816-3 [5], the SIM shall operate within the following limits regarding the I/O signal to ensure proper operation in the GSM environment.

6.2.4.1.2 Conformance requirement

CR1:   The SIM shall operate within the following limits for I/O:

Table 9

Card Type	V_{OL} min/V	V_{OL} max/V	I_{OL} max/uA	V_{OH} min/V	V_{OH} max/V	I_{OH} max/uA	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.5	-1 000	3.8	Vcc + 0.3 V	+20	1 us	5
3 V type	-0.3	0.4	-1 000	0.7 x VCC	Vcc + 0.3 V	+20	1 us	4
1.8 V type (see note)	-0.3	0.3	-1 000	0.7 x VCC	Vcc + 0.3 V	+20	1 us	4
NOTE: Draft EN 301 116 (V0.2.0), clause 5.								

Table 10

Card Type	V_{IL} min/V	V_{IL} max/V	I_{IL} max/uA	V_{IH} min/V	V_{IH} max/V	I_{IH} min/max /uA	T_R & T_F max	fmax /MHz
5 V type	-0.3	0.8	+1 000	0.7 x VCC	Vcc + 0.3 V	±20	1 us	5
3 V type	-0.3	0.2 x VCC	+1 000	0.7 x VCC	Vcc + 0.3 V	±20	1 us	4
1.8 V type ~~(see note)~~	-0.3	0.2 x VCC	+1 000	0.7 x VCC	Vcc + 0.3 V	±20	1 us	4
~~NOTE: Draft EN 301 116 (V0.2.0), clause 5.~~								

Reference: ~~3GPP TS 51.011~~ 3GPP TS 51.011 [1], subclause 5.

Reference: ETS 300 641, clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_IO.

Test Procedure Reference (TPR): TPR_SIM_ELEC_IO_VI.

6.2.4.1.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.4.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) A current measuring device is connected to I/O (contact C7) of the SIM.

3) The capacitance, C_{out} and C_{in}, of I/O (contact C7) is measured to be 30pF.

Test procedure

a) The ME simulator are set to the following max. ranges allowed by the SIM:

 - Vcc to Vcc max.

 - V_{OL} to V_{OL} min, V_{OH} to V_{OH} max.

 - I_{IL} to I_{IL}max, I_{IH} to I_{IH} max.

 - T_R to T_R max and T_F to T_F maxb)

 The ME simulator resets the SIM.

c) The ME simulator sends a STATUS command to the SIM.

d) The ME simulator is set to the minimum ranges allowed by the SIM with V_{OH} inaktiv:

 - V_{cc} to V_{cc} min.

 - V_{OL} to V_{OL} max, V_{OH} to V_{OH} min.

 - I_{IL} to I_{IL}max, I_{IH} to I_{IH} min.

 - T_R to T_R max and T_F to T_F max.

e) The ME simulator resets the SIM.

f) The ME simulator sends a STATUS command to the SIM.

g) *Repeat test a) to l) for all voltage classes:*

 Acceptance criterium for all tests:

- I_{OL} has to be between 0 mA and I_{OL} max.

- I_{OH} has to be $\leq I_{OH}$ max.

- V_{IL} has to be between V_{IL} min and V_{IL} max.

- V_{IH} has to be between V_{IH} min and V_{IH} max.

- T_R and T_R generated by the SIM have to be $\leq T_R$ and T_F max.

6.2.5   States

6.2.5.1   Definition and applicability

There are two states for the while the power supply is on, operating state when the SIM is executing a command, and idle state at any other time.

6.2.5.2   Conformance requirement

CR1:   The SIM shall support exactly one of these items:

- Clock stop allowed, no preferred level.

- Clock stop allowed, high level preferred.

- Clock stop allowed, low level preferred.

- Clock stop not allowed.

- Clock stop not allowed, unless at high level.

- Clock stop not allowed, unless at low level.

CR2:   When the SIM is in idle state, all pertinent data shall be retained.

CR3:   A SIM of Phase 2 or later shall always send the status information "normal ending of the command" after the successful interpretation of the command SLEEP received from a Phase 1 ME.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclauses 5 and 9.2.1.

Test Group Reference (TGR): TGR_SIM_ELEC_STAT.

Test Procedure Reference (TPR): TPR_SIM_ELEC_STAT.

6.2.5.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.5.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to the SIM to select the MF.

c) The ME simulator sends a GET RESPONSE command to the SIM using the SW2 returned by the SIM following step b).

The coding of bits 1, 3 and 4 of byte 14 in the response data shall be one in the table below only [CR1].

d) The ME simulator stops the clock according to the clock stop mode read in step c).

e) The ME simulator pauses for 10 seconds, then starts the clock.

f) The ME simulator sends a GET RESPONSE command to the SIM using the SW2 returned by the SIM following step b).

The response data read shall be that indicating EF$_{ICCID}$.

Table 11

Bit 1	Bit 3	Bit 4	Clock stop mode
1	0	0	Clock stop allowed, no preferred level
1	1	0	Clock stop allowed, high level preferred
1	0	1	Clock stop allowed, low level preferred
0	0	0	Clock stop not allowed
0	1	0	Clock stop only allowed on high level
0	0	1	Clock stop only allowed on low level

6.2.6 Answer To Reset (ATR)

6.2.6.1 ATR content

6.2.6.1.1 Definition and applicability

The ATR is information presented by the SIM to the ME at the beginning of the card session and gives operational requirements.

6.2.6.1.2 Conformance requirement

CR1: The ATR consists of at the most 33 characters.
CR2: Initial character TS is sent by the SIM.
CR3: Format character T0 is sent by the SIM.
CR4: Interface character (global) TA1 is sent by the SIM (optional).
CR5: Interface character (global) TB1 is sent by the SIM (optional).
CR6: Interface character (global) TC1 is sent by the SIM (optional).
CR7: Interface character TD1 is sent by the SIM (optional).
CR8: Interface character (specific) TA2 is sent by the SIM (optional).
CR9: Interface character (global) TB2 is **never** sent by the SIM.
CR10: Interface character (specific) TC2 is sent by the SIM (optional).
CR11: Interface character TDi is sent by the SIM (optional).
CR12: Interface characters TAi, TBi, TCi (i>2) are sent by the SIM (optional).
CR13: Historical characters T1, ..., TK are sent by the SIM (optional).
CR14: Check character TCK is sent by the SIM (conditional).

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_ATR.

Test Procedure Reference (TPR): TPR_SIM_ELEC_ATR_CON.

6.2.6.1.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.2.6.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

The SIM shall send the ATR sequence [CR1].

The total length of the ATR sequence shall not be more than 33 characters [CR1].

The following characters shall be present and in the following order:

Initial character TS [CR2].

Format character T0 [CR3].

Interface character (global) TA1, if its presence is indicated by T0 [CR4].

Interface character (global) TB1, if its presence is indicated by T0 [CR5].

Interface character (global) TC1, if its presence is indicated by T0 [CR6].

Interface character TD1, if its presence is indicated by T0 [CR7].

Interface character (specific) TA2, if its presence is indicated by TD1 [CR8].

Interface character (specific) TC2, if its presence is indicated by TD1 [CR10].

Interface character TDi, if its presence is indicated by TD(i-1, i>1) [CR11].

Interface characters TAi, TBi, TCi if their presence is indicated by TD(i-1, i>2) [CR12].

Historical characters T1,...,TK, if their presence is indicated by T0 [CR13].

Check character TCK, if an additional protocol type to T=0 is indicated by TD1 [CR14].

PI1 shall be equal to 0 if TB1 is sent [CR5].

TC1 shall be either 0 or 255, if sent [CR6].

The SIM shall never send Interface character (global) TB2 [CR9].

6.2.6.2   PTS procedure

6.2.6.2.1   Definition and applicability

The ATR indicates which protocols are available for use during a session. The PTS procedure allows one of the available protocol types to be selected.

6.2.6.2.2   Conformance requirement

CR1:   The SIM shall respond to a PTS-Request from the ME with a PTS-Response (optional).

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_ATR.

Test Procedure Reference (TPR): TPR_SIM_ELEC_ATR_PTS.

6.2.6.2.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.2.6.2.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test Procedure

a) The ME simulator resets the SIM.

  The SIM shall send the correct ATR sequence.

b) The ME simulator sends a PTS-Request to the SIM, selecting T=0 protocol.

  If the SIM supports PTS procedure it shall send a valid PTS-Response [CR1].

6.2.7 Major Capabilities

6.2.7.1 Definition and applicability

The SIM shall adhere to the electronic signals and transmission protocols defined in ~~3GPP TS 51.011~~3GPP TS 51.011 [1] and ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5] to ensure proper operation in the GSM environment.

6.2.7.2 Conformance requirement

CR1: Electronic signals and transmission protocols shall be in accordance with ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5] unless otherwise specified.

CR2: The choice of the transmission protocol(s), to be used to communicate between the ME and the SIM, shall at least include that specified and denoted by T=0 in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5].

CR3: The baudrate for all communications shall be: (clock frequency)/372.

CR4: The bit/character duration and sampling time specified in ~~ISO/IEC 7816-3~~ISO/IEC 7816-3 [5], subclauses 6.1.1 and 6.1.2, are valid for all communications.

CR5: Error detection and character repetition is mandatory for the SIM for all communications.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 5.

Test Group Reference (TGR): TGR_SIM_ELEC_MAJOR.

Test Procedure Reference (TPR): TPR_SIM_ELEC_MAJOR.

6.2.7.3 Test purpose

To verify that the SIM conforms to the above requirements.

  NOTE: The testing of CR1, CR2, CR3, CR4 and CR5 is outside the scope of the present document.

6.2.7.4 Method of test

Initial conditions

N/A

Test procedure

N/A

6.2.7.5 Test requirement

N/A

6.3   Application and File structure

The tests in this subclause ensure that the IUT is tested against the specification of the logical structure, for a SIM, the code associated with it, and the structure of the files used.

6.3.1   File identifier

6.3.1.1   File-type identification

6.3.1.1.1   Definition and applicability

A file identifier is used to address or identify each specific file.

6.3.1.1.2   Conformance requirement

   CR1:   For GSM, the Master File shall be coded as '3F 00'.
   CR2:   For GSM, file type '7F' shall be used to identify Dedicated Files.
   CR3:   For GSM, file type '2F' shall be used to identify Elementary Files under the Master File.
   CR4:   For GSM, file type '6F' shall be used to identify Elementary Files under a Dedicated File.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 6.

Test Group Reference (TGR): TGR_SIM_LOG_FID.

Test Procedure Reference (TPR): TPR_SIM_LOG_FID_FTI.

6.3.1.1.3   Test purpose

To verify that the SIM conforms to the above requirements.

6.3.1.1.4   Method of test

Initial conditions

   1) The SIM is connected to an ME simulator.

Test procedure

   a) The ME simulator resets the SIM.

   b) For each file of 3GPP TS 51.011 3GPP TS 51.011 [1], described in subclause 10.7, the ME simulator sends
       SELECT commands to the SIM to select the file and, if selected successfully, the ME simulator sends a GET
       RESPONSE command to the SIM.

       *After each successful SELECT and GET RESPONSE, byte 7 of the response data shall conform to the following
       table:*

File ID	*Type of File*
'3F 00'	*'01'*
'7F XX'	*'02'*
'2F XX'	*'04'*
'6F XX'	*'04'*

6.3.1.2   File ID assignments

6.3.1.2.1   Definition and applicability

A file identifier is used to address or identify each specific file. There are a number of rules regarding file ID assignment.

6.3.1.2.2   Conformance requirement

   CR1:   A file ID is assigned at the time of creation of the file concerned.
   CR2:   Two files under the same parent shall never have the same ID.
   CR3:   A child and any parent, either immediate or remote, in the hierarchy shall never have the same ID.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 6.

Test Group Reference (TGR): TGR_SIM_LOG_FID.

Test Procedure Reference (TPR): TPR_SIM_LOG_FID_FIA.

6.3.1.2.3   Test purpose

To verify that all files within the SIM structure conform to the above requirements.

   NOTE 1:   CR1 cannot be tested as the SELECT function requires the file ID in order to select files.

   NOTE 2:   CR2 and CR3 cannot be tested due to the operation of the SELECT function which should only ever
             select a single file for a given file ID.

6.3.1.2.4   Method of test

Initial conditions

N/A

Test procedure

N/A

6.3.1.2.5   Test requirement

N/A

6.3.2   Dedicated files

6.3.2.1   Definition and applicability

Dedicated Files provide a functional grouping of Elementary Files. In this way a structured hierarchy of files can be established on the SIM.

6.3.2.2   Conformance requirement

   CR1:   The SIM shall contain DF_{GSM}.
   CR2:   The SIM shall contain $DF_{TELECOM}$ (optional).

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclauses 6.4.1, 10.2 and 10.3.

Test Group Reference (TGR): TGR_SIM_LOG_DF.

Test Procedure Reference (TPR): TPR_SIM_LOG_DF.

6.3.2.3 Test purpose

To verify that the Dedicated Files within the SIM file structure conform to the above requirements.

6.3.2.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to the SIM to select DF$_{GSM}$.

   The status condition returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data [CR1].

c) The ME simulator resets the SIM.

d) The ME simulator sends a SELECT command to the SIM to select DF$_{TELECOM}$.

   The status condition returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data, if the SIM supports DF$_{TELECOM}$, otherwise the status condition returned by the SIM shall be SW1='94', SW2='04' - file ID not found [CR2].

6.3.3 Elementary files

6.3.3.1 Definition and applicability

Elementary Files structure the way in which information is held on the SIM and provide security on how this information is accessed.

6.3.3.2 Conformance requirement

CR1: The total data length of the body of an EF with transparent structure shall be indicated in the header of the EF.
CR2: The record length of an EF with linear fixed structure shall be indicated in the header of the EF.
CR3: The record length multiplied by the number of records of an EF with linear fixed structure shall be indicated in the header of the EF.
CR4: The SIM shall be able to access records within a linear fixed EF using all of the methods given in subclause 6.4.2.
CR5: For an EF with cyclic structure, when all the records have been used for storage, then the next storage of data shall overwrite the oldest information.
CR6: The SIM shall be able to access records within a cyclic EF using all of the methods given in subclause 6.4.3.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclauses 6.4.2.

Test Group Reference (TGR): TGR_SIM_LOG_EF.

Test Procedure Reference (TPR): TPR_SIM_LOG_EF.

6.3.3.3 Test purpose

To verify that the EFs within the SIM file structure conform to the above requirements.

   NOTE: CR4, CR5 and CR6 are tested in subclauses 6.5.5 and 6.5.6.

6.3.3.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator, and the ME simulator has reset the SIM.

Test procedure

The following steps are performed for all EFs in ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 10.4.

a) The ME simulator sends a SELECT command to select the required EF in the SIM.

b) If the EF is successfully selected, the ME simulator sends a GET RESPONSE command to the SIM.

c) The ME simulator fulfils the READ access condition of the EF.

d) If the EF is transparent, the ME simulator sends a READ BINARY command to the SIM. The length used shall be that of bytes 3 and 4 of the response data in step b).

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1].

e) If the EF is transparent, the ME simulator sends a READ BINARY command with offset '00 01' to the SIM. The length used shall be that of bytes 3 and 4 of the response data in step b).

   The status condition returned by the SIM shall indicate an error [CR1].

f) If the EF is linear fixed or cyclic, the ME simulator sends a READ RECORD using ABSOLUTE mode with record 1 to the SIM. The length used shall be that of byte 15 of the response data in step b).

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR2].

g) If the EF is linear fixed or cyclic, the ME simulator sends a READ RECORD using ABSOLUTE mode to the SIM. The record length used shall be that of byte 15 of the response data in step b) and the record number shall be that of bytes 3 and 4 of the response data in step b) divided by the record length.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR3].

h) If the EF is linear fixed or cyclic, the ME simulator sends a READ RECORD using ABSOLUTE mode to the SIM. The record length used shall be that of byte 15 of the response data in step b) and the record number shall be that of bytes 3 and 4 of the response data in step b) divided by the record length, plus 1.

   The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range (invalid address) [CR3].

6.3.4   Methods for selecting a file

6.3.4.1   Definition and applicability

The ME accesses information on the SIM navigating around the file structure by selecting DFs and EFs as required. There are a number of rules regarding which file elements may be selected from a given DF or EF.

6.3.4.2   Conformance requirement

CR1:   Selection of a DF or MF shall set the current Directory on the SIM.
CR2:   After a selection of a DF or MF there shall be no current EF.
CR3:   After a selection of an EF, the current EF shall be set to this EF and the current Directory shall remain the DF or MF which is the parent of this EF.
CR4:   Any application specific command shall only be operable if it is specific to the current Directory.
CR5:   It shall be possible to select the following from the last selected file:

a) any file which is an immediate child of the current Directory

b) any DF which is an immediate child of the parent of the current DF

c) the parent of the current Directory

d) the current DF

e) the MF

NOTE: Reselection of the last selected file is allowed.

CR6: It shall be possible to select any of the 'valid selections' in subclause 6.5 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] for each of the 'last selected file' entries.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 6.5.

Test Group Reference (TGR): TGR_SIM_LOG_SELFILE.

Test Procedure Reference (TPR): TPR_SIM_LOG_SELFILE.

6.3.4.3 Test purpose

To verify that the SIM conforms to the above requirements with regard to file selection.

NOTE: CR5 is tested for function RUN GSM ALGORITHM in subclause 6.6.2..16.

6.3.4.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select DF_{GSM}.

c) The ME simulator sends a STATUS command to the SIM.

Bytes 5 and 6 of the response data shall indicate that DF_{GSM} is the currently selected directory [CR1].

d) The ME simulator sends a READ BINARY command using a length of 1 byte to the SIM.

The status condition returned by the SIM shall be SW1='94', SW2='00' - no EF selected [CR2].

e) The ME simulator sends a SELECT command to the SIM to select EF_{LP}.

f) The ME simulator sends a GET RESPONSE command to the SIM.

Bytes 5 and 6 of the response data shall indicate that EF_{LP} is the currently selected EF [CR3].

g) The ME simulator sends a STATUS command to the SIM.

Bytes 5 and 6 of the response data shall indicate that DF_{GSM} is the currently selected directory [CR3].

h) Step i) is carried out for each file in subclause 6.5 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

i) Step j) is carried out for each one of the 'valid selections' in that line of the table.

j) Steps k) then l) are carried out in turn.

k) The ME simulator sends SELECT commands to the SIM to select the 'last selected file'.

l) The ME simulator sends a SELECT command to the SIM to select the 'valid selection'.

The status condition returned by the SIM shall be SW1='9F', SW2='XX' [CR5,6].

The following file IDs are used to represent the IDs in the table:

Table 12: IDs

Table	Actual
MF	MF
DF1	DF$_{TELECOM}$
DF2	DF$_{GSM}$
EF1	EF$_{ICCID}$
EF2	EF$_{ADN}$
EF3	EF$_{LP}$
EF4	EF$_{IMSI}$

NOTE: When EF$_{ADN}$ is not supported by the SIM, any supported EF in DF$_{TELECOM}$ may be chosen.

6.3.5   Reservation of file IDs

6.3.5.1   Definition and applicability

In order to accommodate planned and possible future requirements, certain file IDs are considered reserved, and may not be used in the SIM file structure.

6.3.5.2   Conformance requirement

CR1:   The following Dedicated File IDs are reserved for operational use by GSM:

-   '7F 10'.

-   '7F 2X'.

CR2:   The following Elementary File IDs are reserved for operational use by GSM:

-   '2F 1X' under MF.

-   '6F 2X', '6F 3X' and '6F 4X' under '7F 10' and '7F 2X'.

CR3:   The following Dedicated File IDs are reserved for administrative use by GSM:

-   '7F 4X'.

CR4:   The following Elementary File IDs are reserved for administrative use by GSM:

-   '2F 01', '2F EX' under MF.

-   '6F XX' under DFs '7F 4X'.

-   '6F 1X' under '7F 10', '7F 20' and '7F 21'.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 6.

Test Group Reference (TGR): TGR_SIM_LOG_ RSVD.

Test Procedure Reference (TPR): TPR_SIM_LOG_RSVD.

6.3.5.3   Test purpose

To verify that the SIM conforms to the above requirements.

NOTE: CR3 and CR4 cannot be tested as the administrative functionality is outside the scope of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

6.3.5.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) For all possible EFs on the SIM, the ME simulator sends SELECT commands to the SIM to select each EF in sequence.

   For all successful selections, the ID of the selected file shall be one of those in clause 10.4 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] or shall not be one of those listed as reserved for operational use. [CR1,2]

6.4   Security features

The tests in this subclause ensure that the IUT conforms with the security aspects which are related to the SIM.

6.4.1   Authentication and cipher key generation procedure

The authentication mechanism employed in the GSM system between the network and SIM to authenticate a SIM, results in a finite interaction with the SIM, through the use of the function RUN GSM ALGORITHM. In order to test the behaviour of the SIM during this authentication mechanism, it is sufficient to test the function which operates on the SIM during the authentication mechanism. The test procedure for the function itself shall be executed, as defined in subclause 6.5.16 ("RUN GSM ALGORITHM" function).

6.4.2   File access conditions

6.4.2.1   Definition and applicability

Every file has its own specific access condition for each command which shall be fulfilled before the command can take place.

6.4.2.2   Conformance requirement

CR1:   For access condition ALWAYS, the command can be performed without any restriction.
CR2:   For access condition CHV1, the command shall only be possible if one of the following three conditions is fulfilled:

a) A correct CHV1 value has already been presented to the SIM during the current session.

b) The CHV1 enabled/disabled indicator is set to "disabled".

c) UNBLOCK CHV1 has been successfully performed during the current session.

CR3:   For access condition CHV2, the command shall only be possible if one of the following two conditions is fulfilled:

a) a correct CHV2 value has already been presented to the SIM during the current session.

b) UNBLOCK CHV2 has been successfully performed during the current session.

CR4:   For access condition NEVER, the command shall not be possible over the SIM/ME interface.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 7.3.

Test Group Reference (TGR): TGR_SIM_SEC_FAC.

Test Procedure Reference (TPR): TPR_SIM_SEC_FAC.

6.4.2.3   Test purpose

To verify that the SIM conforms to the above requirements.

NOTE 1: Allocation of ADM levels and the respective requirements for their fulfilment are the responsibility of the appropriate administrative authority.

NOTE 2: CR2b and CR2c are tested in subclauses 6.6.2.11, 6.6.2.12 and 6.6.2.13.

NOTE 3: CR3b is not tested here although the UNBLOCK CHV function in subclause 6.6.2.13 intrinsically tests for CHV2.

6.4.2.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) EF$_{ADN}$ is present and not invalidated.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to the SIM to select EF$_{ICCID}$.

c) The ME simulator sends a READ BINARY command to the SIM to read the first 1 byte in EF$_{ICCID}$.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1].

d) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

e) The ME simulator sends a READ RECORD command to the SIM to read the first record in EF$_{ADN}$.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR2a].

f) The ME simulator gains CHV1 security access.

g) The ME simulator sends a READ RECORD command to the SIM to read the first record in EF$_{ADN}$.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR2a].

h) The ME simulator sends an INVALIDATE command to the SIM to invalidate EF$_{ADN}$.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR3a].

i) The ME simulator gains CHV2 security access.

j) The ME simulator sends an INVALIDATE command to the SIM to invalidate EF$_{ADN}$.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR3a].

k) The ME simulator sends SELECT commands to the SIM to select EF$_{ICCID}$ under MF.

l) The ME simulator sends an UPDATE BINARY command to the SIM to update the byte in EF$_{ICCID}$ with the byte read in step c).

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR4].

6.5   Void

6.6   Description of the commands

The tests in this subclause ensure that the IUT conforms to the specification for the mapping of functions onto Application Protocol Data Units (APDUs) which are used by the transmission protocol.

6.6.1 Mapping principles

6.6.1.1 Definition and applicability

The transmission protocol requires that the command and response Application Protocol Data Units (APDUs) are mapped using certain principles, in order to ensure correct operation in the GSM environment.

6.6.1.2 Conformance requirement

CR1: The command APDU shall have format (CLA, INS, P1, P2, P3 {, data}).
CR2: The response APDU shall have format ({data,} SW1, SW2).
CR3: The class 'A0' shall be accepted by the SIM.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.1.

Test Group Reference (TGR): TGR_SIM_CMD_MAP.

Test Procedure Reference (TPR): TPR_SIM_CMD_MAP.

6.6.1.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.6.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator gains the security access condition(s) specified by the administrative authority for both INVALIDATE and REHABILITATE on EF_{LOCI}.

c) The ME simulator sends SELECT commands to the SIM to select DF_{GSM}.

d) The ME simulator sends a VERIFY CHV command to the SIM.

e) The ME simulator sends a SELECT command to the SIM to select EF_{LOCI}.

   - [Bytes sent: CLA='A0', INS='A4', P1='00', P2='00', P3='02', data='6F 7E'].

   - [Bytes received: SW1, $SW2_1$].

   The SIM shall have sent SW1='9F' and SW2='lgth' [CR1].

f) The ME simulator sends a GET RESPONSE command to the SIM, requesting all of the available response data, as indicated by $SW2_1$.

   - [Bytes sent: CLA='A0', INS='C0', P1='00', P2='00', P3=$SW2_1$].

   - [Bytes received: data, SW1, SW2].

   The SIM shall have sent 'lgth' bytes followed by SW1='90' and SW2='00' [CR2].

g) The ME simulator sends a READ BINARY command to the SIM to read both bytes.

   - [Bytes sent: CLA='A0', INS='B0', P1='00', P2='00', P3='02'].

   - [Bytes received: data, SW1, SW2].

   The SIM shall have sent 2 bytes followed by SW1='90' and SW2='00'.

h) The ME simulator sends an INVALIDATE command to the SIM.

- [Bytes sent: CLA='A0', INS='04', P1='00', P2='00', P3='00'].

- [Bytes received: SW1, SW2].

The SIM shall have sent SW1='90' and SW2='00'.

i) The ME simulator sends a REHABILITATE command to the SIM.

6.6.2 Coding of the commands

The test procedures defined in subclause 6.5 of the present document, "Descriptions of the functions", intrinsically test most the coding of the associated commands. Therefore, test purposes exist in this subclause only to cover areas of testing not already covered by subclause 6.5.

6.6.2.1 SELECT command

6.6.2.1.1 Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.1.2 Conformance requirement

CR1:   The SELECT function shall select a file according to the methods described in clause 6.5 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

CR2:   The function shall accept as an input, a file ID.

CR3:   If the selected file is the MF or a DF, then the function shall output the file ID, total memory space available, CHV enabled/disabled indicator and CHV status.

CR4:   If the selected file is an EF, then the function shall output the file ID, access conditions, invalidation indicator, structure of EF and the length of the records in the case of linear fixed or cyclic structure.

CR5:   The record pointer in a cyclic file shall address the last record which has been updated or increased.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.1.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_SEL.

6.6.2.1.3 Test purpose

To verify that the SELECT function conforms to the above requirements for the different file types available.

NOTE: CR1 is tested in subclause 6.3.5.

6.6.2.1.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) The records in EF_{ACM} contain the following data:

- Record 1: '11 11 11' (last updated record).

- Record 2: '22 22 22'.

- Record 3: '33 33 33'.

3) The record length of EF_{ADN} is known.

Test procedure and Requirements

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to select DF$_{GSM}$.

   The status returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data [CR2].

c) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data [CR3]:

   - *Bytes 5 and 6 shall indicate that DF$_{GSM}$ is the currently selected file.*

   - *Byte 7 shall be '02' indicating a DF.*

   - *Byte 13 shall be less than or equal to SW2 from step b) minus 13.*

   - *Bit 8 of byte 14 shall be 0 indicating that CHV1 is enabled.*

   - *Byte 15 shall indicate the correct number of DFs which are a direct child of DF$_{GSM}$.*

   - *Byte 16 shall indicate the correct number of EFs which are a direct child of DF$_{GSM}$.*

   - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

   - *Bits 1 through 4 of byte 21 shall indicate three VERIFY CHV2 attempts remaining.*

   - *Bits 1 through 4 of byte 20 shall indicate ten UNBLOCK CHV1 attempts remaining.*

   - *Bits 1 through 4 of byte 22 shall indicate ten UNBLOCK CHV2 attempts remaining.*

d) The ME simulator sends a SELECT command to the SIM to select the MF.

e) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data [CR3]:

   - *Byte 7 shall be '01' indicating MF.*

   - *Byte 15 shall indicate the correct number of DFs which are a direct child of MF.*

   - *Byte 16 shall indicate the correct number of EFs which are a direct child of MF.*

f) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

g) The ME simulator send a SELECT command to the SIM to select DF$_{GSM}$.

h) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data [CR3]:

   - *Bits 1 through 4 of byte 19 shall indicate two VERIFY CHV1 attempts remaining.*

i) The ME simulator sends a DISABLE CHV command to the SIM.

j) The ME simulator send a SELECT command to the SIM to select DF$_{GSM}$.

k) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data [CR3]:

   - *Bit 8 of byte 14 shall be 1 indicating that CHV1 is disabled.*

   - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

l) The ME simulator sends a SELECT command to the SIM to select the MF.

m) The ME simulator sends a SELECT command to the SIM to select DF$_{TELECOM}$.

n) The ME simulator sends a ENABLE CHV command to the SIM.

o) The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$.

p) The ME simulator sends a GET RESPONSE command to the SIM.

The following shall be true of the response data [CR4]:

- *Bytes 5 and 6 shall indicate that EF$_{ADN}$ is the currently selected file.*

- *Bytes 9 through 11 shall state the access conditions in subclause 10 of* ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

- *Bit 1 of byte 12 shall be 1 indicating that the file is not invalidated.*

- *Byte 14 shall be '01' indicating linear fixed structure.*

- *Byte 15 shall indicate the length of the records.*

q) The ME simulator sends a VERIFY CHV command to the SIM with **correct** CHV2.

r) The ME simulator sends an INVALIDATE command to the SIM.

s) The ME simulator sends a SELECT command to the SIM to re-select EF$_{ADN}$.

t) The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall indicate the following [CR4]:

- *Bit 1 of byte 12 shall be 0 indicating that the file **is** invalidated.*

u) The ME simulator sends a REHABILITATE command to the SIM.

v) The ME simulator sends a SELECT command to the SIM to select DF$_{GSM}$.

w) The ME simulator sends a SELECT command to the SIM to select EF$_{ACM}$.

x) The ME simulator sends a GET RESPONSE command to the SIM.

The following shall be true of the response data [CR4]:

- *Byte 14 shall be '03' indicating cyclic structure.*

y) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The response data shall be '11 11 11' [CR5].

6.6.2.2 STATUS command

6.6.2.2.1 Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.2.2 Conformance requirement

CR1: The STATUS function shall output the file ID, total memory space available, CHV enabled/disabled indicator and CHV status of the currently selected MF or DF.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.2.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_STATUS.

6.6.2.2.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.6.2.2.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure and Requirements

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to select DF$_{GSM}$.

c) The ME simulator sends a STATUS command to the SIM.

The following shall be true of the response data [CR1]:

- *Bytes 5 and 6 shall indicate that DF$_{GSM}$ is the currently selected file.*

- *Byte 7 shall be '02' indicating a DF.*

- *Byte 13 shall be less than or equal to SW2 from step b) minus 13.*

- *Bit 8 of byte 14 shall be 0 indicating that CHV1 is enabled.*

- *Byte 15 shall indicate the correct number of DFs which are a direct child of DF$_{GSM}$.*

- *Byte 16 shall indicate the correct number of EFs which are a direct child of DF$_{GSM}$.*

- *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining if CHV1 is initialized.*

- *Bits 1 through 4 of byte 21 shall indicate three VERIFY CHV2 attempts remaining if CHV2 is initialized.*

- *Bits 1 through 4 of byte 20 shall indicate ten UNBLOCK CHV1 attempts remaining if CHV1 is initialized.*

- *Bits 1 through 4 of byte 22 shall indicate ten UNBLOCK CHV2 attempts remaining if CHV2 is initialized.*

d) The ME simulator sends a SELECT command to the SIM to select the MF.

e) The ME simulator sends a STATUS command to the SIM.

The following shall be true of the response data [CR1]:

- *Byte 7 shall be '01' indicating MF.*

- *Byte 15 shall indicate the correct number of DFs which are a direct child of MF.*

- *Byte 16 shall indicate the correct number of EFs which are a direct child of MF.*

f) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

g) The ME simulator send a SELECT command to the SIM to select DF$_{GSM}$.

h) The ME simulator sends a STATUS command to the SIM.

The following shall be true of the response data [CR1]:

- *Bits 1 through 4 of byte 19 shall indicate two VERIFY CHV1 attempts remaining.*

i) The ME simulator sends a DISABLE CHV command to the SIM.

j) The ME simulator send a SELECT command to the SIM to select DF$_{GSM}$.

k) The ME simulator sends a STATUS command to the SIM.

The following shall be true of the response data [CR1]:

- *Bit 8 of byte 14 shall be 1 indicating that CHV1 is disabled.*

- *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

6.6.2.3   READ BINARY command

6.6.2.3.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.3.2   Conformance requirement

CR1:   The READ BINARY function shall read a string of bytes from the current transparent EF.
CR2:   The function shall accept as an input, the relative address (offset) and the length (in bytes) of the string.
CR3:   The function shall output the string of bytes.
CR4:   The function shall only be performed if the READ access condition for the current EF is satisfied.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.3.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_RDBIN.

6.6.2.3.3   Test purpose

To verify that the READ BINARY function conforms to the above requirements.

6.6.2.3.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) EF_{Kc} contains the data string: 'A1 A2 A3 A4 A5 A6 A7 A8 A9'.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{Kc} under DF_{GSM}.

c) The ME simulator sends a READ BINARY command using a length of 9 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR4].

d) The ME simulator sends a VERIFY CHV command to the SIM.

e) The ME simulator sends a READ BINARY command using a length of 9 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1-4].

   The data string returned shall be 'A1 A2 A3 A4 A5 A6 A7 A8 A9' [CR1-4].

f) The ME simulator sends a READ BINARY command using a length of 1 byte to the SIM.

   The data string returned shall be 'A1'.

g) The ME simulator sends a READ BINARY command using an offset of '00 01' and length 8 byte to the SIM.

   The data string returned shall be 'A2 A3 A4 A5 A6 A7 A8 A9' [CR1-4].

h) The ME simulator sends a READ BINARY command using a length of 10 bytes to the SIM.

The status condition returned by the SIM shall be SW1='67', SW2='09' or '00' - incorrect parameter P3.

i) The ME simulator sends a READ BINARY command using an offset of '00 0A' and length 1 byte to the SIM.

The status condition returned by the SIM shall be SW1='6B', SW2='XX' - incorrect parameter P1 or P2.

j) The ME simulator sends a READ BINARY command using an offset of '00 05' and length 5 bytes to the SIM.

An error status condition shall be returned by the SIM.

6.6.2.4   UPDATE BINARY command

6.6.2.4.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.4.2   Conformance requirement

1) The UPDATE BINARY function shall update the current transparent EF with a string of bytes.

2) The function shall accept as an input, the relative address (offset), the length (in bytes) of the string, and the string of bytes.

3) The function shall only be performed if the UPDATE access condition for the current EF is satisfied.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.4.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_UPBIN.

6.6.2.4.3   Test purpose

To verify that the UPDATE BINARY function conforms to the above requirements.

6.6.2.4.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) EF_{Kc} contains the data string: 'FF FF FF FF FF FF FF FF FF'.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{Kc} under DF_{GSM}.

c) The ME simulator sends an UPDATE BINARY command using a length of 9 bytes, and data string 'A1 A2 A3 A4 A5 A6 A7 A8 A9' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR3].

d) The ME simulator sends a VERIFY CHV command to the SIM.

e) The ME simulator sends a READ BINARY command using a length of 9 bytes to the SIM.

The data string returned shall be 'FF FF FF FF FF FF FF FF FF'.

f) The ME simulator sends an UPDATE BINARY command using a length of 9 bytes, and data string 'A1 A2 A3 A4 A5 A6 A7 A8 A9' to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' [CR3].

g) The ME simulator sends a READ BINARY command using a length of 9 bytes to the SIM.

The data string returned shall be 'A1 A2 A3 A4 A5 A6 A7 A8 A9' [CR1].

h) The ME simulator sends an UPDATE BINARY command using a length of 1 byte, and data string 'E4' to the SIM.

i) The ME simulator sends a READ BINARY command using a length of 9 bytes to the SIM.

The data string returned shall be 'E4 A2 A3 A3 A4 A5 A6 A7 A8 A9' [CR1].

j) The ME simulator sends an UPDATE BINARY command using an offset of '00 01', a length 1 byte, and data string 'E5' to the SIM.

k) The ME simulator sends a READ BINARY command using a length of 9 bytes to the SIM.

The data string returned shall be 'E4 E5 A3 A3 A4 A5 A6 A7 A8 A9' [CR1].

6.6.2.5   READ RECORD command

6.6.2.5.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.5.2   Conformance requirement

CR1:   The READ RECORD function shall read one complete record in the current linear fixed or cyclic EF.
CR2:   The function shall accept as an input, the mode, record number if absolute mode, and the length of the record.
CR3:   The function shall output the record specified by the mode.
CR4:   The function shall only be performed if the READ access condition for the current EF is satisfied.
CR5:   If the mode is CURRENT, the current record is read.
CR6:   If the mode is CURRENT, the record pointer is not affected.
CR7:   If the mode is ABSOLUTE, the record given by the record number is read.
CR8:   If the mode is ABSOLUTE, the record pointer is not affected.
CR9:   If the mode is NEXT, the record pointer is incremented before the function is performed and the pointed record is read.
CR10:   If the mode is NEXT, and the record pointer has not been previously been set within the selected EF, the **first** record shall be read and the record pointer set to this record.
CR11:   If the mode is NEXT, and the record pointer addresses the last record in a linear fixed EF, the record pointer shall not change and no data shall be read.
CR12:   If the mode is NEXT, and the record pointer addresses the last record in a cyclic EF, the **first** record shall be read and the record pointer set to this record.
CR13:   If the mode is PREVIOUS, the record pointer is decremented before the function is performed and the pointed record is read.
CR14:   If the mode is PREVIOUS, and the record pointer has not been previously been set within the selected EF, the **last** record shall be read and the record pointer set to this record.
CR15:   If the mode is PREVIOUS, and the record pointer addresses the first record in a linear fixed EF, the record pointer shall not change and no data shall be read.
CR16:   If the mode is PREVIOUS, and the record pointer addresses the first record in a cyclic EF, the **last** record shall be read and the record pointer set to this record.
CR17:   The record pointer shall not be changed if the function is unsuccessful.
CR18:   For modes NEXT and PREVIOUS, P1 has no significance and shall not be interpreted by the SIM.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.5.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_RDREC.

6.6.2.5.3   Test purpose

To verify that the READ RECORD function conforms to the above requirements using two test procedures.

   NOTE: CR12 and CR16 can only be tested if EF$_{ACM}$ is present.

6.6.2.5.4   Method of test

Initial conditions

   1) The SIM is connected to an ME simulator.

   2) The records in EF$_{ADN}$ contain the following data for the first 16 bytes:

      -   First record: '10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F'.

      -   Second record: '20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F'.

      -   Second last record: 'E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF'.

      -   Last record: 'F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF'.

      -   The data for the remainder of these two records and for all other records (if any) is 'FF'.

   3) The records in EF$_{ACM}$ contain the following data:

      -   Record 1: '01 01 01' (last updated record).

      -   Record 2: '02 02 02'.

      -   Record 3: '03 03 03'.

      -   …and so on for all records…

      -   Record X: '0X 0X 0X' (first updated record).

Test procedure 1 and Requirements

   a) The ME simulator resets the SIM.

   b) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

   c) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

      The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR4].

   d) The ME simulator sends a VERIFY CHV command to the SIM.

   e) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

      The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR4].

      The record data returned shall be that of the first record in EF$_{ADN}$ [CR1-4,7].

   f) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

   g) The ME simulator sends a READ RECORD command using NEXT mode to the SIM.

   h) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 2 to the SIM.

      The record data returned shall be that of the second record in EF$_{ADN}$ [CR7].

   i) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

      The record data returned shall be that of the first record in EF$_{ADN}$ [CR5,8].

j) The ME simulator sends a READ RECORD command using NEXT mode to the SIM.

The record data returned shall be that of the second record in EF$_{ADN}$ [CR6].

k) The ME simulator sends a READ RECORD command using ABSOLUTE mode with the last record to the SIM.

The record data returned shall be that of the last record in EF$_{ADN}$ [CR7].

l) The ME simulator sends a READ RECORD command using ABSOLUTE mode with the last record + 1 to the SIM.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range.

m) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the second record in EF$_{ADN}$ [CR17].

n) The ME simulator sends SELECT commands to the SIM to select EF$_{ACM}$ under DF$_{GSM}$.

o) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the first record in EF$_{ACM}$ [CR1,5].

p) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 3 to the SIM.

The record data returned shall be that of the record 3 in EF$_{ACM}$ [CR1,7].

q) The ME simulator sends a READ RECORD command using ABSOLUTE mode with the last record + 1 to the SIM.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range.

r) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the first record in EF$_{ACM}$ [CR17].

Test procedure 2 and Requirements

a) The ME simulator resets the SIM.

b) The ME simulator sends a VERIFY CHV command to the SIM.

c) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

d) The ME simulator sends a READ RECORD command using NEXT mode to the SIM.

The record data returned shall be that of the first record in EF$_{ADN}$ [CR10].

e) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the first record in EF$_{ADN}$ [CR10].

f) The ME simulator sends a READ RECORD command using NEXT mode to the SIM with P1 = 'FF'.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR18].

The record data returned shall be that of the second record in EF$_{ADN}$ [CR9].

g) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the second record in EF$_{ADN}$ [CR9].

h) The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$.

i) The ME simulator sends a READ RECORD command using PREVIOUS mode to the SIM.

The record data returned shall be that of the last record in EF$_{ADN}$ [CR14].

j) The ME simulator sends a READ RECORD command using NEXT mode to the SIM.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range [CR11].

k) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the last record in EF$_{ADN}$ [CR11].

l) The ME simulator sends a READ RECORD command using PREVIOUS mode with P1 = 'FF' to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR18].

The record data returned shall be that of the second last record in EF$_{ADN}$ [CR13].

m) The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$.

n) The ME simulator sends a READ RECORD command using NEXT mode to the SIM.

o) The ME simulator sends a READ RECORD command using PREVIOUS mode to the SIM.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range [CR15].

p) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the first record in EF$_{ADN}$ [CR15].

q) The ME simulator sends SELECT commands to the SIM to select EF$_{ACM}$.

r) The ME simulator sends a READ RECORD command using PREVIOUS mode to the SIM.

The record data returned shall be that of the last record (record X) in EF$_{ACM}$ [CR16].

s) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the last record (record X) in EF$_{ACM}$ [CR16].

t) The ME simulator sends a READ RECORD command using NEXT mode to the SIM.

The record data returned shall be that of the first record (record 1) in EF$_{ACM}$ [CR12].

u) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the first record (record 1) in EF$_{ACM}$ [CR12].

6.6.2.6   UPDATE RECORD command

6.6.2.6.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.6.2   Conformance requirement

CR1:	The UPDATE RECORD function shall update one complete record in the current linear fixed or cyclic EF.
CR2:	The function shall accept as an input, the mode, record number if absolute mode, the length of the record, and the data used for updating the record.
CR3:	The function shall only be performed if the UPDATE access condition for the current EF is satisfied.
CR4:	For cyclic files, only PREVIOUS mode is allowed.
CR5:	If the mode is CURRENT, the current record is updated
CR6:	If the mode is CURRENT, the record pointer is not affected.
CR7:	If the mode is ABSOLUTE, the record given by the record number is updated.
CR8:	If the mode is ABSOLUTE, the record pointer is not affected.

CR9: If the mode is NEXT, the record pointer is incremented before the function is performed and the pointed record is updated.

CR10: If the mode is NEXT, and the record pointer has not previously been set within the selected EF, the **first** record shall be updated and the record pointer set to this record.

CR11: If the mode is NEXT, and the record pointer addresses the last record, the record pointer shall not change and no record shall be updated.

CR12: If the mode is PREVIOUS, the record pointer is decremented before the function is performed and the pointed record is updated.

CR13: If the mode is PREVIOUS, and the record pointer has not previously been set within the selected EF, the **last** record shall be updated and the record pointer set to this record.

CR14: If the mode is PREVIOUS, and the record pointer addresses the first record, the record pointer shall not change and no record shall be updated.

CR15: If the mode is PREVIOUS and the EF is a cyclic file, the oldest record is updated, the record pointer set to this record, and this record shall become the first record.

CR16: The record pointer shall not be changed if the function is unsuccessful.

CR17: For modes NEXT and PREVIOUS, P1 has no significance and shall not be interpreted by the SIM.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 9.2.6.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_UPREC.

6.6.2.6.3 Test purpose

To verify that the UPDATE RECORD function conforms to the above requirements for the different modes available.

NOTE: CR4 and CR13 can only be tested if EF_{ACM} is present.

6.6.2.6.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) The records in EF_{ADN} contain the following data for the first 16 bytes:

    - First record: '10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F'.

    - Second record: '20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F'.

    - Second last record: 'E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF'.

    - Last record: 'F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF'.

    - The data for the remainder of these two records and for all other records (if any) is 'FF'.

3) The records in EF_{ACM} contain the following data:

    - Record 1: '01 01 01' (last updated record).

    - Record 2: '02 02 02'.

    - Record 3: '03 03 03'.

    - …and so on for all records…

    - Record X: '0X 0X 0X' (first updated record).

Test procedure 1 and Requirements

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{ADN} under $DF_{TELECOM}$.

c) The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with record 1 to the SIM. The data used is 'C1' for all bytes.

The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR3].

d) The ME simulator sends a VERIFY CHV command to the SIM.

e) The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with record 1 to the SIM. The data used is 'C2' for all bytes.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR3].

f) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

The record data returned shall be 'C2' for all bytes [CR1-3,7].

g) The ME simulator sends SELECT commands to the SIM to select EF_{ADN} under $DF_{TELECOM}$.

h) The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'D0' for all bytes.

i) The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with record 2 to the SIM. The data used is 'C3' for all bytes.

j) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 2 to the SIM.

The record data returned shall be 'C3' for all bytes[CR7].

k) The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'C4' for all bytes.

l) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

The record data returned shall be 'C4' for all bytes [CR5,8].

m) The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'C5' for all bytes.

n) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 2 to the SIM.

The record data returned shall be 'C5' for all bytes [CR8].

o) The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with the last record to the SIM. The data used is 'C7' for all bytes.

p) The ME simulator sends a READ RECORD command using ABSOLUTE mode with the last record to the SIM.

The record data returned shall be 'C7' for all bytes [CR7].

q) The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with the last record + 1 to the SIM. The data used is 'C8' for all bytes.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range.

r) The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'C9' for all bytes.

s) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 2 to the SIM.

The record data returned shall be 'C9' for all bytes [CR16].

t) The ME simulator sends SELECT commands to the SIM to select EF_{ACM} under DF_{GSM}.

u) The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'CA' for all bytes.

The status condition returned by the SIM shall be SW1='6B', SW2='XX' - file is inconsistent with the command [CR4].

v)   The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with record 3 to the SIM. The data used is 'CB' for all bytes.

The status condition returned by the SIM shall be SW1='6B', SW2='XX' - file is inconsistent with the command [CR4].

Test procedure 2 and Requirements

a)   The ME simulator resets the SIM.

b)   The ME simulator sends a VERIFY CHV command to the SIM.

c)   The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

d)   The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'C2' for all bytes.

e)   The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

The record data returned shall be 'C2' for all bytes [CR10].

f)   The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'C3' for all bytes.

g)   The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

The record data returned shall be 'C3' for all bytes [CR10].

h)   The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM with P1 = 'FF'. The data used is 'C4' for all bytes.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR17].

i)   The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 2 to the SIM.

The record data returned shall be 'C4' for all bytes [CR9,17].

j)   The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'C5' for all bytes.

k)   The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 2 to the SIM.

The record data returned shall be 'C5' for all bytes [CR9].

l)   The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$.

m)   The ME simulator sends an UPDATE RECORD command using PREVIOUS mode to the SIM. The data used is 'C6' for all bytes.

n)   The ME simulator sends a READ RECORD command using ABSOLUTE mode with the last record to the SIM.

The record data returned shall be 'C6' for all bytes [CR13].

o)   The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'C7' for all bytes.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range [CR11].

p)   The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'C8' for all bytes.

q)   The ME simulator sends a READ RECORD command using ABSOLUTE mode with the last record to the SIM.

The record data returned shall be 'C8' for all bytes [CR16].

r)   The ME simulator sends an UPDATE RECORD command using PREVIOUS mode with P1 = 'FF' to the SIM. The data used is 'C9' for all bytes.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR17].

s) The ME simulator sends a READ RECORD command using ABSOLUTE mode with the second last record to the SIM.

The record data returned shall be 'C9' for all bytes [CR12,17].

t) The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$.

u) The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'CA' for all bytes.

v) The ME simulator sends an UPDATE RECORD command using PREVIOUS mode to the SIM. The data used is 'CB' for all bytes.

The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range [CR13].

w) The ME simulator sends an UPDATE RECORD command using CURRENT mode to the SIM. The data used is 'CC' for all bytes.

x) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

The record data returned shall be 'CC' for all bytes [CR16].

y) The ME simulator sends SELECT commands to the SIM to select EF$_{ACM}$ under DF$_{GSM}$.

z) The ME simulator sends an UPDATE RECORD command using PREVIOUS mode to the SIM. The data used is 'CD' for all bytes.

aa) The ME simulator sends a READ RECORD command using ABSOLUTE mode with the first record (record 1) to the SIM.

The record data returned shall be 'CD' for all bytes [CR15].

ab) The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'C2' for all bytes.

The status condition returned by the SIM shall be SW1='6B', SW2='XX' - file is inconsistent with the command [CR4].

6.6.2.7   SEEK command

6.6.2.7.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.7.2   Conformance requirement

CR1:   The SEEK function shall search through the current linear fixed EF to find a record starting with the given pattern.
CR2:   The function shall accept as an input, the type and mode, pattern and length of pattern.
CR3:   The SEEK function shall support both type 1 and type 2.
CR4:   For a type 2 SEEK, the function shall output the record number.
CR5:   The SEEK function shall support the following modes:

a) from the beginning forwards;

b) from the end backwards;

c) from the next location forwards;

d) from the previous location backwards.

CR6:   The function shall only be performed if the READ access condition for the current EF is satisfied.

CR7:   If the parameter P3 indicates a pattern-length greater than the record length, the SIM shall send the status information 'incorrect parameter P3'.

CR8:   The SIM shall be able to accept any pattern length from 1 to 16 bytes inclusive.

CR9:   For a SEEK function of next location forwards, if the record pointer has not been previously set within the selected linear fixed EF, the search begins with the **first** record.

CR10:   For a SEEK function of previous location backwards, if the record pointer has not been previously set within the selected linear fixed EF, the search begins with the **last** record.

CR11:   After a successful SEEK function, the record pointer shall be set to the record in which the pattern was found.

CR12:   The record pointer shall not be changed by an unsuccessful SEEK function.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 9.2.7.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_SEEK.

6.6.2.7.3   Test purpose

To verify that the SEEK function conforms to the above requirements for the different modes available.

6.6.2.7.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) The records in EF$_{ADN}$ contain the following data for the first 16 bytes:

   - record 1: 'A0 A1 A2 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D'.

   - record 2: 'A0 A1 A2 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D'.

   - The data for the remainder of these two records and for all other records is 'FF'.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

c) The ME simulator sends a type 1 SEEK command using the 'from the beginning forwards' mode, a pattern-length of 1, and pattern 'A0' to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR6].

d) The ME simulator sends a VERIFY CHV command to the SIM.

e) The ME simulator sends a type 1 SEEK command using the 'from the beginning forwards' mode, a pattern-length of 1, and pattern 'A0' to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1-3,6].

f) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

g) The ME simulator sends a type 2 SEEK command using the 'from the beginning forwards' mode, a pattern-length of 1, and pattern 'A0' to the SIM.

   The status condition returned by the SIM shall be SW1='9F', SW2='01' [CR1-3,8].

h) The ME simulator sends a GET RESPONSE command to the SIM.

   The response data shall be '01' indicating that the first record has been found [CR4].

i) The ME simulator sends a type 2 SEEK command using the 'from the beginning forwards' mode, a pattern-length of 3, and pattern 'A0 A1 A2' to the SIM.

j)   The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall be '01' indicating that the first record has been found [CR5a].

k)   The ME simulator sends a type 2 SEEK command using the 'from the end backwards' mode, a pattern-length of 3, and pattern 'A0 A1 A2' to the SIM.

l)   The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall be '02' indicating that the second record has been found [CR5b].

m) The ME simulator sends a type 2 SEEK command using the 'from the previous location backwards' mode, a pattern-length of 16, and the following pattern to the SIM:

'A0 A1 A2 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D'

The status condition returned by the SIM shall be SW1='9F', SW2='01' [CR8].

n)   The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall be '01' indicating that the first record has been found [CR5d].

o)   The ME simulator sends a type 2 SEEK command using the 'from the next location forwards' mode, a pattern-length of 3, and pattern 'A0 A1 A2' to the SIM.

p)   The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall be '02' indicating that the second record has been found [CR5c].

q)   The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$ again.

r)   The ME simulator sends a type 2 SEEK command using the 'from the next location forwards' mode, a pattern-length of 3, and pattern 'A0 A1 A2' to the SIM.

s)   The ME simulator sends a GET RESPONSE command to the SIM to retrieve the single byte of response data.

The response data shall be '01' indicating that the first record has been found [CR9].

t)   The ME simulator sends a SELECT command to the SIM to select EF$_{ADN}$ again.

u)   The ME simulator sends a type 2 SEEK command using the 'from the previous location backwards' mode, a pattern-length of 3, and pattern 'A0 A1 A2' to the SIM.

v)   The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall be '02' indicating that the second record has been found [CR10].

w) The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the second record in EF$_{ADN}$ [CR11].

x)   The ME simulator sends a type 2 SEEK command using the 'from the beginning forwards' mode, a pattern-length of 5, and pattern 'A1 A2 11 12 13' to the SIM.

The status condition returned by the SIM shall be SW1='94', SW2='04' - pattern not found [CR1].

y)   The ME simulator sends a READ RECORD command using CURRENT mode to the SIM.

The record data returned shall be that of the second record in EF$_{ADN}$ [CR12].

z)   The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

aa) The ME simulator sends a type 2 SEEK command using the 'from the beginning forwards' mode, a pattern-length of one more than the record size of EF$_{ADN}$, and 'FF' for all pattern bytes to the SIM.

The status condition returned by the SIM shall be SW1='67', SW2='XX' - incorrect parameter P3 [CR7]

6.6.2.8 INCREASE command

6.6.2.8.1 Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] and containing EF_{ACM} and EF_{ACMMAX} to support all functions described therein.

6.6.2.8.2 Conformance requirement

CR1: This function shall add the value given to the value of the last increased/updated record of the current cyclic EF and store the result into the oldest record.
CR2: The record pointer shall be set to this record and this record becomes the first record.
CR3: The function shall only be used if the INCREASE access condition is fulfilled.
CR4: The function shall accept as an input, the value to be added.
CR5: The function shall output the value of the increased record and the value which has been added.
CR6: The SIM shall not perform the INCREASE if the result would exceed the maximum value of the record (represented by all bytes set to 'FF').

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.8.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_INC.

6.6.2.8.3 Test purpose

To verify that the INCREASE function conforms to the above requirements.

6.6.2.8.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) Each record in EF_{ACM} contains the data '00 00 01'.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{ACM} under DF_{GSM}.

c) The ME simulator sends an INCREASE command with value '00 00 02' to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR3].

d) The ME simulator sends a VERIFY CHV command to the SIM.

e) The ME simulator sends an INCREASE command with value '00 00 03' to the SIM.

   The status condition returned by the SIM shall be SW1='9F', SW2='06' [CR4].

f) The ME simulator sends a GET RESPONSE command to the SIM.

   The response data shall be '00 00 04 00 00 03' [CR1,5].

g) The ME simulator sends an INCREASE command with value '01 02 00' to the SIM.

h) The ME simulator sends a GET RESPONSE command to the SIM.

   The response data shall be '01 02 04 01 02 00' [CR1].

i) The ME simulator sends a READ RECORD command using ABSOLUTE mode with record 1 to the SIM.

   The data read shall be '01 02 04' [CR2].

j) The ME simulator sends an INCREASE command with value ' FF 00 00' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='50' - increase cannot be performed - Max value reached [CR6].

k) The ME simulator sends an INCREASE command with value '00 FF FD' to the SIM.

l) The ME simulator sends a GET RESPONSE command to the SIM.

The response data shall be '02 02 01 00 FF FD' [CR5].

6.6.2.9 VERIFY CHV command

6.6.2.9.1 Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.9.2 Conformance requirement

CR1: This function shall verify the CHV presented by comparing it with the one stored in the SIM.
CR2: The function shall accept as input, an indication of CHV1/CHV2 and the CHV.
CR3: The verification process shall be subject to the following conditions being fulfilled:

a) CHV is not disabled;

b) CHV is not blocked.

CR4: If the access condition for a function to be performed on a file is CHV1 or CHV2, then a successful verification of the relevant CHV shall be required prior to the use of the function on this file unless the CHV is disabled.
CR5: If the CHV presented is correct, the number of remaining CHV attempts for that CHV shall be reset to its initial value 3.
CR6: If the CHV presented is false, the number of remaining CHV attempts for that CHV shall be decremented.
CR7: After 3 consecutive false CHV attempts, not necessarily in the same card session, the respective CHV shall be blocked and the access condition never fulfilled until the UNBLOCK CHV function has been successfully performed on the respective CHV.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.9.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_VERCHV.

6.6.2.9.3 Test purpose

To verify that the VERIFY CHV function conforms to the above requirements.

NOTE: This function is only tested for CHV1. It is assumed that if the function operates correctly for CHV1, it will also operate correctly for CHV2 or other CHV.

6.6.2.9.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) CHV1 on the SIM is set to '00000000'.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF$_{Kc}$ under DF$_{GSM}$.

c) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR4].

d) The ME simulator sends a VERIFY CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1,2].

e) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR4].

f) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' -unsuccessful CHV verification, at least one attempt left.

g) The ME simulator sends a STATUS command to the SIM.

   The following shall be true of the response data [CR6]:

   - *Bits 1 through 4 of byte 19 shall indicate two VERIFY CHV1 attempts remaining.*

h) The ME simulator sends a VERIFY CHV command to the SIM.

i) The ME simulator sends a STATUS command to the SIM.

   The following shall be true of the response data [CR5]:

   - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

j) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' -unsuccessful CHV verification, at least one attempt left.

k) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' -unsuccessful CHV verification, at least one attempt left.

l) The ME simulator resets the SIM.

m) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='40' - unsuccessful CHV verification, no attempt left[CR7].

n) The ME simulator resets the SIM.

o) The ME simulator sends a VERIFY CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='40' - CHV blocked [CR3b,7].

p) The ME simulator sends SELECT commands to the SIM to select EF$_{Kc}$ under DF$_{GSM}$.

q) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - CHV blocked [CR7].

r) The ME simulator sends an UNBLOCK CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR7].

s) The ME simulator sends a DISABLE CHV command to the SIM.

t) The ME simulator resets the SIM.

u) The ME simulator sends SELECT commands to the SIM to select EF$_{Kc}$ under DF$_{GSM}$.

v) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR4].

w) The ME simulator sends a VERIFY CHV command to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='08' - in contradiction with CHV status [CR3].

6.6.2.10   CHANGE CHV command

6.6.2.10.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.10.2   Conformance requirement

CR1:   This function shall assign a new value to the relevant CHV, subject to the following conditions being fulfilled:

   a) CHV is not disabled;

   b) CHV is not blocked.

CR2:   The function shall accept as input, an indication of CHV1/CHV2 and the old and new CHV.
CR3:   If the old CHV presented is correct, the number of remaining CHV attempts for that CHV shall be reset to its initial value 3 and the new value for the CHV shall become valid.
CR4:   If the old CHV presented is false, the number of remaining CHV attempts for that CHV shall be decremented and the value of the CHV shall remain unchanged.
CR5:   After 3 consecutive false CHV presentations, not necessarily in the same card session, the respective CHV shall be blocked and the access condition never fulfilled until the UNBLOCK CHV function has been successfully performed on the respective CHV.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.10.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_CHCHV.

6.6.2.10.3   Test purpose

To verify that the CHANGE CHV function conforms to the above requirements.

   NOTE: This function is only tested for CHV1. It is assumed that if the function operates correctly for CHV1, it will also operate correctly for CHV2 or other CHV.

6.6.2.10.4   Method of test

Initial conditions

   1) The SIM is connected to an ME simulator.

   2) CHV1 on the SIM is set to '00000000'.

Test procedure

   a) The ME simulator resets the SIM.

   b) The ME simulator sends a CHANGE CHV command with an **incorrect** old CHV1 of '11111111' and new CHV1 of '33333333' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

c) The ME simulator sends a STATUS command to the SIM.

The following shall be true of the response data [CR4]:

- *Bits 1 through 4 of byte 19 shall indicate two VERIFY CHV1 attempts remaining.*

d) The ME simulator sends a CHANGE CHV command with an old CHV1 of '00000000' and new CHV1 of '33333333' to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR2].

e) The ME simulator sends a STATUS command to the SIM.

The following shall be true of the response data [CR3]:

- *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

f) The ME simulator sends a CHANGE CHV command with an **incorrect** old CHV1 of '00000000' and new CHV1 of '55555555' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

g) The ME simulator sends a CHANGE CHV command with an **incorrect** old CHV1 of '55555555' and new CHV1 of '33333333' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

h) The ME simulator resets the SIM.

i) The ME simulator sends a CHANGE CHV command with an **incorrect** old CHV1 of '00000000' and new CHV1 of '55555555' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='40' - unsuccessful CHV verification, no attempt left [CR5].

j) The ME simulator resets the SIM.

k) The ME simulator sends a CHANGE CHV command with an old CHV1 of '33333333' and new CHV1 of '55555555' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='40' - CHV blocked [CR1b,5].

l) The ME simulator sends an UNBLOCK CHV command with new CHV1 of '55555555' to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR5].

m) The ME simulator sends a DISABLE CHV command to the SIM.

n) The ME simulator resets the SIM.

o) The ME simulator sends a CHANGE CHV command with an old CHV1 '55555555' and new CHV1 of '77777777' to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='08' - in contradiction with CHV status [CR1a].

p) The ME simulator sends an ENABLE CHV command to the SIM with CHV1 '55555555'.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1a].

6.6.2.11 DISABLE CHV command

6.6.2.11.1 Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.11.2 Conformance requirement

CR1: The successful execution of this function shall have the effect that files protected by CHV1 are now accessible as if they were marked 'ALWAYS'.

CR2: The function shall accept as input, CHV1.

CR3: This function shall not be executed by the SIM when CHV1 is already disabled or blocked.

CR4: If the CHV1 presented is correct, the number of remaining CHV1 attempts shall be reset to its initial value 3 and CHV1 shall be disabled.

CR5: If the CHV1 presented is false, the number of remaining CHV1 attempts shall be decremented and CHV1 shall remain enabled.

CR6: After 3 consecutive false CHV1 presentations, not necessarily in the same card session, CHV1 shall be blocked and the access condition never fulfilled until the UNBLOCK CHV function has been successfully performed on CHV1.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.11.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_DISCHV.

6.6.2.11.3 Test purpose

To verify that the DISABLE CHV function conforms to the above requirements.

6.6.2.11.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{LOCI} under DF_{GSM}.

c) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled.

d) The ME simulator sends a DISABLE CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left [CR5].

e) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR5].

f) The ME simulator sends a STATUS command to the SIM.

   The following shall be true of the response data [CR5]:

   - *Bit 8 of byte 14 shall be 0 indicating that CHV1 is still enabled.*

   - *Bits 1 through 4 of byte 19 shall indicate two VERIFY CHV1 attempts remaining.*

g) The ME simulator sends a DISABLE CHV command to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR2].

h) The ME simulator sends a STATUS command to the SIM.

   The following shall be true of the response data [CR4]:

   - *Bit 8 of byte 14 shall be 1 indicating that CHV1 is now disabled.*

   - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

i) The ME simulator sends an ENABLE CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command.

j) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1].

k) The ME simulator sends a DISABLE CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

l) The ME simulator sends a DISABLE CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

m) The ME simulator resets the SIM.

n) The ME simulator sends a DISABLE CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='40' - unsuccessful CHV verification, no attempt left [CR6].

o) The ME simulator resets the SIM.

p) The ME simulator sends a DISABLE CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='40' - CHV blocked [CR3,6].

q) The ME simulator sends an UNBLOCK CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR6].

r) The ME simulator sends a DISABLE CHV command to the SIM.

s) The ME simulator sends a DISABLE CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='08' - in contradiction with CHV status [CR3].

6.6.2.12   ENABLE CHV command

6.6.2.12.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.12.2   Conformance requirement

CR1:   The successful execution of this function shall have the effect that files accessible as if they were
             marked 'ALWAYS' due to CHV1 being disabled are now protected by CHV1.
CR2:   The function shall accept as input, CHV1.
CR3:   This function shall not be executed by the SIM when CHV1 is already enabled or blocked.

CR4:   If the CHV1 presented is correct, the number of remaining CHV1 attempts shall be reset to its initial value 3 and CHV1 shall be enabled.

CR5:   If the CHV1 presented is false, the number of remaining CHV1 attempts shall be decremented and CHV1 shall remain disabled.

CR6:   After 3 consecutive false CHV1 presentations, not necessarily in the same card session, CHV1 shall be blocked and the access condition never fulfilled until the UNBLOCK CHV function has been successfully performed on CHV1.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.12.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_ENCHV.

6.6.2.12.3   Test purpose

To verify that the ENABLE CHV function conforms to the above requirements.

6.6.2.12.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) CHV1 on the SIM is disabled.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{LOCI} under DF_{GSM}.

c) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command.

d) The ME simulator sends an ENABLE CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

e) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - access condition not fulfilled [CR1].

f) The ME simulator sends a STATUS command to the SIM.

   The following shall be true of the response data [CR5]:

   -   *Bit 8 of byte 14 shall be 1 indicating that CHV1 is still disabled.*

   -   *Bits 1 through 4 of byte 19 shall indicate two VERIFY CHV1 attempts remaining.*

g) The ME simulator sends an ENABLE CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR2].

h) The ME simulator sends a STATUS command to the SIM.

   The following shall be true of the response data [CR4]:

   -   *Bit 8 of byte 14 shall be 0 indicating that CHV1 is now enabled.*

   -   *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

i) The ME simulator resets the SIM.

j) The ME simulator sends SELECT commands to the SIM to select EF$_{LOCI}$ under DF$_{GSM}$.

k) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR1].

l) The ME simulator sends a DISABLE CHV command to the SIM.

m) The ME simulator sends an ENABLE CHV command with **incorrect** CHV1 to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

n) The ME simulator sends an ENABLE CHV command with **incorrect** CHV1 to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

o) The ME simulator resets the SIM.

p) The ME simulator sends an ENABLE CHV command with **incorrect** CHV1 to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='40' - unsuccessful CHV verification, no attempt left [CR6].

q) The ME simulator resets the SIM.

r) The ME simulator sends an ENABLE CHV command to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='40' orSW1='98', SW2='08' -CHV blocked [CR3,6].

s) The ME simulator sends an UNBLOCK CHV command to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR6].

t) The ME simulator sends ENABLE CHV command to the SIM.

The status condition returned by the SIM shall be SW1='98', SW2='08' - in contradiction with CHV status [CR3].

6.6.2.13   UNBLOCK CHV command

6.6.2.13.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.13.2   Conformance requirement

CR1:   This function shall unblock a CHV which has been blocked by 3 consecutive wrong CHV presentations.

CR2:   The function shall accept as input, an indication of CHV1/CHV2, the UNBLOCK CHV and the new CHV.

CR3:   This function shall be performed regardless of whether or not the relevant CHV is blocked.

CR4:   If the UNBLOCK CHV presented is correct, the new CHV value, presented together with the UNBLOCK CHV is stored in the relevant EFCHV, the number of remaining UNBLOCK CHV attempts for that UNBLOCK CHV is reset to its initial value 10 and the number of remaining CHV attempts for that CHV is reset to its initial value 3.

CR5:   After a successful unblocking attempt, the CHV shall be enabled, and the relevant access condition level satisfied.

CR6:   If the presented UNBLOCK CHV is false, the number of remaining UNBLOCK CHV attempts for that UNBLOCK CHV shall be decremented.

CR7:   After 10 consecutive false UNBLOCK CHV presentations, not necessarily in the same card session, the respective UNBLOCK CHV shall be blocked.

CR8:   A false UNBLOCK CHV shall have no effect on the status of the respective CHV itself.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.13.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_UNCHV.

6.6.2.13.3   Test purpose

To verify that the UNBLOCK CHV function conforms to the above requirements.

  NOTE 1: CR1 is tested in subclauses 6.6.2.9, 6.6.2.10, 6.6.2.11 and 6.6.2.12.

  NOTE 2: This function is only tested for CHV1. It is assumed that if the function operates correctly for CHV1, it
              will also operate correctly for CHV2 or other CHV.

6.6.2.13.4   Method of test

Initial conditions

  1) The SIM is connected to an ME simulator.

Test procedure 1

  a) The ME simulator resets the SIM.

  b) The ME simulator sends SELECT commands to the SIM to select EF_{Kc} under DF_{GSM}.

  c) The ME simulator sends a VERIFY CHV command to the SIM.

  d) The ME simulator sends an UNBLOCK CHV command with **incorrect** UNBLOCK CHV1 to the SIM.

      The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful UNBLOCK CHV
      verification, at least one attempt left.

  e) The ME simulator sends a STATUS command to the SIM.

      The following shall be true of the response data [CR6,8]:

      - *Bit 8 of byte 14 shall be 0 indicating that CHV1 is enabled.*

      - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

      - *Bits 1 through 4 of byte 20 shall indicate nine UNBLOCK CHV1 attempts remaining.*

  f) The ME simulator sends a DISABLE CHV command to the SIM.

  g) The ME simulator sends an UNBLOCK CHV command with **incorrect** UNBLOCK CHV1 to the SIM.

      The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful UNBLOCK CHV
      verification, at least one attempt left.

  h) The ME simulator sends a STATUS command to the SIM.

      The following shall be true of the response data [CR6,8]:

      - *Bit 8 of byte 14 shall be 1 indicating that CHV1 is still disabled.*

      - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

      - *Bits 1 through 4 of byte 20 shall indicate eight UNBLOCK CHV1 attempts remaining.*

  i) The ME simulator sends an UNBLOCK CHV command to the SIM.

      The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR2].

  j) The ME simulator sends a STATUS command to the SIM.

    The following shall be true of the response data [CR4,5]:

     - *Bit 8 of byte 14 shall be 0 indicating that CHV1 is enabled*

     - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

     - *Bits 1 through 4 of byte 20 shall indicate ten UNBLOCK CHV1 attempts remaining.*

  k) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

    The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

  l) The ME simulator resets the SIM.

  m) The ME simulator sends an UNBLOCK CHV command to the SIM.

  n) The ME simulator sends a STATUS command to the SIM.

    The following shall be true of the response data [CR4]:

     - *Bits 1 through 4 of byte 19 shall indicate three VERIFY CHV1 attempts remaining.*

  o) The ME simulator sends SELECT commands to the SIM to select EF$_{Kc}$ under DF$_{GSM}$.

  p) The ME simulator sends a READ BINARY command using a length of 2 bytes to the SIM.

    The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR5].

Test procedure 2 - *** Destructive test ***

  a) The ME simulator resets the SIM.

  b) The ME simulator sends nine UNBLOCK CHV command with **incorrect** UNBLOCK CHV1 to the SIM.

    The status condition returned by the SIM each time shall be SW1='98', SW2='04' - unsuccessful UNBLOCK CHV verification, at least one attempt left.

  c) The ME simulator resets the SIM.

  d) The ME simulator sends an UNBLOCK CHV command with **incorrect** UNBLOCK CHV1 to the SIM.

    The status condition returned by the SIM shall be SW1='98', SW2='40' - unsuccessful UNBLOCK CHV verification, no attempt left.

  e) The ME simulator sends an UNBLOCK CHV command to the SIM.

  The status condition returned by the SIM shall be SW1='98', SW2='40' - UNBLOCK CHV blocked.

6.6.2.14   INVALIDATE command

6.6.2.14.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.14.2   Conformance requirement

  CR1:   This function shall invalidate the current EF.
  CR2:   After an INVALIDATE function the respective flag in the file status shall be changed accordingly.
  CR3:   The function shall only be performed if the INVALIDATE access condition for the current EF is satisfied.
  CR4:   An invalidated file shall no longer be available within the application for any function except for the SELECT and REHABILITATE functions.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.14.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_INVAL.

6.6.2.14.3   Test purpose

To verify that the INVALIDATE function conforms to the above requirements.

6.6.2.14.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) EF_{LOCI} on the SIM is not invalidated.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{LOCI} under DF_{GSM}.

c) The ME simulator sends an INVALIDATE command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR3].

d) The ME simulator gains the security access condition(s) specified for both INVALIDATE and REHABILITATE on EF_{LOCI}.

e) The ME simulator sends a SELECT command to the SIM to select EF_{LOCI} once more.

f) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data:

   - *Bit 1 of byte 12 shall be 1 indicating that the file is **not** invalidated.*

g) The ME simulator sends an INVALIDATE command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR3].

h) The ME simulator sends a SELECT command to the SIM to select EF_{LOCI} again.

   The status condition returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data [CR4].

i) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data [CR1,2]:

   - *Bit 1 of byte 12 shall be 0 indicating that the file **is** invalidated.*

j) The ME simulator sends a VERIFY CHV command to the SIM.

k) The ME simulator sends a UPDATE BINARY command using a length of 1 byte and data 'C1' to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='10' - in contradiction with invalidation status [CR4].

l) The ME simulator sends a READ BINARY command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='10' - in contradiction with invalidation status [CR4].

m) The ME simulator sends a REHABILITATE command to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR4].

6.6.2.15 REHABILITATE command

6.6.2.15.1 Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.15.2 Conformance requirement

CR1: This function shall rehabilitate an invalidated current EF.

CR2: After a REHABILITATE function the respective flag in the file status byte shall be changed accordingly.

CR3: The function shall only be performed if the REHABILITATE access condition for the current EF is satisfied.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.15.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_REHAB.

6.6.2.15.3 Test purpose

To verify that the REHABILITATE function conforms to the above requirements.

6.6.2.15.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) EF_{LOCI} on the SIM is invalidated.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends SELECT commands to the SIM to select EF_{LOCI} under DF_{GSM}.

c) The ME simulator sends a REHABILITATE command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR3].

d) The ME simulator gains the security access condition(s) specified for both INVALIDATE and REHABILITATE on $EF_{LOCI.}$

e) The ME simulator sends a SELECT command to the SIM to select EF_{LOCI} once more.

f) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data:

   - *Bit 1 of byte 12 shall be 0 indicating that the file **is** invalidated.*

g) The ME simulator sends a REHABILITATE command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1,3].

h) The ME simulator sends a SELECT command to the SIM to select EF_{LOCI} again.

i) The ME simulator sends a GET RESPONSE command to the SIM.

   The following shall be true of the response data [CR1,2]:

- *Bit 1 of byte 12 shall be 1 indicating that the file is **no longer** invalidated.*

j) The ME simulator sends a VERIFY CHV command to the SIM.

k) The ME simulator sends a UPDATE BINARY command using a length of 1 byte and data 'D1' to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1].

6.6.2.16 RUN GSM ALGORITHM command

6.6.2.16.1 Definition and applicability

It shall be mandatory for all cards complying with 3GPP TS 51.011 3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.16.2 Conformance requirement

CR1: This function shall cause the SIM to run the A3 and A8 algorithms using a 16 byte random number and the subscriber authentication key Ki stored in the SIM.
CR2: The function shall return the signed response SRES and cipher key Kc.
CR3: The function shall not be executable unless DF_{GSM} has been selected as the current directory.
CR4: The function shall not be executable unless a successful CHV1 verification procedure has been performed.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 9.2.16.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_RUNGSM.

6.6.2.16.3 Test purpose

To verify that the SIM conforms to the above requirements.

6.6.2.16.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SELECT command to the SIM to select DF_{GSM}.

c) The ME simulator sends a RUN GSM ALGORITHM command to the SIM with random number:

- '00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F'.

The status condition returned by the SIM shall be SW1='98', SW2='04' - access condition not fulfilled [CR4].

d) The ME simulator resets the SIM.

e) The ME simulator sends a VERIFY CHV command to the SIM.

f) The ME simulator sends a RUN GSM ALGORITHM command to the SIM with random number:

- '00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F'.

The status condition returned by the SIM shall be SW1='94, SW2='08' - file inconsistent with command [CR3].

g) The ME simulator sends a SELECT command to the SIM to select DF_{GSM}.

h) The ME simulator sends a RUN GSM ALGORITHM command to the SIM with random number:

- '00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F'.

The status condition returned by the SIM shall be SW1='9F', SW2='0C' - length 'XX' of the response data [CR3,4].

i) The ME simulator sends a GET RESPONSE command to the SIM.

The data returned shall be correct for the given A3 and A8 algorithms and Ki stored in the SIM [CR1,2].

6.6.2.17 SLEEP command

6.6.2.17.1 Definition and applicability

It shall be mandatory for all cards complying with 3GPP TS 51.011 3GPP TS 51.011 [1] to support all functions described therein.

This function is an obsolete GSM function which was issued by Phase 1 MEs.

6.6.2.17.2 Conformance requirement

CR1: The function shall always return a good status.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 9.2.17.

Test Group Reference (TGR): TGR_SIM_FN.

Test Procedure Reference (TPR): TPR_SIM_FN_SLEEP.

6.6.2.17.3 Test purpose

To verify that the SLEEP function conforms to the above requirement.

6.6.2.17.4 Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a SLEEP command to the SIM.

The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1].

6.6.2.18 GET RESPONSE command

6.6.2.18.1 Definition and applicability

It shall be mandatory for all cards complying with 3GPP TS 51.011 3GPP TS 51.011 [1] to support all functions described therein.

6.6.2.18.2 Conformance requirement

CR1: The GET RESPONSE command shall provide response data after the execution of commands RUN GSM ALGORITHM, SEEK (type 2), SELECT, and INCREASE.

CR2: It is required that the GET RESPONSE command is executed immediately after the command it is related to (no other command shall come between the command/response pair and the command GET RESPONSE). If this sequence is not respected, the SIM shall send the Status Information "technical problem with no diagnostic given" as a reaction to the GET RESPONSE.

CR3:   Since the MF is implicitly selected after the activation of the SIM, GET RESPONSE shall be
                    allowed as the first command after activation.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.2.18.

Test Group Reference (TGR): TGR_SIM_CMD.

Test Procedure Reference (TPR): TPR_SIM_CMD_GET.

6.6.2.18.3   Test purpose

To verify that the coding of the GET RESPONSE command conforms to the above requirements.

    NOTE: CR1 is tested in subclauses 6.6.2.1, 6. 6.2.7, 6. 6.2.8, 6. 6.2.16 and 6. 6.2.17.

6.6.2.18.4   Method of test

Initial conditions

    1) The SIM is connected to an ME simulator.

Test procedure

    a) The ME simulator resets the SIM.

    b) The ME simulator sends a GET RESPONSE command to the SIM.

        - [Bytes sent: CLA='A0', INS='C0', P1='00', P2='00', P3='08'].

        - [Bytes received: P3 bytes of data, SW1, SW2].

    Bytes 5 and 6 of the response data shall indicate that MF is the currently selected file [CR3].

    c) The ME simulator sends a STATUS command to the SIM with correct P3.

    d) The ME simulator sends a GET RESPONSE command to the SIM.

        - [Bytes sent: CLA='A0', INS='C0', P1='00', P2='00', P3='05'].

        - [Bytes received: SW1, SW2].

    *The status condition returned by the SIM shall be SW1='6F', SW2='XX' - technical problem with no diagnostic
    given [CR2].*

6.6.3   Definitions and coding

6.6.3.1   Definition and applicability

Certain definitions and coding are used in the response parameters/data of the commands.

6.6.3.2   Conformance requirement

CR1:   The file structure indicator byte shall be one of the following values within the specified range:
                    '00', '01' or '03'.
CR2:   The file type indicator byte shall be one of the following values within the specified range: '00',
                    '01', '02' or '04'.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.3.

Test Group Reference (TGR): TGR_SIM_CMD_DEF.

Test Procedure Reference (TPR): TPR_SIM_CMD_DEF.

6.6.3.3   Test purpose

To verify that the response parameters/data conform to the above requirements for all file IDs on the SIM.

  NOTE: CR2 is covered in subclause 6.3.1.1.

6.6.3.4   Method of test

Initial conditions

  1) The SIM is connected to an ME simulator.

Test procedure

  a) The ME simulator resets the SIM.

  b) For every possible selectable file ID in the file structure, the ME simulator sends SELECT commands to select the file ID. When a file is selected successfully, the ME simulator sends a GET RESPONSE command to the SIM.

   For all EFs found, the following shall be true of the response data:

   -   *Byte 15 shall be '00' if the EF is Transparent.*

   The file structure indicator byte shall be coded as follows, according to the specification in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] *[CR1]:*

   -   *'00' = Transparent*

   -   *'01' = Linear Fixed*

   -   *'03' = Cyclic*

6.6.4   Status conditions returned by the SIM

6.6.4.1   Coding of the status words

6.6.4.1.1   Definition and applicability

The status words SW1 and SW2 provide the method with which the SIM can respond to the ME after executing a command.

6.6.4.1.2   Conformance requirement

  CR1:   The SIM shall respond with the correct SW1 and SW2 status words for commands which are correctly executed.
  CR2:   The SIM shall respond with the correct SW1 and SW2 status words for commands which produce memory management errors.
  CR3:   The SIM shall respond with the correct SW1 and SW2 status words for commands which produce referencing management errors.
  CR4:   The SIM shall respond with the correct SW1 and SW2 status words for commands which produce security management errors.
  CR5:   The SIM shall respond with the correct SW1 and SW2 status words for commands which produce application independent errors.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 9.4.

Test Group Reference (TGR): TGR_SIM_CMD_SC_SW.

Test Procedure Reference (TPR): TPR_SIM_CMD_SC_SW.

6.6.4.1.3   Test purpose

To verify that the SIM conforms to the above requirements when issuing SW1 and SW2 status words.

NOTE 1: CR2 cannot be tested as there is no mechanism to force the SIM to produce memory errors.

NOTE 2: CR4 is already tested in subclause 6. 6.2.8.

6.6.4.1.4   Method of test

Initial conditions

1) The SIM is connected to an ME simulator.

2) EF_{ADN} on the SIM is not invalidated.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a VERIFY CHV command to the SIM.

c) The ME simulator sends SELECT commands to the SIM to select DF_{GSM}.

   The status condition returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data [CR1].

d) The ME simulator sends a GET RESPONSE command to the SIM.

   The status condition returned by the SIM shall be SW1='90', SW2='00' - normal ending of command [CR1].

e) The ME simulator sends a READ BINARY command using a length of 1 byte to the SIM.

   The status condition returned by the SIM shall be SW1='94', SW2='00' - no EF selected [CR3].

f) The ME simulator sends SELECT commands to the SIM to select EF_{ADN}.

g) The ME simulator sends an UPDATE RECORD command using PREVIOUS mode to the SIM. The data used is 'E1' for all bytes.

h) The ME simulator sends an UPDATE RECORD command using NEXT mode to the SIM. The data used is 'E2' for all bytes.

   The status condition returned by the SIM shall be SW1='94', SW2='02' - out of range (invalid address) [CR3].

i) The ME simulator sends a READ BINARY command using a length of 1 byte to the SIM.

   The status condition returned by the SIM shall be SW1='94', SW2='08' - file type inconsistent with the command [CR3].

j) The ME simulator sends a VERIFY CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='04' - unsuccessful CHV verification, at least one attempt left.

k) The ME simulator sends an ENABLE CHV command to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='08' - in contradiction with CHV status [CR3].

l) The ME simulator sends VERIFY CHV command with **incorrect** CHV1 to the SIM.

m) The ME simulator sends VERIFY CHV command with **incorrect** CHV1 to the SIM.

   The status condition returned by the SIM shall be SW1='98', SW2='40' - unsuccessful CHV verification, no attempt left.

n) The ME simulator sends an UPDATE RECORD command using ABSOLUTE mode with record 1 to the SIM. Parameter P3 is set to 1 and the data used is 'E3'.

The status condition returned by the SIM shall be SW1='67', SW2='XX' or SW1='98', SW2='04' - incorrect parameter P3 [CR3].

o) The ME simulator sends an UPDATE RECORD command using mode '44' to the SIM. The data used is 'E4' for all bytes.

The status condition returned by the SIM shall be SW1='6B', SW2='00' or SW1='98', SW2='04' - incorrect parameter P1 or P2 [CR3].

p) The ME simulator sends the following APDU to the SIM.

[Bytes sent: CLA='A0', INS='1E', P1='00', P2='00', P3='00']

The status condition returned by the SIM shall be SW1='6D', SW2='00' - unknown instruction code given in the command [CR5].

s) The ME simulator sends a GET RESPONSE command to the SIM.

The status condition returned by the SIM shall be SW1='6F', SW2='XX' - technical problem with no diagnostic given [CR5].

6.6.4.2 Commands versus possible status responses

6.6.4.2.1 Definition and applicability

Limiting the status conditions for each command to a defined set allows the ME to efficiently manage the handling of the status condition.

6.6.4.2.2 Conformance requirement

CR1:   Table 10 in 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 9.4.6 shows for each command the possible status conditions returned (marked by an asterisk *). The SIM shall not generate status conditions other than those allowed for each command.

Reference: 3GPP TS 51.011 3GPP TS 51.011 [1], subclause 9.4.6.

Test Group Reference (TGR): TGR_SIM_CMD_SC_CSR.

Test Procedure Reference (TPR): TPR_SIM_CMD_SC_CSR.

6.6.4.2.3 Test purpose

To verify for each command that the SIM will only generate the allowed status conditions.

NOTE: CR1 cannot be tested as it is not possible to force the SIM to generate all of the allowed status conditions for each command and there is no way of forcing the SIM to generate disallowed status conditions for each command.

6.6.4.2.4 Method of test

Initial conditions

N/A

Test procedure

N/A

6.6.4.2.5   Test requirement

N/A

6.7   Contents of the elementary files

The subclause provides tests to ensure that the IUT contains all of the EFs need for a GSM session.

6.7.1   Definition and applicability

The Elementary Files described in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] are required on the SIM card in order for a GSM session to be carried out.

The contents of these files are not tested as they are card/personalization specific.

6.7.2   Conformance requirement

The following conformance requirements refer to the tables for each EF in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

    CR1:   Each existing EF shall be selectable under the respective DF using the identifier given in the table
                  for that EF.
    CR2:   All mandatory EFs shall exist on the SIM card.
    CR3:   The identifier of the EF shall be that given in the table for that EF.CR4The type and structure of
                  the EF shall be that given in the table for that EF.
    CR5:   The file size shall be at least that given in the table for that EF.
    CR6:   The access conditions shall be those given in the table for that EF.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], clause 10.

Test Group Reference (TGR): TGR_SIM_CEF.

Test Procedure Reference (TPR): TPR_SIM_CEF.

6.7.3   Test purpose

To verify that the SIM conforms to the above requirements.

    NOTE: The contents and coding of the data within the files are not tested, but shall conform to the respective
                   contents and coding of the data given for each file in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

6.7.4   Method of test

Initial conditions

    1) The SIM is connected to an ME simulator.

Test procedure

    a) The ME simulator resets the SIM.

    b) The ME simulator sends SELECT commands to the SIM to select the respective DF for the first EF in clause 10
        of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

        The status condition returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data [CR1].

    c) The ME simulator sends a SELECT command to the SIM to select the first EF in clause 10 of ~~3GPP TS
        51.011~~3GPP TS 51.011 [1].

        *The status condition returned by the SIM shall be SW1='9F', SW2='XX' - length 'XX' of the response data
        [CR1,2].*

   d) The ME simulator sends a GET RESPONSE command to the SIM.

  The following shall be true of the response data:

    - *Bytes 5 and 6 shall indicate the identifier of the file selected. [CR3].*

    - *Byte 7 shall be '04' indicating EF [CR4].*

    - *Byte 14 shall indicate the structure given in the table for the file in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] [CR4].*

    - *Bytes 3 and 4 shall be at least the minimum file size given in the table for the file in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] if the EF is transparent [CR5].*

    - *Byte 15 shall be in accordance with the record length given in the table for the file in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] if the EF is linear fixed or cyclic [CR5].*

    - *Bytes 3 and 4 shall be an integer multiple of the record length if the EF is linear fixed or cyclic [CR5].*

    - *Bytes 9, 10 and 11 shall indicate the access conditions given in the table for the file in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1] [CR6].*

   e) Steps a) to d) are repeated for the remaining mandatory EFs in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

   f) Steps a) to d) are repeated for the existing optional EFs in clause 10 of ~~3GPP TS 51.011~~3GPP TS 51.011 [1].

6.8   Application Protocol

The tests in this subclause ensure that the IUT conforms to the functional specification for application protocol - in particular the internal management of AND/FDN switching in the SIM.

6.8.1   FDN Procedure

6.8.1.1   Definition and applicability

It shall be mandatory for all cards complying with ~~3GPP TS 51.011~~3GPP TS 51.011 [1] to support all internal management processing required for the GSM application.

6.8.1.2   Conformance requirement

  CR1:   If FDN is enabled, the SIM shall invalidate both EF_{IMSI} and EF_{LOCI} once during each GSM session at least before the next command following selection of either EF.

Reference: ~~3GPP TS 51.011~~3GPP TS 51.011 [1], subclause 10 and 11.

Test Group Reference (TGR): TGR_SIM_APP.

Test Procedure Reference (TPR): TPR_SIM_APP_FDN.

6.8.1.3   Test purpose

To verify that the FDN feature conforms to the above requirements.

6.8.1.4   Method of test

Initial conditions

   1) FDN feature is allocated and activated.

   2) ADN feature is allocated and activated.

3) EF$_{ADN}$ is invalidated.

Test procedure

a) The ME simulator resets the SIM.

b) The ME simulator sends a VERIFY CHV1 to the SIM.

c) The ME simulator sends SELECT commands to the SIM to select EF$_{IMSI}$ under DF$_{GSM}$.

d) The ME simulator sends a GET RESPONSE command to the SIM.

    Bit 1 of byte 12 of the data returned shall be 0 indicating that EF$_{IMSI}$ is invalidated [CR1].

e) The ME simulator sends a REHABILITATE command to the SIM.

f) The ME simulator sends a SELECT command to the SIM to select EF$_{LOCI}$.

g) The ME simulator sends a GET RESPONSE command to the SIM.

    Bit 1 of byte 12 of the data returned shall be 0 indicating that EF$_{LOCI}$ is invalidated [CR1].

h) The ME simulator sends a REHABILITATE command to the SIM.

i) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

j) The ME simulator sends a VERIFY CHV2 to the SIM.

k) The ME simulator sends a REHABILITATE command to the SIM.

l) The ME simulator sends a SELECT command to the SIM to select EF$_{SST}$.

m) The ME simulator gains the access condition for UPDATE policy.

n) The ME simulator sends an UPDATE BINARY command to the SIM to deactivate the ADN service.

o) The ME simulator resets the SIM.

p) The ME simulator sends a VERIFY CHV1 to the SIM.

q) The ME simulator sends SELECT commands to the SIM to select EF$_{LOCI}$ under DF$_{GSM}$.

r) The ME simulator sends a GET RESPONSE command to the SIM.

    Bit 1 of byte 12 of the data returned shall be 0 indicating that EF$_{LOCI}$ is invalidated [CR1].

s) The ME simulator sends a REHABILITATE command to the SIM.

t) The ME simulator sends a SELECT command to the SIM to select EF$_{IMSI}$.

u) The ME simulator sends a GET RESPONSE command to the SIM.

    Bit 1 of byte 12 of the data returned shall be 0 indicating that EF$_{IMSI}$ is invalidated [CR1].

v) The ME simulator sends a REHABILITATE command to the SIM.

w) The ME simulator sends a SELECT command to the SIM to select EF$_{SST}$.

x) The ME simulator gains the access condition for UPDATE policy.

y) The ME simulator sends an UPDATE BINARY command to the SIM to deallocate the ADN service.

z) The ME simulator resets the SIM.

aa) The ME simulator sends a VERIFY CHV1 to the SIM.

ab) The ME simulator sends SELECT commands to the SIM to select EF$_{LOCI}$ under DF$_{GSM}$.

ac) The ME simulator sends a GET RESPONSE command to the SIM.

Bit 1 of byte 12 of the data returned shall be 0 indicating that EF$_{LOCI}$ is invalidated [CR1].

ad) The ME simulator sends a REHABILITATE command to the SIM.

ae) The ME simulator sends a SELECT command to the SIM to select EF$_{IMSI}$.

af) The ME simulator sends a GET RESPONSE command to the SIM.

Bit 1 of byte 12 of the data returned shall be 0 indicating that EF$_{IMSI}$ is invalidated [CR1].

ag) The ME simulator sends a REHABILITATE command to the SIM.

ah) The ME simulator sends a SELECT command to the SIM to select EF$_{SST}$.

ai) The ME simulator sends an UPDATE BINARY command to the SIM to allocate and activate the ADN service.

aj) The ME simulator resets the SIM.

ak) The ME simulator sends a SELECT command to the SIM to select EF$_{LOCI}$.

al) The ME simulator sends a GET RESPONSE command to the SIM.

Bit 1 of byte 12 of the data returned shall be 1 indicating that EF$_{LOCI}$ is not invalidated [CR1].

am) The ME simulator sends a SELECT command to the SIM to select EF$_{IMSI}$.

an) The ME simulator sends a GET RESPONSE command to the SIM.

Bit 1 of byte 12 of the data returned shall be 1 indicating that EF$_{IMSI}$ is not invalidated [CR1].

ao) The ME simulator sends a SELECT command to the SIM to select EF$_{SST}$.

ap) The ME simulator gains the access condition for UPDATE policy.

aq) The ME simulator sends an UPDATE BINARY command to the SIM to deactivate the FDN service.

ar) The ME simulator sends SELECT commands to the SIM to select EF$_{ADN}$ under DF$_{TELECOM}$.

as) The ME simulator sends a VERIFY CHV2 to the SIM.

at) The ME simulator sends a INVALIDATE command to the SIM.

au) The ME simulator resets the SIM.

av) The ME simulator sends a SELECT command to the SIM to select EF$_{LOCI}$.

aw) The ME simulator sends a GET RESPONSE command to the SIM.

Bit 1 of byte 12 of the data returned shall be 1 indicating that EF$_{LOCI}$ is not invalidated [CR1].

ax) The ME simulator sends a SELECT command to the SIM to select EF$_{IMSI}$.

ay) The ME simulator sends a GET RESPONSE command to the SIM.

Bit 1 of byte 12 of the data returned shall be 1 indicating that EF$_{IMSI}$ is not invalidated [CR1].

Annex A (informative):
Change History

This annex lists all change requests approved for the present document since the present document was approved by 3GPP.

This annex lists all change requests approved for the present document since the present document was approved by 3GPP. Meeting / Date	Plenary doc	WG doc	CR	Rev	CAT	Subject	New Ver
TP-27	TP-050027	T3-050120	A002		B	Release 4 based on 11.17 v8.1.0	4.0.0

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CR-Form-v7.1

CHANGE REQUEST

⌘ **11.10-4 CR** ⌘**rev** **-** ⌘ Current version: **8.11.0** ⌘

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

Proposed change affects: UICC apps⌘ **X**   ME ☐   Radio Access Network ☐   Core Network **X**

Title: ⌘	CR 11.10-4 R99: Essential Corrections
Source: ⌘	CT6
Work item code:⌘	TEI ***Date:*** ⌘ 27/04/2005
Category: ⌘	**F** ***Release:*** ⌘ R99

Use one of the following categories:
  F *(correction)*
  A *(corresponds to a correction in an earlier release)*
  B *(addition of feature),*
  C *(functional modification of feature)*
  D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
Ph2   *(GSM Phase 2)*
R96   *(Release 1996)*
R97   *(Release 1997)*
R98   *(Release 1998)*
R99   *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change: ⌘ a) Missing step number.

Section	Sequence
27.22.4.16.1.4.2	1.2

b) Data value is incorrect for SET UP 1.4.1. Ti flag should be the same as the Ti flag of DISCONNECT 1.4.1 as both are being sent by the same Originator i.e. SS (*As per TS 24.007 clause 11.2.3.1.3*, the transaction identifier flag can take the values "0" or "1".The TI flag is used to identify which side of the interface initiated the transaction. A message has a TI flag set to "0" when it belongs to transaction initiated by its sender, and to "1" otherwise)

Section	Data name	Data Value	Sequence
27.22.4.16.1.4.2	Ti flag	0	1.4

c) Changes in Expected Sequence 1.14 of clause 27.22.6.1.4.2
    c.1) Incomplete Precondition.
    c.2) Incorrect test step 7 to show User->ME interaction.

d) Corrections in Test purpose.

Section
27.22.7.1.1.3
27.22.7.2.1.3
27.22.7.2.2.3
27.22.7.3.1.3
27.22.7.6.1.3

27.22.7.7.1.3
27.22.7.7.2.3
27.22.7.8.1.3
27.22.4.27.1.3
27.22.4.27.2.3
27.22.4.30.3

e1) Missing USER->ME interaction.

Section	Sequence	Step
27.22.7.6.1.4.2	1.1	8

e2) Missing ME->SIM interaction.

Section	Sequence	Step
27.22.7.6.1.4.2	1.1	10

f) Missing ME->USER interaction: This is done to align the Test Cases with the existing ones and thus following a consistent approach which would help remove the ambiguity.

Section	Sequence	Step
27.22.4.27.1.4.2	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.9	4
27.22.4.28.4.2	1.1, 1.3	4, 11
27.22.4.28.4.2	1.2	4
27.22.4.29.4.2	1.1	8
27.22.4.30.4.2	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	4
27.22.7.11.4.2	1.1	8

g) Missing test steps in test case.

Section	Sequence	Step	Reason for change
27.22.4.7.1.4.2	1.1	6	Location Update needs to be performed after the SIM is initialised again(*As per TS 24.008 Clause 4.4.3)*
27.22.4.7.1.4.2	1.4	7	
27.22.4.30.4.2	1.1	11	The ME shall send the data to the SS once it receives the PROACTIVE COMMAND: SEND DATA (Immediate mode). Else the data is stored in the Tx buffer(*As per Annexure J and clause 6.4.30 of TS 11.14 V8.17.0)*
27.22.4.30.4.2	1.2	19	
27.22.4.30.4.2	1.3	27	
27.22.4.30.4.2	1.4	27, 48	
27.22.7.10.4.2	1.1	4, 5, 6, 7	These are the expected steps for PROACTIVE COMMAND: OPEN CHANNEL.

h) Incorrect data value SMS-PP 1.4.1: *As per TS 23.040 Clause 9.2.3.1 TP-Message-Type-Indicator (TP-MTI) is "00" for SMS-DELIVER (in the direction SC to MS).* In step 7 of the Expected Sequence, the Short Message is sent from SS->ME. So it should be a SMS DELIVER TPDU and not SMS SUBMIT TPDU. Accordingly the other fields are filled depending upon the TP-MTI.

Section	Sequence
27.22.4.22.1.4.2	1.4

i) Incorrect Coding of SMS-PP (Data download) Message: Coding of length of address field should be 04 as the Address-Length field is an integer representation of the number of useful semi-octets within the Address-Value field, i.e. excludes any semi octet containing only fill bits (*As per TS 23.040, clause*

9.1.2.5)

Section	Sequence	Message name
27.22.4.7.1.4.2	1.6	SMS-PP (Data Download) Message 1.6.1
27.22.5.1.4.2	1.2, 1.3, 1.4	SMS-PP (Data Download) Message 1.2.1/ 1.3.1/ 1.4.1
27.22.5.1.4.2	1.6	SMS-PP (Data Download) Message 1.6.1

j) Changes in clause 27.22.4.7.2 REFRESH (IMSI changing procedure): The proposed changes are as *per TS 24.008 Clause 4.3.4 and 4.4.3*

    j.1) Incomplete Initial Condition

Section	Reason for change
27.22.4.7.2.4.1	The ATT flag should be set to "MSs shall apply IMSI attach and detach procedure" so that the ME can send an IMSI Attach message required in Expected Sequence 2.2 and 2.3

    j.2) Missing test steps

Section	Sequence	Step	Reason for change
27.22.4.7.2.4.2	2.2, 2.3	6	As the ATT flag is set to "MSs shall apply IMSI attach and detach procedure " the ME may perform IMSI Detach during MM Restart or GSM Termination procedure. *As per TS 03.22 Clause 4.10 (which refers to 23.122 Clause 4.8)* MM Restart Procedure - To perform the procedure the MS shall behave as if the SIM is removed and afterwards a new SIM is inserted. And this behavior is further specified in *TS 24.008 Clause 4.3.4.* as The IMSI detach procedure may be invoked by a mobile station if the mobile station is deactivated or if the SIM is detached from the mobile station.

Summary of change: ⌘	a) Missing step number added. b) Data value is corrected. c) Precondition and the User->ME interaction corrected. d) Test purpose corrected. e) Missing User->ME interaction step added. f) Missing ME->USER interaction step added. g) Missing test steps incorporated. h) SMS-TPDU of SMS-PP 1.4.1 is corrected. i) Coding of SMS-PP (Data download) Message is corrected. j) The Initial Condition corrected and the missing test steps incorporated.
Consequences if not approved: ⌘	a) Imprecision in Tests steps numbering causes ambiguity. b) Incorrect Data value will cause the ME to unfairly fail the test. c) Incorrect Precondition may cause ambiguity in the mind of the user whereas the incorrect interaction may cause the ME to unfairly fail the test. d) Inconsistency of Test purpose. e) Missing USER->ME interaction would not run the test sequence as expected or may cause the ME to unfairly fail the test. f) Missing ME->USER interaction would create ambiguity in the mind of users. g) Missing test steps would cause the ME to unfairly fail the test. h) Incorrect SMS-TPDU would cause the ME to unfairly fail the test. i) Inconsistency of Coding would not affect the test result.

	j) Incomplete Initial Condition and the missing test steps would cause the ME to unfairly fail the test.	

Clauses affected:	⌘	27.22.4.7.1.4.2, 27.22.4.7.2.4.1, 27.22.4.7.2.4.2, 27.22.4.16.1.4.2, 27.22.4.22.1.4.2, 27.22.4.27.1.3, 27.22.4.27.1.4.2, 27.22.4.27.2.3, 27.22.4.28.4.2, 27.22.4.29.4.2, 27.22.4.30.3, 27.22.4.30.4.2, 27.22.5.1.4.2, 27.22.6.1.4.2, 27.22.7.1.1.3, 27.22.7.2.1.3, 27.22.7.2.2.3, 27.22.7.3.1.3, 27.22.7.6.1.3, 27.22.7.6.1.4.2, 27.22.7.7.1.3, 27.22.7.7.2.3, 27.22.7.8.1.3, 27.22.7.10.4.2, 27.22.7.11.4.2.		

			Y	N			
Other specs affected:	⌘			X	Other core specifications	⌘	
			X		Test specifications		TS 31.124
				X	O&M Specifications		

Other comments:	⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

27.22.4.7.1.4.2   Procedure

Expected Sequence 1.1 (REFRESH, SIM Initialization)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: REFRESH 1.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: REFRESH 1.1.1	
4	SIM	Invalidate EF IMSI, EF LOCI and EF ADN	[Restricted dialling feature is enabled]
5	ME → SIM	SIM Initialization	[ME performs SIM initialization]
6	ME → SS	Location update being performed	(type "normal location updating")
76	ME → SIM	TERMINAL RESPONSE: REFRESH 1.1.1A Or	
		TERMINAL RESPONSE: REFRESH 1.1.1B	[additional EFs read]
87	SIM → ME	PROACTIVE SIM SESSION ENDED	
98	USER → ME	Call setup to "321"	
109	ME → USER	Call set up not allowed	
1110	USER → ME	Call setup to "123"	
1211	ME → SS	Setup	Called party BCD number shall be "123"

[..]

27.22.4.7.1.4.2   Procedure

[..]

Expected Sequence 1.4 (REFRESH, SIM Initialization and Full File Change Notification)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: REFRESH 1.4.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: REFRESH 1.4.1	
4	SIM	Invalidate EF IMSI, EF LOCI and EF ADN	[Restricted dialling feature is enabled]
5	SIM	Update EF FDN	[EF FDN record 1 updated to contain the dialling string "0123456789"]
6	ME → SIM	SIM Initialization	[ME performs SIM initialization]
7	ME → SS	Location update being performed	(type "normal location updating")
87	ME → SIM	TERMINAL RESPONSE: REFRESH 1.4.1A Or TERMINAL RESPONSE: REFRESH 1.4.1B	[additional EFs read]
98	SIM → ME	PROACTIVE SIM SESSION ENDED	
109	USER → ME	Call setup to "321"	
1110	ME → USER	Call set up not allowed	
1211	USER → ME	Call setup to "0123456789"	
1312	ME → SS	Setup	Called party BCD number shall be "0123456789"

[..]

27.22.4.7.1.4.2   Procedure

[..]

Expected Sequence 1.6 (REFRESH, SIM Initialization after SMS-PP data download)

Step	Direction	MESSAGE / Action	Comments
1	ME	The ME shall be in its normal idle mode	[Start a sequence to verify that the ME returns the RP-ACK message back to the system Simulator, if the SIM responds with '90 00']
2	SS → ME	SMS-PP Data Download Message 1.6.1	
3	ME → USER	The ME shall not display the message or alert the user of a short message waiting	
4	ME → SIM	ENVELOPE: SMS-PP DOWNLOAD 1.6.1	
5	SIM → ME	PROACTIVE COMMAND PENDING: REFRESH 1.1.1	
6	ME → SS	RP-ACK	
7	ME → SIM	FETCH	
8	SIM → ME	PROACTIVE COMMAND: REFRESH 1.1.1	
9	SIM	Invalidate EF IMSI, EF LOCI and EF ADN	[Restricted dialling feature is enabled]
10	ME → SIM	SIM Initialization	[ME performs SIM initialization]
11	ME → SIM	TERMINAL RESPONSE: REFRESH 1.1.1A Or TERMINAL RESPONSE: REFRESH 1.1.1B	[additional EFs read]
12	SIM → ME	PROACTIVE SIM SESSION ENDED	
13	USER → ME	Call setup to "321"	
14	ME → USER	Call set up not allowed	
15	USER → ME	Call setup to "123"	
16	ME → SS	Setup	Called party BCD number shall be "123"

SMS-PP (Data Download) Message 1.6.1

Logically:

```
SMS TPDU
     TP-MTI              SMS-DELIVER
     TP-MMS              No more messages waiting for the MS in this SC
     TP-RP               TP-Reply-Path is not set in this SMS-DELIVER
     TP-UDHI             TP-UD field contains only the short message
     TP-SRI              A status report will not be returned to the SME
     TP-OA
        TON              International number
        NPI              "ISDN / telephone numbering plan"
        Address value    "1234"
     TP-PID              SIM Data download
     TP-DCS
        Coding Group     General Data Coding
        Compression      Text is uncompressed
        Message Class    Class 2 SIM Specific Message
        Alphabet         Default Alphabet
     TP-SCTS:            01/01/98 00:00:00 +0
     TP-UDL              13
     TP-UD               "Short Message"
```
Coding:

BER-TLV	04	0403	91	21	43	7F	12	89	10	10	00	00
	00	00	0D	53	F4	5B	4E	07	35	CB	F3	79
	F8	5C	06									

[..]

27.22.4.7.2.4.1   Initial conditions

The ME is connected to the SIM Simulator and only connected to the System Simulator if the System Simulator is mentioned in the sequence table.The elementary files are coded as SIM Application Toolkit default.

Prior to this test the ME shall have been powered on and performed the PROFILE DOWNLOAD procedure.

The ATT flag broadcast in the L3-RR SYSTEM INFORMATION TYPE 3 message on the BCCH is set to "MSs shall apply IMSI attach and detach procedure" for the expected sequences 2.2 and 2.3.

27.22.4.7.2.4.2   Procedure

 [..]

Expected Sequence 2.2 (REFRESH, SIM Initialization and Full File Change Notification)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: REFRESH 2.2.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: REFRESH 2.2.1	
4	SIM	Update EF IMSI	[Update the contents of EF IMSI to "001010123456787", -]
5	ME	Invoke MM Restart Procedure	
6	ME → SS	ME may perform IMSI DETACH	ME may perform IMSI DETACH Aas per PICS "IMSI detach after SIM removal"
76	ME → SIM	SIM INITIALIZATION	[ME performs SIM initialization; including reading EF IMSI, EF LOCI and EF KC]
87	ME → SIM	TERMINAL RESPONSE: REFRESH 2.2.1A Or TERMINAL RESPONSE: REFRESH 2.2.1B	[normal] [additional EFs read]
98	SIM → ME	PROACTIVE SIM SESSION ENDED	
109	ME → SS	IMSI ATTACH	[Send IMSI of "001010123456787" to System Simulator]

 [..]

27.22.4.7.2.4.2 Procedure

[..]

Expected Sequence 2.3 (REFRESH, SIM Reset)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: REFRESH 2.3.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: REFRESH 2.3.1	
4	SIM	Update EF IMSI	[Update the contents of EF IMSI to "001010123456786
5	ME → SIM	GSM Termination Procedure	
6	ME → SS	~~ME may perform~~ IMSI DETACH	ME may perform IMSI DETACH ~~a~~As per PICS "IMSI detach after SIM removal"
7~~6~~	ME → SIM	GSM Activation Procedure	
8~~7~~	ME → SIM	SIM Initialization	[ME performs SIM initialization; including reading EF IMSI, EF LOCI and EF KC]
9~~8~~	ME → SS	IMSI ATTACH	[Send IMSI of "001010123456786" to System Simulator]

[..]

27.22.4.16.1.4.2   Procedure

[..]

Expected Sequence 1.2 (SET UP EVENT LIST, Replace Event)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SET UP EVENT LIST 1.2.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.2.1	[Call Connected and Call Disconnected Events]
4	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.2.1	
54	SIM → ME	PROACTIVE COMMAND PENDING: SET UP EVENT LIST 1.2.2	
65	ME → SIM	FETCH	
76	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.2.2	[Call Disconnected Event]
87	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.2.2	
98	SIM → ME	PROACTIVE SIM SESSION ENDED	
10	SS → ME	SETUP 1.2.2	[Incoming call alert]
11	USER → ME	User shall accept the incoming call	
12	ME → SS	CONNECT 1.2.2	
13	SS → ME	DISCONNECT 1.2.2	
14	ME → SIM	ENVELOPE: EVENT DOWNLOAD CALL DISCONNECT 1.2.2A or ENVELOPE: EVENT DOWNLOAD CALL DISCONNECT 1.2.2B	[Call Disconnect Event]
1514	SIM → ME	PROACTIVE SIM SESSION ENDED	

[..]

27.22.4.16.1.4.2   Procedure

[..]

Expected Sequence 1.4 (SET UP EVENT LIST, Remove Event on ME Power Cycle)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SET UP EVENT LIST 1.4.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.4.1	[Call Connected Event]
	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.4.1	
4	SIM → ME	PROACTIVE SIM SESSION ENDED	
5	User → ME	Power off ME	
6	User → ME	Power on ME	
7	SS → ME	SETUP 1.4.1	[Incoming call alert]
8	USER → ME	User shall accept the incoming call	
9	ME → SS	CONNECT 1.4.1	
10	ME → SIM	No ENVELOPE: EVENT DOWNLOAD (call connected) sent	
11	SS → ME	DISCONNECT 1.4.1	

PROACTIVE COMMAND: SET UP EVENT LIST 1.4.1

Logically:

    Command details
        Command number: 1
        Command type: SET UP EVENT LIST
        Command qualifier: '00'
    Device identities
        Source device: SIM
        Destination device: ME
    Event list
        Event 1:   Call Connected

Coding:

BER-TLV:	D0	0C	81	03	01	05	00	82	02	81	82	99
	01	01										

TERMINAL RESPONSE: SET UP EVENT LIST 1.4.1

Logically:

    Command details
        Command number: 1
        Command type: SET UP EVENT LIST
        Command qualifier: '00'
    Device identities
        Source device: ME
        Destination device: SIM
    Result
        General Result: Command performed successfully

Coding:

BER-TLV:	81	03	01	05	00	82	02	82	81	83	01	00

SET UP 1.4.1

Logically:

    Transaction identifier
        Ti value: 0 (bit 5-7)
        Ti flag: 01 (bit 8)
    Address
        TON: "Unknown"
        NPI: "ISDN/ telephone numbering plan"
        Dialling number string: "9876"

CONNECT 1.4.1

Logically:

    Transaction identifier
        Ti value: 0 (bit 5-7)
        Ti flag: 1 (bit 8)

DISCONNECT 1.4.1

Logically:

    Transaction identifier
        Ti value: 0 (bit 5-7)
        Ti flag: 0 (bit 8)
    Cause
        Value: Normal call clearing

[..]

27.22.4.22.1.4.2   Procedure

 [..]

Expected Sequence 1.4 (SET UP IDLE MODE TEXT, competing information on ME display)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SET UP IDLE MODE TEXT 1.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SET UP IDLE MODE TEXT 1.1.1	["Idle Mode Text"]
4	ME → SIM	TERMINAL RESPONSE: SET UP IDLE MODE TEXT 1.1.1	[Command performed successfully]
5	USER → ME	Select idle screen	Only if idle screen not already available
6	ME → USER	Display "Idle Mode Text"	
7	SS → ME	SMS PP 1.4.1	[Display immediate SMS]
8	ME → USER	Display "Test Message"	
9	USER → ME	Clear display and select idle screen	
10	ME → USER	Display "Idle Mode Text"	
11	SIM → ME	PROACTIVE COMMAND PENDING: DISPLAY TEXT 1.4.1	
12	ME → SIM	FETCH	
13	SIM → ME	PROACTIVE COMMAND: DISPLAY TEXT 1.4.1	[Normal priority, wait for user to clear message, unpacked, 8 bit data]
14	ME → USER	Display "Toolkit Test 1"	
15	USER → ME	Clear Message	
16	ME → SIM	TERMINAL RESPONSE: DISPLAY TEXT 1.4.1	[Command performed successfully]
17	ME → USER	Display "Idle Mode Text"	
18	SIM → ME	PROACTIVE COMMAND PENDING: PLAY TONE 1.4.1	
19	ME → SIM	FETCH	
20	SIM → ME	PROACTIVE COMMAND: PLAY TONE 1.4.1	
21	ME → USER	Display "Dial Tone" Play a standard supervisory dial tone through the external ringer for a duration of 5 s	
22	ME → SIM	TERMINAL RESPONSE: PLAY TONE 1.4.1	[Command performed successfully]
23	SIM → ME	PROACTIVE SIM SESSION ENDED	
24	ME → USER	Display "Idle Mode Text"	

~~SMS-PP 1.4.1~~

~~Logically:~~

~~SMS TPDU~~
~~TP MTI   SMS-SUBMIT~~
~~TP RD   Instruct the SC to accept an SMS-SUBMIT for a SM~~
~~TP VPF   TP VP field not present~~
~~TP RP   TP Reply-Path is not set in this SMS-SUBMIT~~
~~TP UDHI   The TP-UD field contains only the short message~~
~~TP SRR   A status report is not requested~~
~~TP MR   "00"~~
~~TP DA~~
~~TON   International number~~
~~NPI   "ISDN / telephone numbering plan"~~
~~Address value   "012345678"~~

~~TP PID "00"~~
~~TP DCS~~
~~Message coding 8 bit data~~
~~Message class class 0~~
~~TP-UDL 12~~
~~TP UD "Test Message"~~

~~Coding:~~

~~BER-TLV:~~	~~01~~	~~00~~	~~09~~	~~91~~	~~10~~	~~32~~	~~54~~	~~76~~	~~F8~~	~~00~~	~~F4~~	~~0C~~
	~~54~~	~~65~~	~~73~~	~~74~~	~~20~~	~~4D~~	~~65~~	~~73~~	~~73~~	~~61~~	~~67~~	~~65~~

SMS-PP 1.4.1

Logically:

SMS TPDU
    TP-MTI   SMS-DELIVER
    TP-MMS   No more messages waiting for the MS in this SC
    TP-RP   TP-Reply-Path is not set in this SMS-DELIVER
    TP-UDHI   TP-UD field contains only the short message
    TP-SRI   A status report will not be returned to the ME
    TP-OA
        TON   International number
        NPI   "ISDN / telephone numbering plan"
        Address value   "1234"
    TP-PID   ME Data download

    TP-DCS
        Coding Group   General Data Coding
        Compression   Text is uncompressed
        Message Class   Class 1 Default meaning: ME specific
        Alphabet   8 bit data
    TP-SCTS: 01/01/98 00:00:00 +0
    TP-UDL   12
    TP-UD   "Test Message"

Coding:

BER-TLV:	04	04	91	21	43	7D	15	89	10	10	00	00
	00	00	0C	54	65	73	74	20	4D	65	73	73
	61	67	65									

[..]

27.22.4.27.1.3   Test purpose

To verify that the ME shall send a:

- TERMINAL RESPONSE (OK); or

- TERMINAL RESPONSE (Command performed with modification); or

- TERMINAL RESPONSE (Network currently unable to process command);

- TERMINAL RESPONSE (Bearer Independent Protocol error);

- TERMINAL RESPONSE (ME currently unable to process command);

to the SIM after the ME receives the OPEN CHANNEL proactive command. The TERMINAL RESPONSE sent back to the SIM is function of the ME and the network capabilities against asked parameters by the SIM.

 [..]

27.22.4.27.1.4.2   Procedure

Expected Sequence 1.1 (OPEN CHANNEL, immediate link establishment, CSD, 9600bps V.32)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.1.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.1.1	[Command performed successfully]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.2 (OPEN CHANNEL, immediate link establishment, CSD, 9600bps V.34)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.2.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.2.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.2.1	[Command performed successfully]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.3 (OPEN CHANNEL, immediate link establishment, CSD, 9600bps V.120)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.3.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.3.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.3.1	[Command performed successfully]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.4 (OPEN CHANNEL, immediate link establishment, CSD, 9600bps V.110 or X.31 flag stuffing, bearer asynchronous UDI)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.4.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.4.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.4.1	[Command performed successfully]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.5 (OPEN CHANNEL, immediate link establishment, CSD, 9600bps V.32, bearer asynchronous RDI)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.5.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.5.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.5.1	[Command performed successfully]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.6 (OPEN CHANNEL, immediate link establishment, CSD, 9600bps V.32, bearer asynchronous)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.6.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.6.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.6.1	[Command performed successfully]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.7(OPEN CHANNEL, immediate link establishment, CSD, 9600 bps, performed with modification)

The system simulator shall be configured such that open channel requests will be accepted with modification

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.7.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.7.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.7.1	[Command performed with modification]

[..]

27.22.4.27.1.4.2   Procedure

[..]

Expected Sequence 1.9 (OPEN CHANNEL, immediate link establishment, CSD, No channel available)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.9.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.9.1	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.9.1	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.9.2	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.9.2	
1110	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL (immediate) 1.9.2	[Bearer independent protocol error]

[..]

27.22.4.27.2.3   Test purpose

To verify that the ME shall send a:

- TERMINAL RESPONSE (OK); or

- TERMINAL RESPONSE (Command performed with modification); or

- TERMINAL RESPONSE (User did not accept the proactive command);

- TERMINAL RESPONSE (ME currently unable to process command);

to the SIM after the ME receives the OPEN CHANNEL proactive command. The TERMINAL RESPONSE sent back to the SIM is function of the ME and the network capabilities against asked parameters by the SIM.

[..]

27.22.4.28.4.2   Procedure

Expected sequence 1.1 (CLOSE CHANNEL, successful)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1 A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: CLOSE CHANNEL 1.1.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: CLOSE CHANNEL 1.1.1	
11	ME → USER	The ME may display channel closing information	
1210	ME → SS	DISCONNECT	[MO DISCONNECT]
1311	ME → SIM	TERMINAL RESPONSE CLOSE CHANNEL 1.1.1	[Command performed successfully]

[..]

27.22.4.28.4.2   Procedure

[..]

Expected sequence 1.2 (CLOSE CHANNEL, with an invalid channel identifier)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: CLOSE CHANNEL 1.2.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: CLOSE CHANNEL 1.2.1	
1110	ME → SIM	TERMINAL RESPONSE CLOSE CHANNEL 1.2.1	[Invalid channel number]

[..]

27.22.4.28.4.2   Procedure

[..]

Expected sequence 1.3 (CLOSE CHANNEL, on an already closed channel)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: CLOSE CHANNEL 1.1.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: CLOSE CHANNEL 1.1.1	
11	ME → USER	The ME may display channel closing information	
1210	ME → SS	DISCONNECT	[MO DISCONNECT]
1311	ME → SIM	TERMINAL RESPONSE CLOSE CHANNEL 1.1.1	[Command performed successfully]
1412	SIM → ME	PROACTIVE COMMAND PENDING: CLOSE CHANNEL 1.3.1	
1513	ME → SIM	FETCH	
1614	SIM → ME	PROACTIVE COMMAND: CLOSE CHANNEL 1.3.1	
1715	ME → SIM	TERMINAL RESPONSE CLOSE CHANNEL 1.3.1	[Channel closed]

[..]

27.22.4.29.4.2   Procedure

Expected sequence 1.1 (RECEIVE DATA, already opened channel)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.1.1 PENDING	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.1.1	
4	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.1.1	
5	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
6	ME → SIM	FETCH	
7	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL (immediate) 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
8	ME → USER	The ME may display channel opening information	
9~~8~~	ME → SS	SETUP CALL	
10~~9~~	SS → ME	CONNECTED	
11~~10~~	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
12~~11~~	SS → ME	Transfer of 1000 Bytes of data to the ME through channel 1	
13~~12~~	ME → SIM	ENVELOPE: EVENT DOWNLOAD - Data available 1.1.1	(1000 Bytes of data in the ME buffer)
14~~13~~	SIM → ME	PROACTIVE COMMAND PENDING: RECEIVE DATA 1.1.1	
15~~14~~	ME → SIM	FETCH	
16~~15~~	SIM → ME	PROACTIVE COMMAND: RECEIVE DATA 1.1.1	200 Bytes
17~~16~~	ME → SIM	TERMINAL RESPONSE: RECEIVE DATA 1.1.1	
18~~17~~	SIM → ME	PROACTIVE COMMAND PENDING: RECEIVE DATA 1.1.2	
19~~18~~	ME → SIM	FETCH	
20~~19~~	SIM → ME	PROACTIVE COMMAND: RECEIVE DATA 1.1.2	200 Bytes
21~~20~~	ME → SIM	TERMINAL RESPONSE: RECEIVE DATA 1.1.2	
22~~21~~	SIM → ME	PROACTIVE COMMAND PENDING: RECEIVE DATA 1.1.3	
23~~22~~	ME → SIM	FETCH	
24~~23~~	SIM → ME	PROACTIVE COMMAND: RECEIVE DATA 1.1.3	200 Bytes
25~~24~~	ME → SIM	TERMINAL RESPONSE: RECEIVE DATA 1.1.3	
26~~25~~	SIM → ME	PROACTIVE COMMAND PENDING: RECEIVE DATA 1.1.4	
27~~26~~	ME → SIM	FETCH	
28~~27~~	SIM → ME	PROACTIVE COMMAND: RECEIVE DATA 1.1.4	200 Bytes
29~~28~~	ME → SIM	TERMINAL RESPONSE: RECEIVE DATA 1.1.4	
30~~29~~	SIM → ME	PROACTIVE COMMAND PENDING: RECEIVE DATA 1.1.5	
31~~30~~	ME → SIM	FETCH	
32~~31~~	SIM → ME	PROACTIVE COMMAND: RECEIVE DATA 1.1.5	200 Bytes
33~~32~~	ME → SIM	TERMINAL RESPONSE: RECEIVE DATA 1.1.5	

[..]

27.22.4.30.3   Test purpose

To verify that the ME shall send a:

- TERMINAL RESPONSE (Command Performed Successfully); or

- TERMINAL RESPONSE (ME currently unable to process command); or

- TERMINAL RESPONSE (Bearer Independent Protocol Error);

- TERMINAL RESPONSE (Proactive SIM session terminated by the user);

to the SIM after the ME receives the RECEIVE DATA proactive command. The TERMINAL RESPONSE sent back to the SIM is function of the ME and the network capabilities against asked parameters by the SIM.

[..]

27.22.4.30.4.2   Procedure

Expected sequence 1.1 (SEND DATA, immediate mode)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.1.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: SEND DATA (immediate) 1.1.1	
11	ME->SS	Transfer of 8 Bytes of data to the SS through channel 1	
1210	ME → SIM	TERMINAL RESPONSE: SEND DATA (immediate) 1.1.1	[Command performed successfully]

[..]

27.22.4.30.4.2   Procedure

[..]

Expected sequence 1.2 (SEND DATA, Store mode)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.2.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.2.1	Send 500 Bytes of data (200 + 200 + 100)
1110	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.2.1	[Command performed successfully]
1211	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.2.2	
1312	ME → SIM	FETCH	
1413	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.2.2	
1514	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.2.2	[Command performed successfully]
1615	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.2.3	
1716	ME → SIM	FETCH	
1817	SIM → ME	PROACTIVE COMMAND: SEND DATA (Immediate mode) 1.2.3	
19	ME->SS	Transfer of 500 Bytes of data to the SS through channel 1	
2018	ME → SIM	TERMINAL RESPONSE: SEND DATA (Immediate mode) 1.2.3	[Command performed successfully]

[..]

27.22.4.30.4.2   Procedure

[..]

Expected sequence 1.3 (SEND DATA, Store mode, Tx buffer fully used)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1 A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1 A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.1	Send 1kByte of data by packet of 200 Bytes
1110	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.1	[Command performed successfully]
1211	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.2	
1312	ME → SIM	FETCH	
1413	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.2	[200 Bytes]
1514	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.2	[Command performed successfully]
1615	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.3	
1716	ME → SIM	FETCH	
1817	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.3	[200 Bytes]
1918	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.3	[Command performed successfully]
2019	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.4	
2120	ME → SIM	FETCH	
2221	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.4	[200 Bytes]
2322	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.4	[Command performed successfully]
2423	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.5	
2524	ME → SIM	FETCH	
2625	SIM → ME	PROACTIVE COMMAND: SEND DATA (immediate) 1.3.5	[200 Bytes]
27	ME->SS	Transfer of 1000 Bytes of data to the SS through channel 1	
2826	ME → SIM	TERMINAL RESPONSE: SEND DATA (immediate) 1.3.5	[Command performed successfully]

[..]

27.22.4.30.4.2   Procedure

[..]

Expected sequence 1.4 (SEND DATA, 2 consecutive SEND DATA Store mode)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.1	Send 1000 Bytes of data by packets of 200 Bytes
1110	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.1	[Command performed successfully]
1211	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.2	
1312	ME → SIM	FETCH	
1413	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.2	[200 Bytes]
1514	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.2	[Command performed successfully]
1615	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.3	
1716	ME → SIM	FETCH	
1817	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.3	[200 Bytes]
1918	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.3	[Command performed successfully]
2019	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.4	
2120	ME → SIM	FETCH	
2221	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.4	[200 Bytes]
2322	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.4	[Command performed successfully]
2423	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.5	…
2524	ME → SIM	FETCH	
2625	SIM → ME	PROACTIVE COMMAND: SEND DATA (immediate) 1.3.5	
27	ME->SS	Transfer of 1000 Bytes of data to the SS through channel 1	
2826	ME → SIM	TERMINAL RESPONSE: SEND DATA (immediate) 1.3.5	[Command performed successfully]
2927	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.1	

30<s>28</s>	ME → SIM	FETCH	
31<s>29</s>	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.1	Send 1000 Bytes of data by packets of 200 Bytes
32<s>30</s>	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.1	[Command performed successfully]
33<s>31</s>	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.2	
34<s>32</s>	ME → SIM	FETCH	
35<s>33</s>	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.2	[200 Bytes]
36<s>34</s>	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.2	[Command performed successfully]
37<s>35</s>	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.3	
38<s>36</s>	ME → SIM	FETCH	
39<s>37</s>	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.3	[200 Bytes]
40<s>38</s>	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.3	[Command performed successfully]
41<s>39</s>	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.4	
42<s>40</s>	ME → SIM	FETCH	
43<s>41</s>	SIM → ME	PROACTIVE COMMAND: SEND DATA (store mode) 1.3.4	[200 Bytes]
44<s>42</s>	ME → SIM	TERMINAL RESPONSE: SEND DATA (store mode) 1.3.4	[Command performed successfully]
45<s>43</s>	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.3.5	…
46<s>44</s>	ME → SIM	FETCH	
47<s>45</s>	SIM → ME	PROACTIVE COMMAND: SEND DATA (immediate) 1.3.5	
48	ME->SS	Transfer of 1000 Bytes of data to the SS through channel 1	
49<s>46</s>	ME → SIM	TERMINAL RESPONSE: SEND DATA (immediate) 1.3.5	[Command performed successfully]

[..]

27.22.4.30.4.2   Procedure

[..]

Expected sequence 1.5 (SEND DATA, immediate mode with a bad channel identifier)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING: SEND DATA 1.5.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: SEND DATA (immediate) 1.5.1	
1110	ME → SIM	TERMINAL RESPONSE: SEND DATA (immediate) 1.1.1	[Invalid channel number]

[..]

27.22.4.30.4.2   Procedure

[..]

Expected sequence 1.6 (SEND DATA, immediate mode, Proactive SIM session terminated by the user)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
4	ME → USER	The ME may display channel opening information	
54	ME → SS	SETUP CALL	
65	SS → ME	CONNECTED	
76	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
87	SIM → ME	PROACTIVE COMMAND PENDING; SEND DATA 1.6.1	
98	ME → SIM	FETCH	
109	SIM → ME	PROACTIVE COMMAND: SEND DATA (immediate) 1.6.1	
1110	ME → USER	ME displays "Send data"	
1211	USER → ME	Abort proactive session	
1312	ME → SIM	TERMINAL RESPONSE: SEND DATA (immediate) 1.1.1	[Proactive SIM session terminated by the user]

[..]

27.22.5.1.4.2   Procedure

[..]

Expected Sequence 1.2 (SMS-PP Data Download, General Data Coding, GET RESPONSE, Acknowledgement)

Step	Direction	MESSAGE / Action	Comments
1	SS → ME	SMS-PP Data Download Message 1.2.1	
2	ME → USER	The ME shall not display the message or alert the user of a short message waiting.	
3	ME → SIM	ENVELOPE: SMS-PP DOWNLOAD 1.2.2	
4	SIM → ME	RESPONSE DATA AVAILABLE	[SW1 / SW2 of '9F 0B']
5	ME → SIM	GET RESPONSE	
6	SIM → ME	SMS-PP Data Download SIM Acknowledgement 1.2.4	
7	ME → SS	SMS-PP Data Download SIM Acknowledgement 1.2.4 in the TP-User-Data element of the RP-ACK message. The values of protocol identifier and data coding scheme in RP-ACK shall be as in the original message.	

Expected Sequence 1.3 (SMS-PP Data Download, General Data Coding, FETCH, MORE TIME)

Step	Direction	MESSAGE / Action	Comments
1	SS → ME	SMS-PP Data Download Message 1.3.1	
2	ME → USER	The ME shall not display the message or alert the user of a short message waiting	
3	ME → SIM	ENVELOPE: SMS-PP DOWNLOAD 1.3.2	
4	SIM → ME	PROACTIVE COMMAND PENDING: MORE TIME 1.3.4	[SW1 / SW2 of '91 0B']
5	ME → SS	RP-ACK	
6	ME → SIM	FETCH	
7	SIM → ME	PROACTIVE COMMAND: MORE TIME 1.3.4	
8	ME → SIM	TERMINAL RESPONSE: MORE TIME 1.3.5	
9	SIM → ME	PROACTIVE SIM SESSION ENDED	

PROACTIVE COMMAND: MORE TIME 1.3.4

Logically:

    Command details
        Command number: 1
        Command type: MORE TIME
        Command qualifier: "00"
    Device identities
        Source device: SIM
        Destination device: ME

Coding:

BER-TLV:	D0	09	81	03	01	02	00	82	02	81	82

TERMINAL RESPONSE: MORE TIME 1.3.5

Logically:

Command details
    Command number: 1
    Command type: MORE TIME
    Command qualifier: "00"
Device identities
    Source device: ME
    Destination device: SIM
Result
    General Result: Command performed successfully

Coding:

BER-TLV:	81	03	01	02	00	82	02	82	81	83	01	00

Expected Sequence 1.4 (SMS-PP Data Download, General Data Coding)

Step	Direction	MESSAGE / Action	Comments
1	SS → ME	SMS-PP Data Download Message 1.4.1	
2	ME	The ME shall not display the message or alert the user of a short message waiting	
3	ME → SIM	ENVELOPE: SMS-PP DOWNLOAD 1.4.2	
4	SIM → ME	SW1 / SW2 of '90 00'	
5	ME → SS	RP-ACK	

SMS-PP (Data Download) Message 1.2.1 / 1.3.1 / 1.4.1

Logically:

SMS TPDU
    TP-MTI   SMS-DELIVER
    TP-MMS   No more messages waiting for the MS in this SC
    TP-RP   TP-Reply-Path is not set in this SMS-DELIVER
    TP-UDHI   TP-UD field contains only the short message
    TP-SRI   A status report will not be returned to the SME
    TP-OA
    TON   International number
    NPI   "ISDN / telephone numbering plan"
    Address value   "1234"
    TP-PID   SIM Data download
    TP-DCS
        Coding Group   General Data Coding
        Compression   Text is uncompressed
        Message Class   Class 2 SIM Specific Message
        Alphabet   8 bit data
    TP-SCTS: 01/01/98 00:00:00 +0
    TP-UDL   13
    TP-UD   "Short Message"

Coding:

BER-TLV:	04	04~~3~~	91	21	43	7F	16	89	10	10	00	00
	00	00	0D	53	68	6F	72	74	20	4D	65	73
	73	61	67	65								

27.22.5.1.4.2   Procedure

[..]

Expected Sequence 1.6 (SMS-PP Data Download, with Data Coding / Message Class)

Step	Direction	MESSAGE / Action	Comments
1	SS → ME	SMS-PP Data Download Message 1.6.1	
2	ME	The ME shall not display the message or alert the user of a short message waiting	
3	ME → SIM	ENVELOPE: SMS-PP DOWNLOAD 1.6.2	
4	SIM → ME	SW1 / SW2 of '90 00'	
5	ME → SS	RP-ACK	

SMS-PP (Data Download) Message 1.6.1

Logically:

SMS TPDU
      TP-MTI   SMS-DELIVER
      TP-MMS   No more messages waiting for the MS in this SC
      TP-RP   TP-Reply-Path is not set in this SMS-DELIVER
      TP-UDHI   TP-UD field contains only the short message
      TP-SRI   A status report will not be returned to the SME
      TP-OA
         TON   International number
         NPI   "ISDN / telephone numbering plan"
         Address value   "1234"
      TP-PID   SIM Data download
      TP-DCS
         Coding Group   Data Coding / Message Class
         Message Coding   8 bit data
         Message Class   Class 2 SIM Specific Message
      TP-SCTS: 01/01/98 00:00:00 +0
      TP-UDL   13
      TP-UD   "Short Message"

Coding:

BER-TLV:	04	04~~03~~	91	21	43	7F	F6	89	10	10	00	00
	00	00	0D	53	68	6F	72	74	20	4D	65	73
	73	61	67	65								

[..]

27.22.6.1.4.2   Procedure

[..]

Expected Sequence 1.14 (CALL CONTROL BY SIM , set up call through call register, allowed with modifications)

Pre-condition: the ME has a mean to register the last dialled number(s), and the ME will store dialled numbers allowed with modification by call control in its register.

Step	Direction	Message / Action	Comments
1	User → ME	Set up a call to "+01234567890123456789"	
2	ME → SIM	ENVELOPE CALL CONTROL 1.6.1A or ENVELOPE CALL CONTROL 1.6.1B	[Option A shall apply for GSM parameters] [Option B shall apply for PCS1900 parameters]
3	SIM → ME	9F 08	
4	ME → SIM	GET RESPONSE	
5	SIM → ME	CALL CONTROL RESULT 1.6.1	[Call control result: "Allowed with modifications"]
6	ME → SS	The ME sets up the call to "+010203"	
7	User → ME	End the call and then Sset up a call to "+01234567890123456789"	
8	ME → SIM	ENVELOPE CALL CONTROL 1.6.1A or ENVELOPE CALL CONTROL 1.6.1B	[Option A shall apply for GSM parameters] [Option B shall apply for PCS1900 parameters]
9	SIM → ME	9F 08	
10	ME → SIM	GET RESPONSE	
11	SIM → ME	CALL CONTROL RESULT 1.6.1	[Call control result: "Allowed with modifications"]
12	ME → SS	The ME sets up the call to "+010203"	

[..]

45

27.22.7.1.1.3   Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: MT Call has occurred using the ENVELOPE (EVENT DOWNLOAD - MT Call) command.

[..]

27.22.7.2.1.3   Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: Call Connected has occurred using the ENVELOPE (EVENT DOWNLOAD -Call Connected) command.

[..]

27.22.7.2.2.3 Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: Call Connected has occurred using the ENVELOPE (EVENT DOWNLOAD -Call Connected) command.

[..]

27.22.7.3.1.3   Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: Call Disconnected has occurred using the ENVELOPE (EVENT DOWNLOAD -Call Disconnected) command.

[..]

27.22.7.6.1.3   Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: Idle Screen Available has occurred using the ENVELOPE (EVENT DOWNLOAD - IDLE SCREEN AVAILABLE) command.

[..]

27.22.7.6.1.4.2 Procedure

Expected Sequence 1.1 (EVENT DOWNLOAD - IDLE SCREEN AVAILABLE)

Step	Direction	MESSAGE / Action	Comments
1	USER → ME	Select screen other than the ME idle screen	
2	SIM → ME	PROACTIVE COMMAND PENDING: SET UP EVENT LIST 1.1.1	[set up event list: idle screen available]
3	ME → SIM	FETCH	
4	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.1.1	[set up event list: idle screen available]
5	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.1.1	[command performed successfully]
6	USER → ME	Select ME idle screen	
7	ME → SIM	ENVELOPE: IDLE SCREEN AVAILABLE 1.1.1	
8	USER → ME	Select screen other than the ME idle screen	
98	USER → ME	Select ME idle screen	check if no envelope Event Download- idle screen sending to the SIM (this event is reported once)
10	ME → SIM	No envelope Event Download- idle screen shall be sent to the SIM	

[..]

27.22.7.7.1.3   Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: Card Reader Status has changed using the ENVELOPE (EVENT DOWNLOAD - Card Reader Status) command.

The ME-Manufacturer can assign the card reader identifier from 0 to 7.

This test applies for MEs with only one additional card reader.

In this particular case the card reader identifier 1 is chosen.

 [..]

27.22.7.7.2.3   Test purpose

To verify that the ME informs the SIM that~~the~~ an Event: Card Reader Status has changed using the ENVELOPE (EVENT DOWNLOAD - Card Reader Status) command.

The ME-Manufacturer can assign the card reader identifier from 0 to 7.

This test applies for MEs with only one additional card reader.

In this particular case the card reader identifier 1 is chosen as an example

 [..]

27.22.7.10.4.2   Procedure

Expected sequence 1.1 (EVENT DOWNLOAD - Data available)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	[Command performed successfully]
4	ME → USER	The ME may display channel opening information	
5	ME → SS	SETUP CALL	
6	SS → ME	CONNECTED	
7	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	
84	SS → ME	Data sent through the BIP channel	
95	ME → SIM	ENVELOPE 1.1.1 (Event-Data Available)	

PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A

Logically:

Command details
        Command number: 1
        Command type: OPEN CHANNEL
        Command qualifier: immediate link establishment
Device identities
        Source device: SIM
        Destination device: ME
Address
        TON: International number
        NPI: ISDN / telephone numbering plan
        Dialling number string   "112233445566778"
Bearer description
        Bearer type: CSD
        Bearer parameter
            Data rate: 9600bps V.32
            Bearer service: data circuit asynchronous UDI
            Connection element: non-transparent
Buffer size   1000

Coding:

BER-TLV:	D0	1E	81	03	01	40	01	82	02	81	82	86
	09	91	11	22	33	44	55	66	77	F8	B5	04
	01	07	00	01	B9	02	03	E8				

TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A

Logically:

Command details
     Command number: 1
     Command type: OPEN CHANNEL
     Command qualifier: immediate link establishment
Device identities
     Source device: ME
     Destination device: SIM
Result
     General Result: Command performed successfully
Channel status   Channel identifier 1 and link established
Bearer description
     Bearer type: CSD
     Bearer parameter
      Data rate: 9600bps V.32
       Bearer service: data circuit asynchronous
       Connection element: non-transparent
Buffer size   1000

Coding:

BER-TLV:	81	03	01	40	01	82	02	82	81	83	01	00
	B8	02	81	01	B5	04	01	07	00	01	B9	02
	03	E8										

PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B

Logically:

Command details
     Command number: 1
     Command type: OPEN CHANNEL
     Command qualifier: immediate link establishment
Device identities
     Source device: SIM
     Destination device: ME
Bearer
     Bearer type: GPRS
     Bearer parameter:
      Precedence Class: 02
      Delay Class: 04
      Reliability Class: 05
      Peak throughput class: 05
      Mean throughput class: 16
      Packet data protocol: 02 (IP)
Buffer
     Buffer size: 1000
Text String: UserLog (User login)
Text String: UserPwd (User password)
SIM/ME interface transport level
     Transport format: UDP
     Port number: 44444
Data destination address   01.01.01.01

Coding:

BER-TLV:	D0	36	81	03	01	40	01	82	02	81	82	35
	07	02	02	04	05	05	10	02	39	02	03	E8
	0D	08	F4	55	73	65	72	4C	6F	67	0D	08
	F4	55	73	65	72	50	77	64	3C	03	01	AD
	9C	3E	05	21	01	01	01	01				

TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B

Logically:

Command details
    Command number: 1
    Command type: OPEN CHANNEL
    Command qualifier: immediate link establishment
Device identities
    Source device: ME
    Destination device: SIM
Result
    General Result: Command performed successfully
Channel status   Channel identifier 1 and link established or PDP context activated
Bearer description
    Bearer type: GPRS
    Bearer parameter:
      Precedence Class: 02
      Delay Class: 04
      Reliability Class: 05
      Peak throughput class: 05
      Mean throughput class: 16
      Packet data protocol: 02 (IP)
Buffer
    Buffer size: 1000

Coding:

BER-TLV:	81	03	01	40	01	82	02	82	81	83	01	00
	38	02	81	00	35	07	02	02	04	05	05	10
	02	39	02	03	E8							

ENVELOPE: EVENT DOWNLOAD - Data available 1.1.1

Logically:

Event list
    Event: Data available
Device identities
    Source device: ME
    Destination device: SIM
Channel status
    Channel status: Channel 1 open, link established
Channel Data Length
    Channel data length: 8 Bytes available in Rx buffer

Coding:

BER-TLV:	D6	0E	99	01	09	82	02	82	81	B8	02	81
	00	B7	01	08								

[..]

27.22.7.11.4.2   Procedure

Expected sequence 1.1 (EVENT DOWNLOAD - Channel Status on a link dropped)

Step	Direction	MESSAGE / Action	Comments
1	SIM → ME	PROACTIVE COMMAND PENDING: SET UP EVENT LIST 1.1.1	
2	ME → SIM	FETCH	
3	SIM → ME	PROACTIVE COMMAND: SET UP EVENT LIST 1.1.1	[EVENT: channel status]
4	ME → SIM	TERMINAL RESPONSE: SET UP EVENT LIST 1.1.1	[command performed successfully]
5	SIM → ME	PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND PENDING: OPEN CHANNEL 1.1.1B	See initial conditions
6	ME → SIM	FETCH	
7	SIM → ME	PROACTIVE COMMAND: OPEN CHANNEL 1.1.1A or PROACTIVE COMMAND: OPEN CHANNEL 1.1.1B	
8	ME → USER	The ME may display channel opening information	
9	ME → SS	SETUP CALL	
10	SS → ME	CONNECTED	
11	ME → SIM	TERMINAL RESPONSE: OPEN CHANNEL 1.1.1A or TERMINAL RESPONSE: OPEN CHANNEL 1.1.1B	[Command performed successfully]
12	SS → ME	Link dropped	
13	ME → SIM	ENVELOPE 1.1.1 (Event-Channel Status)	

[..]