3GPP TSG-T (Terminals) Meeting #16
Marco Island, USA   4 – 6 June 2002

Tdoc TP-020118

Source: T3

Title: Change Requests to TS 31.122 USIM conformance test specification

Document for: Approval

This document contains several change requests as follows:

T3 Doc	Spec	CR	Rel	Cat	Subject
T3-020426	31.122	007	99	F	General Corrections
T3-020425	31.122	008	99	F	Removal of test for use of procedure byte '61xx' for case 2 commands

CR-Form-v3

CHANGE REQUEST

⌘ **31.122** CR **007** ⌘ rev **-** ⌘ Current version: **3.2.0** ⌘

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

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

Title: ⌘	General Corrections	
Source: ⌘	T3	
Work item code: ⌘	TEI	***Date:*** ⌘ 24/05/02
Category: ⌘ **F**		***Release:*** ⌘ R99

Use <u>one</u> of the following categories:
F (essential 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:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	TS 31.122 mandates the use of certain status words while TS 102 221 does not mandate any specific one.
Summary of change: ⌘	Make TS 31.122 less restrictive
Consequences if not approved: ⌘	TS 31.122 does not test correctly TS 102 221 since it mandates a specific UICC/USIM behaviour which is not required by TS 102 221.

Clauses affected: ⌘	6.5.2.2.2, 6.5.2.2.3, 6.5.4.3, 6.6.3, 6.7.2.1, 6.8.1.1, 6.8.1.2, 6.8.1.6, 6.8.1.7, 6.8.1.8, 6.8.1.9, 6.8.1.10, 6.8.1.11, 6.8.1.12, 6.8.1.13, 6.8.1.14

Other specs Affected: ⌘	☐ Other core specifications ⌘
	☐ Test specifications
	☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

6.5.2.2.2 Linear fixed EF

6.5.2.2.2.1 Definition and applicability

Linear fixed Elementary Files structure the way in which information is held in a sequence of the same length of record format on the UICC and provide means on how this information is accessed.

6.5.2.2.2.2 Conformance requirement

CR1 A linear fixed EF consists of a sequence of records all having the same (fixed) length.

CR2 The first record shall be record number 1.

CR3 The length of a record shall be indicated in the SELECT response of the EF.

CR4 The length of a record multiplied by the number of records shall be indicated in the SELECT response of the EF.

CR5 The UICC shall be able to access records within a linear fixed EF using all of the following:

- absolutely using the record number;

- when the record pointer is not set, it shall be possible to perform an action on the first or the last record by using the NEXT or PREVIOUS mode;

- when the record pointer is set it shall be possible to perform an action on this record, the next record (unless the record pointer is set to the last record) or the previous record (unless the record pointer is set to the first record);

- by identifying a record using pattern search.

CR6 If an action following selection of a record is aborted (e.g. due to an unsuccessful execution of a command), then the record pointer shall remain set at the record at which it was set prior to the action.

Reference: TS 102.221 [1], subclause 8.2.2.2.

Test Group Reference (TGR): TGR_USIM_TP102.221_AFS_FT_EF_LF

Test Procedure Reference (TPR): TPR_USIM_TP102.221_AFS_FT_EF_LF

6.5.2.2.2.3 Test purpose

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

NOTE: CR5 and CR6 are tested in subclause 6.8.1.

6.5.2.2.2.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) The records in EF_{FDN} shall contain the following data for the first 10 bytes:

```
1st record  'A0 A1 A2 B0 B1 B2 A0 A1 A2 A0'
2nd record  'B0 B1 B2 A0 A1 A2 A0 A1 A2 B0'
3rd record  'B0 B1 B2 A0 A1 A2 B0 B1 B2 A0'
4th record  'A0 A1 A2 B0 B1 B2 B0 B1 B2 B0'
```

3) The data for the remainder of these four records and for all other records (if any) shall be 'FF'.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

d) The ME simulator shall send a SELECT command to the UICC to select EF$_{FDN}$.

   Following shall be true for the SELECT response data:

   - *the value of TLV DO with tag '80' shall be equal to product of byte 6 and byte 7 in TLV DO with tag '82' [CR4].*

e) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 and Le = '00' to the UICC.

   The data returned by the UICC shall be that of the first record [CR2].

   The length of the data returned shall be that of byte 6 in TLV DO with tag '82' of the response data in step d) [CR3].

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

f) The ME simulator shall repeat sending a READ RECORD command using NEXT mode with Le = '00' to the UICC until it reaches the last record whose record number is equal to the byte 7 in TLV DO with tag '82' of the response data in step d).

   The length of the data returned in response to every READ RECORD command shall be that of byte 6 in TLV DO with tag '82' of the response data in step d) [CR1, CR3].

   The status condition returned by the UICC in response to every READ RECORD command shall be SW1='90', SW2='00' - normal ending of the command.

g) The ME simulator shall send a READ RECORD command using NEXT mode with Le = '00' to the UICC.

   The UICC shall return an error code appropriate to the command (e.g. SW1='6A', SW2='83' - record not found) [CR4] The status condition returned by the UICC shall be SW1='6A', SW2='83' - record not found [CR4].

NOTE: Step g) confirms that the number of records indicated in byte 7 in the TLV DO with tag '82' of the response data is correct.

6.5.2.2.3 Cyclic EF

6.5.2.2.3.1 Definition and applicability

Cyclic Elementary Files structure the way in which information is held in a record format with chronological order on the UICC and provide means on how this information is accessed.

6.5.2.2.3.2 Conformance requirement

CR1 An EF with a cyclic structure consists of a fixed number of records with the same (fixed) length.

CR2 In this file structure there shall be a link between the last record (n) and the first record.

CR3 When the record pointer is set to the last record n, then the next record shall be record number 1.

CR4 When the record pointer is set to record 1, then the previous record shall be record number n.

CR5 The last updated record containing the newest data shall be record number 1, and the oldest data shall be held in record number n.

CR6 For update operations only PREVIOUS record shall be used.

CR7 For reading operations, the methods of addressing shall be Next, Previous, Current and Record Number.

CR8 If an action following selection of a record is aborted (e.g. due to an unsuccessful execution of a command), then the record pointer shall remain set at the record at which it was set prior to the action.

Reference: TS 102.221 [1], subclause 8.2.2.3.

Test Group Reference (TGR): TGR_USIM_TP102.221_AFS_FT_EF_CF

Test Procedure Reference (TPR): TPR_USIM_TP102.221_AFS_FT_EF_CF

6.5.2.2.3.3 Test purpose

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

> NOTE: CR8 are tested in subclause 6.8.1.

6.5.2.2.3.4 Method of test

> NOTE: When EF_{ICI} is not supported by the UICC, any supported cyclic EF in ADF_{USIM} may be chosen.

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) EF_{ICI} shall have at least 4 records.

3) The records in EF_{ICI} shall contain the following data:

   1st record '01' for all bytes
   2nd record '02' for all bytes
   3rd record '03' for all bytes
   xth record '0X' for all bytes

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

d) The ME simulator shall send a SELECT command to the UICC to select EF_{ICI}.

e) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

   The response data shall be the data in the first record [CR1].

f) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step b).

   The response data shall be the data in the last record [CR1, CR4].

g) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step b).

   The response data shall be the data in the first record [CR2, CR3, CR4, CR7].

h) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step b).

   The response data shall be the data in the last record [CR4, CR7].

i) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC with 'FF' for all the bytes. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step b) [CR5].

j) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

   The response data shall be the new data that has been updated in step ij) [CR5].

k) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The response data shall be the previous data in the second last record [CR5].

l) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 1 to the UICC with 'FF' for all the bytes. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The UICC shall return an error code appropriate to the command (e.g. SW1='69', SW2='81' – command incompatible with file structure) The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR6].

m) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC with 'FF' for all the bytes. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The UICC shall return an error code appropriate to the command (e.g. SW1='69', SW2='81' – command incompatible with file structure) The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR6].

n) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC with 'FF' for all the bytes. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The UICC shall return an error code appropriate to the command (e.g. SW1='69', SW2='81' – command incompatible with file structure) The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR6].

6.5.4.3 Short File Identifier

6.5.4.3.1 Definition and applicability

Any EF within a DF can be implicitly selected without giving a SELECT command by applying one of the following commands at the DF or ADF level and giving a Short File Identifier (SFI) as a part of the command:

6.5.4.3.2 Conformance requirement

CR1 It shall be possible to use to the following commands.

 a) READ RECORD;

 b) UPDATE RECORD;

 c) READ BINARY;

 d) UPDATE BINARY;

 e) INCREASE;

 f) SEARCH RECORD.

CR2 SFI shall be found in the TLV DO with tag '88'.

CR3 If the length of the TLV DO with tag '88' is 0, it indicates that the file does not support referencing by SFI.

CR4 If TLV DO is absent, the least significant 5 bits of the file identifier shall be used as SFI.

CR5 SFI shall not be used in a path as file identifier.

CR6 When the READ RECORD command contains a valid SFI, it shall set the file as the current EF and reset the current record pointer. Subsequent records are read with the READ RECORD command without SFI.

CR7 When the UPDATE RECORD command contains a valid SFI, it shall set the file as the current EF and reset the current record pointer. Subsequent records are updated with the UPDATE RECORD command without SFI.

CR8 When the INCREASE command contains a valid SFI, it shall set the file as the current EF and reset the current record pointer. Subsequent records are increased with the INCREASE command without SFI.

CR9 When the SEARCH RECORD command contains a valid SFI, it shall set the file as the current EF and reset the current record pointer. Subsequent records are searched with the SEARCH RECORD command without SFI.

Reference: TS 102.221 [1], subclause 8.4.3.

Test Group Reference (TGR): TGR_USIM_TP102.221_AFS_MSF_SFI

Test Procedure Reference (TPR): TPR_USIM_TP102.221_AFS_MSF_SFI

6.5.4.3.3 Test purpose

To verify that the UICC conforms to the above requirements with regard to selection by short file identifier.

NOTE 1: CR3 shall not be tested as it requires information on the files which do not support SFI.

NOTE 2: CR4 shall not be tested as it requires information on the file ID.

NOTE 3: CR1, CR6, CR7, CR8 and CR9 are tested in subclause 6.8.1.

6.5.4.3.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF_{IMSI}.

   TLV DO with tag '88' of the response data shall indicate the SFI of the EF_{IMSI} [CR2].

d) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

e) The ME simulator shall send a SELECT command to the UICC to select EF_{IMSI} with using the SFI in the path.

   ~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR5].

6.6.3 Security Environment

6.6.3.1 Definition and applicability

The security environment is a mechanism to specify for the card system the security functions that are available to provide protection to commands for a specific application of the UICC.

6.6.3.2 Conformance requirement

CR1 For Release '99 (Card implementation) SE01 (default SE) and SE00 (no authentication method required) are defined.

CR2 When the SE00 is active, Universal PIN shall be used if known and enabled, otherwise no PIN shall be used.

CR3 When the SE00 is active, Application PIN shall be disabled.

CR4 When the SE01 is active, Application PIN shall be used if enabled, otherwise no PIN shall be used.

CR5 A multi-verification capable UICC shall support the use of SE00 and SE01 in order to allow application verification requirement to be replaced by the Universal PIN.

CR6 The PIN shall map to the SE ID according to table 9.1 of the TS 102.221 [1].

Reference: TS 102.221 [1], subclause 9.3.1.

Test Group Reference (TGR): TGR_USIM_TP102.221_SEC1_SE

Test Procedure Reference (TPR): TPR_USIM_TP102.221_SEC1_SE

6.6.3.3 Test purpose

To verify that the UICC conforms to the above requirements.

6.6.3.4 Method of test

NOTE: The following test procedures shall be applicable only to a multi-verification capable UICC.

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) SE01 shall be active.

Test procedures

For a multi-verification capable UICC

a) The ME simulator shall reset the UICC.

c) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application [CR1].

The following shall be true of the response data:

- *TLV DO with tag '90' (PIN Status) under TLV DO with tag 'C6' shall indicate that the Application PINs and the Universal PIN are enabled;*

- *TLV DO with tag '8B' shall be as follows:*

EF$_{ARR}$ FID	SE ID1	Record No X	SE ID2	Record No Y

where - *SE ID1 and SE ID2 can be either 00 or 01, but SE ID1 shall not be the same as SE ID2.*

- *Record No X and Y are the record number of the EF$_{ARR}$.*

d) The ME simulator shall send a READ RECORD command to read the record number X of EFARR [CR4].

If SE ID1 is 00, either one of the following shall be true of the response data:

- *The TLV_DO with tag '83' in the SC_DO shall be '11';*

- *The SC_DO shall be '90 00'.*

If SE ID1 is 01, either one of the following shall be true of the response data:

- *The TLV_DO with tag '83' in the SC_DO shall be '01';*

- *The SC_DO shall be '90 00'.*

e) Step d) shall be repeated for record number Y for SE ID2 [CR4].

f) If the TLV_DO with tag 83 is '01' for SE01, steps f) to v shall be carried out.

g) The ME simulator shall send a SELECT command to the UICC to select EFICCID.

h) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR6].

i) The ME simulator shall send a SELECT command to the UICC to select EF_{IMSI} under ADF_{USIM}.

j) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '69', SW2 = '82' – security status not satisfied.

k) The ME simulator shall send a VERIFY PIN command using Universal PIN to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR4].

l) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '69', SW2 = '82' – security status not satisfied.

m) The ME simulator shall send a VERIFY PIN command using PIN Application 1 to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR4].

n) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR4, CR6].

o) The ME simulator shall send a DISABLE PIN command to disable the PIN Application 1 to the UICC.

p) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

The following shall be true of the response data:

- *TLV DO with tag '90' (PIN Status) under TLV DO with tag 'C6' shall indicate that the PIN Application 1 is disabled, and the Universal PIN is enabled and its Usage Qualifier is set to '00'.*

q) The ME simulator shall send a SELECT command to the UICC to select EF_{ICCID}.

r) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR6].

s) The ME simulator shall send a SELECT command to the UICC to select EF_{IMSI} under ADF_{USIM}.

t) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR4, CR6].

u) The ME simulator shall send an ENABLE PIN command to enable the PIN Application 1 to the UICC.

v) The ME simulator shall send a DISABLE PIN command to disable and indicate the Universal PIN as a replacement of the PIN Application 1 to the UICC [CR5].

w) The ME simulator shall reset the UICC.

x) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

The following shall be true of the response data:

- *TLV DO with tag '90' (PIN Status) under TLV DO with tag 'C6' shall indicate that the PIN Application 1 is disabled and the Universal Pin is enabled [CR2, CR3].*

y) If the TLV_DO with tag 83 is '11' for SE00, steps z to mm) shall be carried out.

z) The ME simulator shall send a SELECT command to the UICC to select EF_{ICCID}.

aa) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR6].

bb) The ME simulator shall send a SELECT command to the UICC to select EFIMSI under ADFUSIM.

cc) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '69', SW2 = '82' – security status not satisfied.

dd) The ME simulator shall send a VERIFY PIN command using PIN Application 1 to the UICC.

The response data returned by the UICC shall indicate an error.

ee) The ME simulator shall send a VERIFY PIN command using Universal PIN to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR2].

ff) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR2, CR6].

gg) The ME simulator shall send a DISABLE PIN command to disable the Universal PIN to the UICC.

hh) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

The following shall be true of the response data:

-    *TLV DO with tag '90' (PIN Status) under TLV DO with tag 'C6' shall indicate that the PIN Application 1 and the Universal Pin are disabled.*

ii) The ME simulator shall send a SELECT command to the UICC to select EFICCID.

jj) The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR6].

kk) The ME simulator shall send a SELECT command to the UICC to select EFIMSI under ADFUSIM.

ll   The ME simulator shall send a READ BINARY command to the UICC.

The response data returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR2, CR6].

mm)   The ME simulator shall send an ENABLE PIN command to enable the Universal PIN to the UICC.

nn) The ME simulator shall send an ENABLE PIN command to enable the PIN Application 1 to the UICC.

6.7.2.1   Status Conditions Returned by the UICC

6.7.2.1.1   Definition and applicability

The status words SW1 and SW2 provide the method with which the UICC can respond to the ME after executing a command.

6.7.2.1.2   Conformance requirement

CR1   The UICC shall respond with the appropriate SW1 and SW2 status words for commands which are correctly executed.

CR2 The UICC shall respond with the appropriate SW1 and SW2 status words for commands which produce warnings.

CR3 The UICC shall respond with the appropriate SW1 and SW2 status words for commands which produce execution errors.

CR4 The UICC shall respond with the appropriate SW1 and SW2 status words for commands which produce checking errors.

CR5 The UICC shall respond with the appropriate SW1 and SW2 status words for commands which produce application errors.

Reference: TS 102.221 [1], subclause 10.2.1.

Test Group Reference (TGR): TGR_USIM_TP102.221_CS_RS_SC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CS_RS_SC

6.7.2.1.3 Test purpose

To verify that the UICC conforms to the above requirements when issuing SW1 and SW2 status words.

NOTE 1: CR3 is not tested as it is not possible to force a UICC to produce an execution error.

NOTE 2: CR5 is tested in subclause 6.8.1.8.

6.7.2.1.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

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

c) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

d) The ME simulator shall send a READ BINARY command without SFI referencing to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '86' - command not allowed (no EF selected) [CR4].

e) The ME simulator shall send a SELECT command to the UICC to select EF_{IMSI}.

f) The ME simulator shall send a READ BINARY command with P2 = '0F' to the UICC.

The status condition returned by the UICC shall be SW1 = '6B', SW2 = '00' - wrong parameter(s) P1-P2, or SW1 = '6A', SW2 = '86' – incorrect parameters P1-P2 [CR4].

g) The ME simulator shall send a SELECT command to the UICC to select EF_{ECC}.

h) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC.

i) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC.

The status condition returned by the UICC shall be SW1 = '6A', SW2 = '83' - record not found [CR4].

j) The ME simulator shall send a READ BINARY command using a length of 1 byte to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR4].

k) The ME simulator shall send a SELECT command to the UICC to select EF$_{LOCI}$ with Lc = 1.

   The status condition returned by the UICC shall be SW1 = '67', SW2 = '00' - wrong length, or SW1 = '6A', SW2 = '87' – Lc inconsistent with P1 - P2 [CR4].

l) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

   The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' – security status not satisfied [CR2].

m) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

   The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' – security status not satisfied [CR2].

n) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

   The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' – security status not satisfied [CR2].

o) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

   The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' – authentication method blocked [CR4].

p) The ME simulator shall send an UNBLOCK PIN command with Unblock PIN to the UICC.

q) The ME simulator shall send a READ RECORD command using P2 = '01' to the UICC.

   The status condition returned by the UICC shall be SW1 = '6B', SW2 = '00' – wrong parameter(s) P1 - P2, or SW1 = '6A', SW2 = '86' - incorrect parameter P1 or P2 [CR4].

r) The ME simulator shall send the following APDU to the UICC.
   [Bytes sent: CLA = '00', INS = '6F', P1 = '00', P2 = '00', P3 = '00']

   The status condition returned by the UICC shall be SW1 = '6D', SW2 = '00' - instruction code not supported or invalid [CR4].

s) The ME simulator shall send a GET RESPONSE command to the UICC.

   The status condition returned by the UICC shall be SW1 = '6F', SW2 = '00' - technical problem, no precise diagnosis [CR4].

t) The ME simulator shall send the following APDU to the UICC.
   [Bytes sent: CLA = '40', INS = 'C0', P1 = '00', P2 = '00', P3 = '00']

   The status condition returned by the UICC shall be SW1 = '6E', SW2 = '00' – class not supported [CR4].

u) The ME simulator shall send a STATUS command with CLA = '81' to the UICC.

   The status condition returned by the UICC shall be SW1 = '68', SW2 = '81' – logical channel not supported or SW1 = '6E', SW2 = '00 ' – class not supported [CR4].

v) The ME simulator shall send a STATUS command with CLA = '84' to the UICC.
   [Bytes sent: CLA = '84', INS = 'F2', P1 = '00', P2 = '00', Le = '02']

   The status condition returned by the UICC shall be SW1 = '68', SW2 = '82' – secure messaging not supported or SW1 = '6E', SW2 = '00 ' – class not supported [CR4].

w) The ME simulator shall reset the UICC.

x) The ME simulator shall send a SELECT command with an incorrect file ID to the UICC.
   [Bytes sent: CLA = '00', INS = 'A4', P1 = '00', P2 = '04', Lc = '02', data = '12 34']

   The status condition returned by the UICC shall be SW1 = '6A', SW2 = '82' – file not found [CR4].

y) The ME simulator shall send a SELECT command to the UICC to select EF$_{ICCID}$.

z) The ME simulator shall send an UPDATE BINARY command to the UICC. The data used shall be '00 00'.

   The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' – security status not satisfied [CR4].

SW1	SW2	Description	CR	TP
'90'	'00'	- Normal ending of the command	CR1	b)
'91'	'XX'	- Normal ending of the command, with extra information from the proactive UICC containing a command for the ME. Length 'XX' of the response data	USAT	N/A
SW1	**SW2**	**Error description**		
'93'	'00'	- SIM Application Toolkit is busy. Command cannot be executed at present, further normal commands are allowed.	USAT	N/A
SW1	**SW2**	**Description**		
'62'	'00'	- No information given, state of non volatile memory unchanged	CR2	N/A
'62'	'81'	- Part of returned data may be corrupted	CR2	N/A
'62'	'82'	- End of file/record reached before reading Le bytes	CR2	N/A
'62'	'83'	- Selected file invalidated	CR2	N/A
'63'	'CX'	- Command successful but after using an internal update retry routine 'X' times - Verification failed, 'X' retries remaining	CR2	l), m), n)
SW1	**SW2**	**Description**		
'64'	'00'	- No information given, state of non-volatile memory unchanged	CR3	N/A
'65'	'00'	- No information given, state of non-volatile memory changed	CR3	N/A
'65'	'81'	- Memory problem	CR3	N/A
SW1	**SW2**	**Description**		
'67'	'00'	- Wrong length	CR4	k)
'67'	'XX'	- The interpretation of this status word is command dependent, except for SW2 = '00'	CR4	N/A
'6B'	'00'	- Wrong parameter(s) P1-P2	CR4	f), q)
'6D'	'00'	- Instruction code not supported or invalid	CR4	r)
'6E'	'00'	- Class not supported	CR4	t), u), v)
'6F'	'00'	- Technical problem, no precise diagnosis	CR4	s)
'6F'	'XX'	- The interpretation of this status word is command dependent, except for SW2 = '00'	CR4	N/A
SW1	**SW2**	**Description**		
'68'	'00'	- No information given	CR4	N/A
'68'	'81'	- Logical channel not supported	CR4	u)
'68'	'82'	- Secure messaging not supported	CR4	v)
SW1	**SW2**	**Description**		
'69'	'00'	- No information given	CR4	N/A
'69'	'81'	- Command incompatible with file structure	CR4	j)
'69'	'82'	- Security status not satisfied	CR4	z)
'69'	'83'	- Authentication method blocked	CR4	o)
'69'	'84'	- Referenced data invalidated	CR4	N/A
'69'	'85'	- Conditions of used not satisfied	CR4	N/A
'69'	'86'	- Command not allowed (no EF selected)	CR4	d)
SW1	**SW2**	**Description**		
'6A'	'80'	- Incorrect parameters in the data field	CR4	N/A
'6A'	'81'	- Function not supported	CR4	N/A
'6A'	'82'	- File not found	CR4	x)
'6A'	'83'	- Record not found	CR4	i)
'6A'	'86'	- Incorrect parameters P1-P2	CR4	f), q)
'6A'	'87'	- Lc inconsistent with P1-P2	CR4	k)
'6A'	'88'	- Referenced data not found	CR4	N/A
SW1	**SW2**	**Error description**		
'98'	'50'	- INCREASE cannot be performed, max value reached.	CR5	6.8.1.8.4 h)
'98'	'62'	- Authentication error, application specific	CR5	N/A

6.8.1.1 SELECT

6.8.1.1.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.1.2 Conformance requirement

CR1 This function shall select a file according to the methods described in subclause 8.4 of TS 102.221 [1].

CR2 The function shall accept as an input:

   a) a file ID (FID);

   b) an application ID (AID);

   c) a path;

   d) empty.

CR3 If the selected file is the MF or a DF, then the function shall output the file descriptor, file identifier, UICC characteristics, life cycle status integer, security attributes and PIN status.

CR4 If the selected file is the a ADF, then the function shall output the file descriptor, DF name, UICC characteristics, life cycle status integer, security attributes and PIN status.

CR5 If the selected file is an EF, then the function shall output the file descriptor, file identifier, UICC characteristics, security attributes, life cycle status integer and file size.

CR6 After a successful selection the record pointer shall be undefined.

CR7 If P2 = '0C' the function shall output only SW1 and SW2.

CR8 If P1 = '00' and if the data field is empty or equal to '3F 00' then the function shall select the MF.

CR9 If P1 = '00' and if the data field is equal to '7F FF' then the function shall select the ADF of the current application.

CR10 It is mandatory for data objects to be provided in the order given in the description of each response.

Reference: TS 102.221 [1], subclause 11.1.1.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_SEL

6.8.1.1.3 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 6.5.4.

6.8.1.1.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

   a) The ME simulator shall reset the UICC.

   b) The ME simulator shall send a SELECT command to the UICC to select DF$_{TELECOM}$.

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

   The FCP shall contain the following tags [CR3]:

   - *Tag '82' (File Descriptor)*

     The first byte shall be '38' or '78' (indicating a DF or ADF);

   - *Tag '83' (File Identifier)*

The value shall be '7F 10' (indicating DF$_{TELECOM}$);

- *Tag 'A5' (Proprietary information)*

   It shall contain tag '80' (UICC characteristics);

- *Tag '8A' (Life Cycle Status Integer);*

- *Tag 'C6' (PIN Status Template DO)*

   It shall contain tag '90' (PS_DO).

The FCP shall contain exactly one of the following tags:

- *Tag '8C' (Compact format);*

- *Tag 'AB' (Expanded format);*

- *Tag '8B' (Referenced to Expanded Format).*

The TLV DOs with the above Tags shall be provided in FCP in order given in the Table 11.3 of subclause 11.1.1.3 of the TS 102.221 [1] [CR10].

c)   The ME simulator shall send a SELECT command to the UICC to select the MF.

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

The FCP shall contain the following tags [CR3]:

- *Tag '82' (File Descriptor)*

   The first byte shall be '38' or '78' (indicating a DF or ADF);

- *Tag '83' (File Identifier)*

   The value shall be '3F 00' (indicating MF);

- *Tag 'A5' (Proprietary information)*

   It shall contain tag '80' (UICC characteristics);

- *Tag '8A' (Life Cycle Status Integer);*

- *Tag 'C6' (PIN Status Template DO)*

   It shall contain tag '90' (PS_DO).

The FCP shall contain exactly one of the following tags:

- *Tag '8C' (Compact format);*

- *Tag 'AB' (Expanded format);*

- *Tag '8B' (Referenced to Expanded Format).*

The TLV DOs with the above Tags shall be provided in FCP in order given in the Table 11.3 of subclause 11.1.1.3 of the TS 102.221 [1] [CR10].

d)   The ME simulator shall send a SELECT command to the UICC to select EF$_{DIR}$.

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

The FCP shall contain the following tags [CR5]:

- *Tag '82' (File Descriptor)*

   The first byte shall be '02' or '42' (indicating a linear fixed EF);

   The length shall be '05' (i.e. containing record length etc);

- *Tag '83' (File Identifier)*

    The value shall be '2F 00' (indicating EF$_{DIR}$);

- *Tag 'A5' (Proprietary information)*

    It shall contain tag '80' (UICC characteristics);

- *Tag '8A' (Life Cycle Status Integer);*

- *Tag '80' (File size).*

The FCP shall contain exactly one of the following tags:

- *Tag '8C' (Compact format);*

- *Tag 'AB' (Expanded format);*

- *Tag '8B' (Referenced to Expanded Format).*

The TLV DOs with the above Tags shall be provided in FCP in order given in the Table 11.4 of subclause 11.1.1.3 of the TS 102.221 [1] [CR10].

e) The ME simulator shall send a READ RECORD command using CURRENT mode to the UICC.

   The UICC shall return an error code appropriate to the command (e.g. ~~The status returned by the UICC shall be~~ SW1 = '6A', SW2 = '83' - Record not found) [CR6].

f) The ME simulator shall send a SELECT command with P2 = '0C' to the UICC to select the MF.

   The response from the UICC shall be only SW1 = '90', SW2 = '00' – normal ending of the command [CR7].

g) The ME simulator shall send a SELECT command to the UICC to select the EF$_{ARR}$ under DF$_{TELECOM}$ by path selection

   The response from the UICC shall be only SW1 = '90', SW2 = '00' – normal ending of the command.

   The TLV DO with Tag '83' in the FCP shall indicate the current EF is EF$_{ARR}$ [CR2c].

h) The ME simulator shall send a SELECT command to the UICC to select the parent DF.

   The response from the UICC shall be only SW1 = '90', SW2 = '00' – normal ending of the command.

   The TLV DO with Tag '83' in the FCP shall indicate the current DF is MF [CR2d].

i) The ME simulator shall send a SELECT command with AID to the UICC to select and activate the USIM application.

   The status returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR2b].

   The FCP shall contain the following tags [CR4]:

- *Tag '82' (File Descriptor)*

    The first byte shall be '38' or '78' (indicating a DF or ADF);

- *Tag '84' (DF name - AID)*

    The value shall be the AID of the USIM application;

- *Tag 'A5' (Proprietary information)*

    It shall contain tag '80' (UICC characteristics);

- *Tag '8A' (Life Cycle Status Integer);*

- *Tag 'C6' (PIN Status Template DO)*

    It shall contain tag '90' (PS_DO).

The FCP shall contain exactly one of the following tags:

- *Tag '8C' (Compact format);*

- *Tag 'AB' (Expanded format);*

- *Tag '8B' (Referenced to Expanded Format).*

The TLV DOs with the above Tags shall be provided in FCP in order given in the Table 11.4 of subclause 11.1.1.3 of the TS 102.221 [1] [CR10].

j) The ME simulator shall send a SELECT command to the UICC to select DF$_{TELECOM}$.

k) The ME simulator shall send a SELECT command with P1 = '00' and data field equals to '7FFF' to the UICC to select the ADF of the current USIM application.

The status returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR9].

The FCP returned shall be as same as those returned in step i) above [CR4].

l) The ME simulator shall send a SELECT command with P1 = '00' and data field equals to '3F00' to the UICC to select the MF.

The status returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR8].

The FCP returned shall be as same as those returned in step c) above [CR3].

m) The ME simulator shall send a SELECT command with P1 = '00', P2 = '0C' and with empty data field to the UICC to select the MF.

The response from the UICC shall be only SW1 = '90', SW2 = '00' – normal ending of the command [CR7, CR8].

6.8.1.2 STATUS

6.8.1.2.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.2.2 Conformance requirement

CR1 If the parameter P2 = '00', then the STATUS function shall output the FCP of the currently selected MF, DF or ADF.

CR2 If the parameter P2 = '01', then the STATUS function shall output the DF$_{NAME}$ TLV DO of the currently selected ADF.

CR3 If the parameter P2 = '0C', then the STATUS function shall output only SW1 and SW2.

Reference: TS 102.221 [1], subclause 11.1.2.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_STATUS

6.8.1.2.3 Test purpose

To verify that the UICC conforms to the above requirements.

6.8.1.2.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

a)   The ME simulator shall reset the UICC.

b)   The ME simulator shall send a STATUS command with P2 = '00' to the UICC.

   The FCP shall contain the following tags [CR1]:

   -   *Tag '82' (File Descriptor)*

      The first byte shall be '38' or '78' (indicating a DF);

   -   *Tag '83' (File Identifier)*

      The value shall be '3F 00' (indicating MF);

   -   *Tag 'A5' (Proprietary information)*

      It shall contain tag '80' (UICC characteristics);

   -   *Tag '8A' (Life Cycle Status Integer);*

   -   *Tag 'C6' (PIN Status Template DO)*

      It shall contain tag '90' (PS_DO).

   The FCP shall contain exactly one of the following tags:

   -   *Tag '8C' (Compact format);*

   -   *Tag 'AB' (Expanded format);*

   -   *Tag '8B' (Referenced to Expanded Format).*

c)   The ME simulator shall send a SELECT command to select DF$_{TELECOM}$.

d)   The ME simulator shall send a STATUS command with P2 = '00' to the UICC.

   The FCP shall contain the following tags [CR1]:

   -   *Tag '82' (File Descriptor)*

      The first byte shall be '38' or '78' (indicating a DF);

   -   *Tag '83' (File Identifier)*

      The value shall be '7F 10' (indicating DF$_{TELECOM}$);

   -   *Tag 'A5' (Proprietary information)*

      It shall contain tag '80' (UICC characteristics);

   -   *Tag '8A' (Life Cycle Status Integer);*

   -   *Tag 'C6' (PIN Status Template DO)*

      It shall contain tag '90' (PS_DO).

   The FCP shall contain exactly one of the following tags:

   -    *Tag '8C' (Compact format);*

   -    *Tag 'AB' (Expanded format);*

   -    *Tag '8B' (Referenced to Expanded Format).*

e)   The ME simulator shall send a STATUS command with P2 = '01' to the UICC.

~~The response data returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR2].

f) The ME simulator shall send a SELECT command to the UICC to select and activate the USIM application.

g) The ME simulator shall send a STATUS command with P2 = '00' to the UICC.

The FCP shall contain the following tags [CR1]:

- *Tag '82' (File Descriptor)*

  The first byte shall be '38' or '78' (indicating an ADF);

- *Tag '84' (DF name - AID)*

  The value shall be the AID of the USIM application;

- *Tag 'A5' (Proprietary information)*

  It shall contain tag '80' (UICC characteristics);

- *Tag '8A' (Life Cycle Status Integer);*

- *Tag 'C6' (PIN Status Template DO)*

  It shall contain tag '90' (PS_DO).

The FCP shall contain exactly one of the following tags:

- *Tag '8C' (Compact format);*

- *Tag 'AB' (Expanded format);*

- *Tag '8B' (Referenced to Expanded Format).*

h) The ME simulator shall send a SELECT command to the UICC to select the DF$_{PHONEBOOK}$.

i) The ME simulator shall send a STATUS command with P2 = '00' to the UICC.

The FCP shall contain the following tags [CR1]:

- *Tag '82' (File Descriptor)*

  The first byte shall be '38' or '78' (indicating a DF);

- *Tag 'A5' (Proprietary information)*

  It shall contain tag '80' (UICC characteristics);

- *Tag '8A' (Life Cycle Status Integer);*

- *Tag 'C6' (PIN Status Template DO)*

  It shall contain tag '90' (PS_DO).

The FCP shall contain exactly one of the following tags:

- *Tag '8C' (Compact format);*

- *Tag 'AB' (Expanded format);*

- *Tag '8B' (Referenced to Expanded Format).*

j) The ME simulator shall send a STATUS command with P2 = '01' to the UICC.

The following shall be true of the response data [CR2]:

Value of tag '84' shall be the AID of the USIM application.

k) The ME simulator shall send a STATUS command with P2 = '0C' to the UICC.

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

   - *The response data from the UICC shall be only SW1 = '90', SW2 = '00' – normal ending of the command [CR3].*

l) The ME simulator shall send a SELECT command to select DF$_{TELECOM}$.

m) The ME simulator shall send a STATUS command with P2 = '00' to the UICC.

   The FCP shall contain the following tags [CR1]:

   - *Tag '82' (File Descriptor)*

     The first byte shall be '38' or '78' (indicating a DF);

   - *Tag '83' (File Identifier)*

     The value shall be '7F 10' (indicating DF$_{TELECOM}$);

   - *Tag 'A5' (Proprietary information)*

     It shall contain tag '80' (UICC characteristics);

   - *Tag '8A' (Life Cycle Status Integer);*

   - *Tag 'C6' (PIN Status Template DO)*

     It shall contain tag '90' (PS_DO).

   The FCP shall contain exactly one of the following tags:

   - *Tag '8C' (Compact format);*

   - *Tag 'AB' (Expanded format);*

   - *Tag '8B' (Referenced to Expanded Format).*

n) The ME simulator shall send a STATUS command with P2 = '01' to the UICC.

   The following shall be true of the response data [CR2]:

   Value of tag '84' shall be the AID of the USIM application.

6.8.1.6 UPDATE RECORD

6.8.1.6.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.6.2 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 shall be allowed.

CR5 If the mode is CURRENT, the current record shall be updated.

CR6 If the mode is CURRENT, the record pointer shall not be affected.

CR7   If the mode is ABSOLUTE, the record given by the record number shall be updated.

CR8   If the mode is ABSOLUTE, the record pointer shall not be affected.

CR9   If the mode is NEXT, the record pointer shall be incremented before the function is performed and the pointed record shall be 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 shall be 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 shall be decremented before the function shall be performed and the pointed record shall be 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, the EF is a linear fixed, 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 shall be 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 USIM.

CR18   The function shall accept the SFI as an input.

CR19   When the command contains a valid SFI, it shall set the file as the current EF and resets the current record pointer.

Reference: TS 102.221 [1], subclause 8.4.3 and 11.1.6.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_UPREC

6.8.1.6.3   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 any cyclic EF is present.

6.8.1.6.4   Method of test

NOTE 1: Test procedures have been separated into 3 parts. The first part is for testing CURRENT and ABSOLUTE mode, and the second part is for testing NEXT and PREVIOUS mode and the third part is for testing the SFI referencing.

NOTE 2: When EF_{CCP2} is not supported by the UICC, any supported linear EF in ADF_{USIM} supporting SFI may be chosen.

NOTE 3: When EF_{ACM} is not supported by the UICC, any supported cyclic EF in ADF_{USIM} may be chosen.

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure 1 (CURRENT and ABSOLUTE mode)

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF$_{CCP2}$.

d) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 1 to the UICC. The data used shall be 'C1' for all bytes.

    The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - security status not satisfied [CR3].

e) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

f) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 1 to the UICC. The data used shall be 'C2' for all bytes.

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

g) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

    The record data returned shall be 'C2' for all bytes [CR1-CR3, CR7].

h) The ME simulator shall send a SELECT command to the UICC to select EF$_{CCP2.}$

i) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'FF' for all bytes.

j) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

    The record data returned shall be 'FF' for all bytes [CR7].

k) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 2 to the UICC. The data used shall be 'C3' for all bytes.

l) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 2 to the UICC.

    The record data returned shall be 'C3' for all bytes [CR7].

m) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'C4' for all bytes.

n) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

    The record data returned shall be 'C4' for all bytes [CR5, CR8].

o) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'C5' for all bytes.

p) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 2 to the UICC.

    The record data returned shall be 'C5' for all bytes [CR8].

q) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with the last record to the UICC. The data used shall be 'C6' for all bytes.

r) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with the last record to the UICC.

    The record data returned shall be 'C6' for all bytes [CR7].

s) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with the last record + 1 to the UICC. The data used shall be 'C7' for all bytes.

    The status condition returned by the UICC shall be SW1 = '6A', SW2 = '83' – record not found.

t) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'C8' for all bytes.

u) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 2 to the UICC.

    The record data returned shall be 'C8' for all bytes [CR16].

v) The ME simulator shall send a SELECT command to the UICC to select EF_ACM.

w) The ME simulator shall send a VERIFY PIN command with the relevant PIN to the UICC.

x) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'C9' for all bytes.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR4].

y) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 3 to the UICC. The data used shall be 'CA' for all bytes.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR4].

z) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'CB' for all bytes.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR4].

aa) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC. The data used shall be 'CC' for all bytes.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR4].

bb) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

The record data returned shall be 'CC' for all bytes [CR16].

cc) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC. The data used shall be '00 00 01'.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR4].

Test procedure 2 (NEXT and PREVIOUS mode)

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF_CCP2.

d) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

e) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'C2' for all bytes.

f) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

The record data returned shall be 'C2' for all bytes [CR10].

g) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'C3' for all bytes.

h) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

The record data returned shall be 'C3' for all bytes [CR10].

i) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'C4' for all bytes.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR17].

j) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 2 to the UICC.

The record data returned shall be 'C4' for all bytes [CR9, CR17].

k) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'C5' for all bytes.

l) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 2 to the UICC.

The record data returned shall be 'C5' for all bytes [CR9].

m) The ME simulator shall send a SELECT command to the UICC to select EF$_{CCP2.}$

n) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC. The data used shall be 'C6' for all bytes.

o) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with the last record to the UICC.

The record data returned shall be 'C6' for all bytes [CR13].

p) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'C7' for all bytes.

The status condition returned by the UICC shall be SW1 = '6A', SW2 = '83' – record not found [CR11].

q) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'C8' for all bytes.

r) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with the last record to the UICC.

The record data returned shall be 'C8' for all bytes [CR16].

s) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC. The data used shall be 'C9' for all bytes.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR17].

t) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with the second last record to the UICC.

The record data returned shall be 'C9' for all bytes [CR12, CR17].

u) The ME simulator shall send a SELECT command to the UICC to select EF$_{CCP2.}$

v) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC. The data used shall be 'CA' for all bytes.

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

w) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC. The data used shall be 'CB' for all bytes.

The status condition returned by the UICC shall be SW1 = '6A', SW2 = '83' - record not found [CR13].

x) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC. The data used shall be 'CC' for all bytes.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command [CR13].

y) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

The record data returned shall be 'CC' for all bytes [CR16].

Test procedure 3 (SFI referencing)

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

d) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 1 and with SFI to select EF_{CCP2} under ADF_{USIM} to the UICC. The data used shall be 'C0' for all bytes.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR18].

e) The ME simulator shall send a READ RECORD command using CURRENT mode to the UICC.

The UICC shall return an error code appropriate to the command *The status condition returned by the UICC shall be* *(e.g. SW1 = '6A', SW2 = '83' – record not found) [CR19].*

f) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC.

The record data returned shall be 'C0' for all bytes [CR19].

6.8.1.7 SEARCH RECORD

6.8.1.7.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.7.2 Conformance requirement

CR1 The SEARCH RECORD function shall search through a linear fixed EF or cyclic EF to find record(s) containing a specific pattern.

CR2 The function shall only be performed if the READ access condition for the current EF is satisfied.

CR3 The search shall start:

    a) at the first byte of the record(s);

    b) from a given offset in the record(s);

    c) from the first occurrence of a given byte in the record(s).

CR4 If one or more matches are found the record pointer shall be set to the first record where the search pattern was found.

CR5 For a simple search, the function shall accept as input, the record number, search mode and search pattern.

CR6 For an enhanced search, the function shall accept as input, the record number, search mode, search pattern and offset.

CR7 The SEARCH RECORD function shall output either:

    a) none, if Le is empty or no matches were found;

    b) at most the number of record(s) number(s) defined in Le.

CR8 For a simple search, the function shall support the following modes:

    a) start forward search from record indicated in P1;

    b) start backward search from record indicated in P1.

CR9 For an enhanced search, the SEARCH RECORD function shall support the following modes:

    a) start forward search from record indicated in P1 with search indication;

    b) start backward search from record indicated in P1 with search indication;

    c) start forward search from next record with search indication;

    d) start backward search from previous record with search indication.

CR10   For the modes "forward search from next record" and "backward search from previous record", P1 has no significance within the scope of the present document and shall be set to '00'.

CR11   For a SEARCH RECORD function of forward search from next record (enhanced search), if the record pointer has not been previously set within the selected linear fixed or cyclic EF, the search shall begin with the first record.

CR12   For a SEARCH RECORD function of backward search from previous record (enhanced search), if the record pointer has not been previously set within the selected linear fixed EF, the search shall begin with the last record.

CR13   The record pointer shall not be changed by an unsuccessful SEARCH RECORD function.

CR14   The function shall accept the SFI as an input.

CR15   When the SEARCH RECORD command contains a valid SFI, it shall set the file as the current EF and resets the current record pointer.

Reference: TS 102.221 [1], subclause 8.2.2, 8.4.3 and 11.1.7.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_SRREC

6.8.1.7.3   Test purpose

To verify that the SEARCH RECORD function conforms to the above requirements for the different modes available.

6.8.1.7.4   Method of test

NOTE 1: CR7 can not be tested for T = 0 protocol as the Le byte is not transmitted to the UICC. It is dependent on the design of the transport layer of a ME whether to pass all the response data bytes from the UICC to its application layer according to the Le byte. (CR7 is tested in test procedure 4)

NOTE 2: When EF_{SMS} does not support the SFI, any other linear fixed EF in ADF_{USIM} supporting SFI and capable of storing at least 20 bytes of data shall be chosen for test procedure 3 (SFI).

NOTE 3: When EF_{SMS} is not supported by the USIM application, any other linear fixed EF capable of storing at least 20 bytes of data may be used.

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) The records in EF_{SMS} shall contain the following data for the first 20 bytes:

```
1st record  'A0 A1 A2 B0 B1 B2 A0 A1 A2 A0 A1 A2 FF A0 A1 A2 A3 A4 A5 A6'
2nd record  'B0 B1 B2 A0 A1 A2 A0 A1 A2 B0 B1 B2 FF B0 B1 B2 B3 B4 B5 B6'
3rd record  'B0 B1 B2 A0 A1 A2 B0 B1 B2 A0 A1 A2 FF C0 C1 C2 C3 C4 C5 C6'
4th record  'A0 A1 A2 B0 B1 B2 B0 B1 B2 B0 B1 B2 FF D0 D1 D2 D3 D4 D5 D6'
```
3) The data for the remainder of these four records and for all other records shall be 'FF'.

Test procedure 1 (simple search)

a)   The ME simulator shall reset the UICC.

b)   The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c)   The ME simulator shall send a SELECT command to the UICC to select EF_{SMS}.

d)　The ME simulator shall send a SEARCH RECORD command using the record number '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' – security status not satisfied [CR2].

e)　The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

f)　The ME simulator shall send a SEARCH RECORD command using the record number '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

The UICC shall return '01 02 03 04' indicating that first, second, third and fourth record have been found [CR3a, CR8a].

The status condition returned by the UICC shall be SW1='90', SW2='00' - normal ending of the command [CR1, CR2, CR5].

g)　The ME simulator shall send a SEARCH RECORD command using the record number '02', the 'simple backward search from record indicated in P1' mode and search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

The response data shall be '02 01' indicating that the first and second record have been found [CR3a, CR8b].

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

h)　The ME simulator shall send a READ RECORD command using CURRENT mode to the UICC.

The record data returned shall be that of the second record in EF$_{SMS}$ [CR4].

i)　The ME simulator shall send a SEARCH RECORD command using the record number '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A2 A3 A4' with Le = '00' to the UICC.

No data shall be returned by the UICC as this search pattern can not be found in any of the records [CR7a].

j)　The ME simulator shall send a READ RECORD command using CURRENT mode to the UICC.

The record data returned shall be that of the second record in EF$_{SMS}$ [CR13].

k)　The ME simulator shall send a SELECT command to the UICC to select EF$_{SMS}$.

l)　The ME simulator shall send a SEARCH RECORD command using the record number '00' (current record), the 'simple forward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command, as no current record exists.

m)　The ME simulator shall send a READ RECORD command using NEXT mode to the UICC.

n)　The ME simulator shall send a SEARCH RECORD command using the record number '00' (current record), the 'simple forward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

The response data shall be '01 02 03 04' indicating that the first, second, third and fourth record have been found [CR3a, CR8a].

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

o)　The ME simulator shall send a SELECT command to the UICC to select EF$_{SMS}$.

p)　The ME simulator shall send a SEARCH RECORD command using the record number '00' (current record), the 'simple backward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command, as no current record exists.

q)　The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC.

r)   The ME simulator shall send a SEARCH RECORD command using the record number '00' (current record), the 'simple backward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC.

The response data shall be '04 03 02 01' indicating that the first, second, third and fourth record have been found [CR3a, CR8b].

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

Test procedure 2 (enhanced search)

a)   The ME simulator shall reset the UICC.

b)   The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c)   The ME simulator shall send a SELECT command to the UICC to select EF_{SMS}.

d)   The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

e)   The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'enhanced forward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '03' indicating that the search shall start from that offset.

The data returned shall be '02 03' indicating that the second and third records have been found [CR3b, CR9b].

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

f)   The ME simulator shall send a SEARCH RECORD command using the record number = '02', the 'enhanced backward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '03' indicating that the search shall start from that offset.

The response data shall be '02' indicating that the second record has been found [CR3b, CR9b].

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

g)   The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced forward search from next record' mode, search pattern 'A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '07' indicating that the search shall start from that offset.

The response data shall be '03' indicating that the third record has been found [CR3b, CR9c].

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

h)   The ME simulator shall send a SEARCH RECORD command using the P1 = '01', the 'enhanced forward search from next record' mode, search pattern 'A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '07' indicating that the search shall start from that offset.

The status condition returned by the UICC shall indicate an error The UICC shall return an error code appropriate to the command [CR10].

i)   The ME simulator shall send a SEARCH RECORD command using the P1 = '04', the 'enhanced backward search from previous record' mode, search pattern 'A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '07' indicating that the search shall start from that offset.

The status condition returned by the UICC shall indicate an error The UICC shall return an error code appropriate to the command [CR10].

j)   The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced backward search from previous record' mode, search pattern 'B1 B2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '07' indicating that the search shall start from that offset.

The response data shall be '02' indicating that the second record has been found [CR3b, CR9d].

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

k) The ME simulator shall send a SEARCH RECORD command using the record number = '03', the 'enhanced forward search from record indicated in P1' mode, search pattern 'B1 B2 A0' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '1' and the second byte shall be set to 'B0' indicating that the search shall start after the first occurrence of the value.

The response data shall be '03' indicating that the third record has been found [CR3c, CR9a].

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

l) The ME simulator shall send a SEARCH RECORD command using the record number = '02', the 'enhanced backward search from record indicated in P1' mode, search pattern 'B1 B2 A0' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '1' and the second byte shall be set to 'B0' indicating that the search shall start after the first occurrence of the value.

The response data shall be '02 01' indicating that the first and second record has been found [CR3c, CR9b].

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

m) The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced forward search from next record' mode, search pattern 'B0 B1' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '1' and the second byte shall be set to 'A2' indicating that the search shall start after the first occurrence of the value.

The response data shall be '03 04' indicating that the third and fourth record have been found [CR3c, CR9c].

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

n) The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced backward search from previous record' mode, search pattern 'B0 B1' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '1' and the second byte shall be set to 'A2' indicating that the search shall start after the first occurrence of the value.

The response data shall be '02 01' indicating that the first and second record have been found [CR3c, CR9d].

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

o) The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced forward search from next record' mode, search pattern 'FF B0' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '1' and the second byte shall be set to 'FF' indicating that the search shall start after the first occurrence of the value.

No data shall be returned by the UICC as this search pattern can not be found in any of the records [CR7a].

p) The ME simulator shall send a SELECT command to the UICC to select EF_{SMS}.

q) The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced forward search from record indicated in P1' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command, as no current record exists.

r) The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced forward search from next record' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

The response data shall be '01 02 03 04' indicating that the first, second, third and fourth record have been found [CR 11].

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

s)　The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced forward search from next record' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

The response data shall be '02 03 04' indicating that the second, third and fourth record have been found [CR4, CR9c].

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

t)　The ME simulator shall send a SELECT command to the UICC to select EF$_{SMS}$.

u)　The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced backward search from record indicated in P1' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command, as no current record exists.

v)　The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced backward search from previous record' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

The response data shall be '04 03 02 01' indicating that the first, second, third and fourth record have been found [CR12].

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

w)　The ME simulator shall send a SEARCH RECORD command using the P1 = '00', the 'enhanced backward search from previous record' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

The response data shall be '03 02 01' indicating that the first, second and third record have been found [CR4, CR9d].

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

x)　The ME simulator shall send a SEARCH RECORD command using the P1 = '01', the 'enhanced forward search from next record' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR 10].

y)　The ME simulator shall send a SEARCH RECORD command using the P1 = '01', the 'enhanced backward search from previous record' mode, search pattern 'A0 A1 A2' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '00' indicating that the search shall start from that offset.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR 10].

z)　The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'enhanced forward search from record indicated in P1' mode and search pattern 'A0 A2 A3 A4' with Le = '00' to the UICC. The bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '03' indicating that the search shall start from that offset.

No data shall be returned by the UICC as this search pattern can not be found in any of the records [CR7a].

aa)　The ME simulator shall send a READ RECORD command using CURRENT mode to the UICC.

The record data returned shall be that of the third record in EF$_{SMS}$ [CR13].

Test procedure 3 (SFI)

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

d) The ME simulator shall send a SEARCH RECORD command using the SFI of EF_{SMS}, the record number = '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A1 A2' with Le = '00' to the UICC.

   The data returned shall be '01 02 03 04' indicating that the first, second, third and fourth records have been found.

   The status condition returned shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR14].

e) The ME simulator shall send a SEARCH RECORD command using the SFI of EF_{SMS}, the record number = '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A2 A3' with Le = '00' to the UICC.

   No data shall be returned by the UICC as this search pattern can not be found in any of the records.

f) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC.

   The record data returned shall be that of the first record in EF_{SMS} [CR15].

Test procedure 4 (Only applicable for T=1 protocol)

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF_{SMS}.

d) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

e) The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A1 A2 B0' with an empty Le to the UICC.

   The UICC shall not return any response data bytes [CR7a].

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

f) The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A2 A3 A4' with Le = '01' to the UICC.

   No data shall be returned by the UICC as this search pattern can not be found in any of the records [CR7a].

g) The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A1 A2 B0' with Le = '01' to the UICC.

   The data returned shall be '01' indicating that the first record has been found [CR7b].

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

h) The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'simple forward search from record indicated in P1' mode and search pattern 'A0 A1 A2 B0' with Le = '04' to the UICC.

   The data returned shall be '01 02 03 04' indicating that the first, second, third and fourth record have been found [CR7b].

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

i) The ME simulator shall send a SEARCH RECORD command using the record number = '01', the 'enhanced forward search from record indicated in P1' mode, search pattern 'A0 A1 A2 B0' with Le = '04' to the UICC. The

bit 4 of the first byte in the search indication shall be set to '0' and the second byte shall be set to '03' indicating that the search shall start from that offset.

The data returned shall be ' 02 03' indicating that the second and third record have been found [CR7b].

6.8.1.8   INCREASE

6.8.1.8.1   Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] and containing EFs which have the INCREASE access condition assigned i.e. EF_{ACM} associated with EF_{ACMmax}, EF_{ICT} or EF_{OCT}, to support all functions described therein.

6.8.1.8.2   Conformance requirement

CR1   This function shall add the value given by the ME 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 record number 1.

CR3   The function shall only be used if the INCREASE access condition is fulfilled.

CR4   The function shall accept the input as 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 UICC shall not perform the INCREASE if the result would exceed the maximum value of the record (represented by all bytes set to 'FF').

CR7   This command shall only be used on files that refer to an access rule where this INS code is indicated as part of the rule.

Reference: TS 102.221 [1], subclause 11.1.8.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_INC

6.8.1.8.3   Test purpose

To verify that the INCREASE function conforms to the above requirements.

6.8.1.8.4   Method of test

NOTE 1: When EF_{ACM} is not supported by the USIM application, any other cyclic EF which have the INCREASE access condition assigned may be used. In such case, the length of the value to be sent with an INCREASE command shall be equal to the record length of that EF.

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) Each record in EF_{ACM} shall contain the data '00 00 01'.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF_{ACM}.

d) The ME simulator shall send an INCREASE command with value '00 00 02' to the UICC.

   The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' – security status not satisfied [CR3].

e) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

f) The ME simulator shall send an INCREASE command with value '00 00 03' to the UICC.

   The response data shall be '00 00 04 00 00 03' [CR1, CR4, CR5].

g) The ME simulator shall send an INCREASE command with value '01 02 00' to the UICC.

   The response data shall be '01 02 04 01 02 00' [CR1].

h) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC.

   The data read shall be '01 02 04' [CR2].

i) The ME simulator shall send an INCREASE command with value 'FF 00 00' to the UICC.

   The status condition returned by the UICC shall be SW1 = '98', SW2 = '50' - INCREASE cannot be performed, maximum value reached [CR6].

j) The ME simulator shall send an INCREASE command with value '00 FF FD' to the UICC.

   The response data shall be '02 02 01 00 FF FD' [CR5].

k) The ME simulator shall send a SELECT command to the UICC to select EF$_{ICI}$.

l) The ME simulator shall send an INCREASE command with value '01 02 00' to the UICC.

   ~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR7].

6.8.1.9　VERIFY PIN

6.8.1.9.1　Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.9.2　Conformance requirement

CR1　This command shall initiate the comparison in the UICC of the PIN verification data sent from the ME with the PIN reference data stored in the card.

CR2　The function shall accept as an input, an indication of PIN (key reference number), the PIN value, or empty.

CR3　The verification process shall be subject to the following conditions being fulfilled:

    a) PIN is not disabled;

    b) PIN is not blocked.

CR4　If the access condition for a function to be performed on the last selected file is PIN, then a successful verification of PIN shall be required prior to the use of the function on this file unless the PIN is disabled.

CR5　If the PIN presented is correct, the number of remaining PIN attempts for that PIN shall be reset to its initial value 3.

CR6　If the PIN presented is false, the number of remaining PIN attempts for that PIN shall be decremented.

CR7　After 3 consecutive false PIN presentations, not necessarily in the same card session, the respective PIN shall be blocked.

CR8　The value of the retry counter and how many verification attempts are left, shall be obtained in the following ways:

    a) The VERIFY command is sent to the UICC with parameter P2 indicating PIN for which the retry counter value is to be retrieved with an empty data field (response SW1, SW2 '63 CX' where X indicates the number of further allowed retries);

b) In case of an unsuccessful PIN verification and if the PIN was not previously blocked prior to the execution of the command, the UICC shall return the remaining retry value in the response parameters SW1, SW2 (response '63 CX' where X indicates the number of further allowed retries).

CR9 The access condition can never be fulfilled until the UNBLOCK PIN function has been successfully performed on the respective PIN.

Reference: TS 102.221 [1], subclause 11.1.9.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_VERPIN

6.8.1.9.3 Test purpose

To verify that the VERIFY PIN function conforms to the above requirements.

NOTE: This function is only tested for PIN. It is assumed that if the function operates correctly for PIN, it will also operate correctly for PIN2 or other PIN.

6.8.1.9.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF_{IMSI}.

d) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - access condition not fulfilled [CR4].

e) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR1, CR2].

f) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR4].

g) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempts left [CR6, CR8b].

h) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

i) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR5, CR8a].

j) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempt left [CR8b].

k) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' - unsuccessful PIN verification, 1 attempt left [CR8b].

l) The ME simulator shall reset the UICC and select USIM application.

m) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' - unsuccessful PIN verification, no attempts left [CR7, CR8b].

n) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - unsuccessful PIN verification, no attempts left [CR7].

o) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked [CR3b, CR7].

p) The ME simulator shall reset the UICC and select and activate USIM application.

q) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked [CR3b, CR7].

r) The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

s) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - security status not satisfied [CR7].

t) The ME simulator shall send an UNBLOCK PIN command to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR9].

u) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR1 of subclause 6.8.1.13.2].

v) The ME simulator shall send a DISABLE PIN command to the UICC.

w) The ME simulator shall reset the UICC.

x) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

y) The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

z) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR4].

aa) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR3a].

bb) The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

6.8.1.10　CHANGE PIN

6.8.1.10.1　Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.10.2　Conformance requirement

CR1　This command shall be used to initiate the comparison of the verification data with the PIN, and then to conditionally replace the existing PIN with the new PIN sent to the UICC in the command.

CR2　This function shall assign a new value to the relevant PIN subject to the following conditions being fulfilled:

　　　a) PIN is not disabled;

　　　b) PIN is not blocked.

CR3　The function shall accept as input, an indication of PIN (key reference number), the old and new PIN.

CR4　If the old PIN presented is correct, the number of remaining PIN attempts for that PIN shall be reset to its initial value 3 and the new value for the PIN becomes valid.

CR5　If the old PIN presented is false, the number of remaining PIN attempts for that PIN shall be decremented and the value of the PIN shall remain unchanged.

CR6　After 3 consecutive false PIN presentations, not necessarily in the same card session, the respective PIN shall be blocked and the access condition can never be fulfilled until the UNBLOCK PIN function has been performed successfully on the respective PIN.

Reference: TS 102.221 [1], subclause 11.1.10.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_CHPIN

6.8.1.10.3　Test purpose

To verify that the CHANGE PIN function conforms to the above requirements.

NOTE:　This function is only tested for PIN. It is assumed that if the function operates correctly for PIN, it will also operate correctly for PIN2 or other PIN.

6.8.1.10.4　Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) PIN of the UICC shall be set to '00000000'.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a CHANGE PIN command with an incorrect old PIN and new PIN of '33333333' to the UICC.

　　The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempts left [CR5].

d) The ME simulator shall send a CHANGE PIN command with a correct old PIN and new PIN of '33333333' to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR1, CR2, CR3].

e) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR4].

f) The ME simulator shall send a VERIFY PIN command with a new PIN of '33333333' to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR1, CR4].

g) The ME simulator shall send a CHANGE PIN command with an incorrect old PIN and new PIN of '55555555' to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempts left [CR5].

h) The ME simulator shall send a CHANGE PIN command with an incorrect old PIN and new PIN of '55555555' to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' - unsuccessful PIN verification, 1 attempt left [CR5].

i) The ME simulator shall reset the UICC.

j) The ME simulator shall send a CHANGE PIN command with an incorrect old PIN and new PIN of '55555555' to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' - unsuccessful PIN verification, no attempt left [CR5].

k) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked [CR6]..

l) The ME simulator shall reset the UICC.

m) The ME simulator shall send a CHANGE PIN command with an old PIN of '33333333' and new PIN of '55555555' to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked [CR2b].

n) The ME simulator shall send an UNBLOCK PIN command with Unblock PIN and a new PIN of '55555555' to the UICC.

o) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' -unsuccessful PIN verification, 3 attempts left [CR1 of subclause 6.8.1.13.2].

p) The ME simulator shall send a VERIFY PIN command with a new PIN of '55555555' to the UICC.

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

q) The ME simulator shall send a DISABLE PIN command to the UICC.

r) The ME simulator shall reset the UICC.

s) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

t) The ME simulator shall send a CHANGE PIN command with an old PIN '55555555' and new PIN of '77777777' to the UICC.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR2a].

u) The ME simulator shall send an ENABLE PIN command to the *UICC* with PIN '55555555'.

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

v) The ME simulator shall send a CHANGE PIN command with an old PIN '55555555' and new PIN of '00000000' to the UICC.

6.8.1.11 DISABLE PIN

6.8.1.11.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.8.1.11.2 Conformance requirement

CR1 This function shall switch off the requirement to compare the PIN verification data with the PIN reference data.

CR2 The command shall allow an indication whether to use an alternative global key reference, if enabled, or not when the application PIN is disabled.

CR3 If an alternative global key reference is used as a replacement for the application PIN, the verification of the alternative global key reference shall be performed instead of the application PIN verification to get access to the application.

CR4 The successful execution of this function shall have the effect that files protected by PIN are now accessible as if they were marked "ALWAYS", except in the case where the alternative global key reference is to be used as a replacement for the disabled PIN.

CR5 In the case where the alternative global key reference is to be used as a replacement for the disabled PIN, the access condition for files containing only a reference to the disabled PIN is the alternative global key reference.

CR6 The function shall accept as input, PIN indication and PIN.

CR7 The function shall accept as input, Global key reference data number for verification replacement, PIN indication and PIN.

CR8 For files having more than one global key reference indicated in the access rules the access condition is "ALWAYS" after disabling on of the key references used in the access rules.

CR9 The function shall not be executed by the UICC when PIN is already disabled or blocked.

CR10 If the PIN presented is correct, the number of remaining PIN attempts shall be reset to its initial value 3 and PIN shall be disabled.

CR11 If the PIN presented is false, the number of remaining PIN attempts shall be decremented and PIN remains enabled.

CR12 After 3 consecutive false PIN presentations, not necessarily in the same card session, the PIN shall be blocked and the access condition can never be fulfilled until the UNBLOCK PIN function has been successfully performed on PIN.

Reference: TS 102.221 [1], subclause 11.1.11.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_DISPIN

6.8.1.11.3 Test purpose

To verify that the DISABLE PIN function conforms to the above requirements.

NOTE: The test procedure for an alternative global key reference is not included as it is out of the scope of the present document.

6.8.1.11.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

d) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - access condition not fulfilled.

e) The ME simulator shall send a DISABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempts left [CR11].

f) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - access condition not fulfilled [CR11].

g) The ME simulator shall send a STATUS command to the UICC.

The following shall be true of the response data [CR11]:

TLV DO with tag '90' in tag 'C6' in tag '62' shall be '80' indicating that PIN is still enabled.

h) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempts left [CR11].

i) The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR6].

j) The ME simulator shall send a STATUS command to the UICC.

The following shall be true of the response data [CR10]:

- TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is disabled.

k) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR10].

l) The ME simulator shall reset the UICC.

m) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

n) The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

o) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

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

p) The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

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

q) The ME simulator shall send a DISABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempt left.

r) The ME simulator shall send a DISABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' - unsuccessful PIN verification, 1 attempt left.

s) The ME simulator shall reset the UICC.

t) The ME simulator shall send a DISABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' - unsuccessful PIN verification, no attempt left [CR12].

u) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - unsuccessful PIN verification, no attempt left [CR7, CR8b].

v) The ME simulator shall reset the UICC.

w) The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked [CR9].

x) The ME simulator shall send an UNBLOCK PIN command with Unblock PIN to the UICC.

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

y) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR1 of subclause 6.8.1.13.2].

z) The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR6].

aa) The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR9].

bb) The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

6.8.1.12 ENABLE PIN

6.8.1.12.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

### 6.8.1.12.2	Conformance requirement

CR1	This function shall switch on the requirement to compare the PIN verification data with the PIN reference data.

CR2	The function shall not be executed by the UICC when PIN is already enabled or blocked.

CR3	If the PIN presented is correct, the number of remaining PIN attempts shall be reset to its initial value 3 and PIN shall be enabled.

CR4	If the PIN presented is false, the number of remaining PIN attempts shall be decremented and PIN shall remains disabled.

CR5	After 3 consecutive false PIN presentations, not necessarily in the same card session, PIN shall be blocked.

CR6	If the PIN is blocked and enabled, the access condition can never be fulfilled until the UNBLOCK PIN function has been successfully performed on PIN.

CR7	The function shall accept as input, PIN.

CR8	The usage of the alternative global key reference as a replacement shall be disabled upon enabling the PIN for which the alternative global key reference has been a replacement.

CR9	If the PIN is blocked and disabled, the access condition shall remain granted.

Reference: TS 102.221 [1], subclause 11.1.12.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_ENPIN

### 6.8.1.12.3	Test purpose

To verify that the ENABLE PIN function conforms to the above requirements.

NOTE:	CR8 is tested in subclause 6.6.5.

### 6.8.1.12.4	Method of test

Initial conditions

1)	The UICC shall be connected to a ME simulator.

Test procedure

a)	The ME simulator shall reset the UICC.

b)	The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

c)	The ME simulator shall reset the UICC.

d)	The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

e)	The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

f)	The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

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

g)	The ME simulator shall send an ENABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' – unsuccessful PIN verification, 2 attempts left [CR4].

h)	The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

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

i)   The ME simulator shall send a STATUS command to the UICC.

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

-    *TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is still disabled.*

j)   The ME simulator shall send an ENABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' - unsuccessful PIN verification, 1 attempt left.

k)   The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR2, CR7].

l)   The ME simulator shall send a STATUS command to the UICC.

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

-    *TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is now enabled.*

m)   The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR3].

n)   The ME simulator shall reset the UICC.

o)   The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

p)   The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

q)   The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - access condition not fulfilled [CR1].

r)   The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command

s)   The ME simulator shall send an ENABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempt left.

t)   The ME simulator shall send an ENABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' - unsuccessful PIN verification, 1 attempt left.

u)   The ME simulator shall reset the UICC.

v)   The ME simulator shall send an ENABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' - unsuccessful PIN verification, no attempt left [CR5].

w)   The ME simulator shall send an ENABLE PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' – PIN blocked [CR5].

x)   The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

y) The ME simulator shall send a SELECT command to the UICC to select EF$_{IMSI}$.

z) The ME simulator shall send a STATUS command to the UICC.

If TLV DO with tag '90' in the PS template DO of the response data indicates that PIN is enabled, then aa1) to aa3) shall be carried out.

If TLV DO with tag '90' in the PS template DO of the response data indicates that PIN is disabled, then aa4) to aa6) shall be carried out.

aa1) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - security status not satisfied [CR6].

aa2) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked.

aa3) The ME simulator shall send a UNBLOCK PIN command with Unblock PIN to the UICC.

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

aa4) The ME simulator shall send a READ BINARY command using a length of 2 bytes to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR9].

aa5) The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - PIN blocked [CR2].

aa6) The ME simulator shall send a UNBLOCK PIN command with Unblock PIN to the UICC.

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

bb) The ME simulator shall reset the UICC.

cc) The ME simulator shall send a STATUS command to the UICC.

The following shall be true of the response data [CR5]:

The TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is enabled.

dd) The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error or warning code appropriate to the command ~~or warning~~ [CR2].

6.8.1.13 UNBLOCK PIN

6.8.1.13.1 Definition and applicability

It shall be mandatory for all UICC complying with TS 102.221 [1] to support all functions described therein.

6.8.1.13.2 Conformance requirement

CR1 This function shall be used to reset the PIN retry counter to its initial value and then to conditionally set a new PIN value.

CR2 The function shall accept as input, an indication of PIN, the Unblock PIN and the new PIN.

CR3 This function shall be performed regardless of whether or not the relevant PIN is blocked.

CR4 If the Unblock PIN presented is correct, the new PIN value, presented together with the Unblock PIN shall be stored in the relevant EF, the number of remaining UNBLOCK PIN attempts for that Unblock PIN shall

be reset to its initial value 10 and the number of remaining PIN attempts for that PIN shall be reset to its initial value 3.

CR5 After a successful unblocking attempt, the PIN shall be enabled, and the relevant access condition level satisfied.

CR6 If the presented Unblock PIN is false, the number of remaining UNBLOCK PIN attempts for that Unblock PIN shall be decremented.

CR7 After 10 consecutive false Unblock PIN presentations, not necessarily in the same card session, the respective Unblock PIN shall be blocked.

CR8 A false Unblock PIN shall have no effect on the status of the respective PIN itself.

CR9 If the data field is empty, this UICC shall return the value of retry counter with response status word '63CX'.

CR10 In case of an unsuccessful PIN verification, the UICC shall return an error.

Reference: TS 102.221 [1], subclause 11.1.13.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_UNPIN

6.8.1.13.3 Test purpose

To verify that the UNBLOCK PIN function conforms to the above requirements.

NOTE 1: CR1 is tested in subclauses 6.8.1.9, 6.8.1.10, 6.8.1.11, 6.8.1.12.

NOTE 2: This function is only tested for PIN. It is assumed that if the function operates correctly for PIN, it will also operate correctly for PIN2 or other PIN.

6.8.1.13.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure 1

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send an UNBLOCK PIN command with incorrect Unblock PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C9' - unsuccessful Unblock PIN verification, 9 attempts left [CR10].

d) The ME simulator shall send a STATUS command to the UICC.

The following shall be true of the response data [CR6, CR8]:

- *TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is enabled.*

e) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left.

f) The ME simulator shall send an UNBLOCK PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C9' - unsuccessful PIN verification, 9 attempts left [CR9].

g) The ME simulator shall send a DISABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command.

h) The ME simulator shall send an UNBLOCK PIN command with incorrect Unblock PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C8' - unsuccessful Unblock PIN verification, 8 attempts left.

i) The ME simulator shall send a STATUS command to the UICC.

The following shall be true of the response data [CR6, CR8]:

- *TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is disabled.*

j) The ME simulator shall send an ENABLE PIN command with PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' – normal ending of the command.

k) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempts left.

l) The ME simulator shall send an UNBLOCK PIN command with Unblock PIN and new PIN '33333333' to the UICC.

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

m) The ME simulator shall send a STATUS command to the UICC.

The following shall be true of the response data [CR4, CR5]:

- *TLV DO with tag '90' in the PS template DO of the response data shall indicate that PIN is enabled.*

n) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR4].

o) The ME simulator shall send a VERIFY PIN command with the new PIN to the UICC.

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

p) The ME simulator shall send an UNBLOCK PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'CA' - unsuccessful PIN verification, 10 attempts left [CR4].

q) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C2' - unsuccessful PIN verification, 2 attempt left.

r) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C1' - unsuccessful PIN verification, 1 attempt left.

s) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' - unsuccessful PIN verification, no attempt left.

t) The ME simulator shall send a VERIFY PIN command with incorrect PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - unsuccessful PIN verification, no attempt left.

u) The ME simulator shall send an UNBLOCK PIN command with Unblock PIN and new PIN '00000000' to the UICC.

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

v) The ME simulator shall send a VERIFY PIN command with an empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C3' - unsuccessful PIN verification, 3 attempts left [CR3].

Test procedure 2 - *** Destructive test ***

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send 9 UNBLOCK PIN command with incorrect Unblock PIN to the UICC.

The status condition returned by the UICC each time shall be SW1 = '63', SW2 = 'CX' - unsuccessful Unblock PIN verification 'X' retries remaining. After 9 times of unsuccessful Unblock PIN verification, the SW shall be SW1 = '63', SW2 = 'C1', at least one attempt left [CR6, CR10].

c) The ME simulator shall reset the UICC.

d) The ME simulator shall send an UNBLOCK PIN command with incorrect Unblock PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '63', SW2 = 'C0' - unsuccessful Unblock PIN verification, no attempt left [CR7].

e) The ME simulator shall send an UNBLOCK PIN command with Unblock PIN to the UICC.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '83' - Unblock PIN blocked [CR7].

6.8.1.14   DEACTIVATE FILE

6.8.1.14.1   Definition and applicability

It shall be mandatory for all UICC complying with TS 102.221 [1] to support all functions described therein.

6.8.1.14.2   Conformance requirement

CR1   This function shall deactivate the EF.

CR2   The target EF shall be selected by following ways:

  a) Select by file id (P1 = '00');

  b) Select by path from MF (P1 = '08');

  c) Select by path from current DF (P1 = '09').

CR3   After a DEACTIVATE FILE function the respective flag in the file LCSI_DO shall be changed accordingly.

CR4   The function shall only be performed if the DEACTIVATE FILE access condition for the designated EF is satisfied.

CR5   In case of successful execution of the command, the EF on which the command was applied shall become the current EF.

CR6   After unsuccessful execution, the current EF and current DF shall remain the same as prior to the execution.

CR7   A deactivated file shall no longer be available within the application for any function except for the SELECT and ACTIVATE FILE functions.

CR8   If P1 = P2 = '00' and the data field is empty, then the command shall apply to the current EF.

Reference: TS 102.221 [1], subclause 11.1.14.

Test Group Reference (TGR): TGR_USIM_TP102.221_CMD_GC

Test Procedure Reference (TPR): TPR_USIM_TP102.221_CMD_GC_DEACTV

6.8.1.14.3   Test purpose

To verify that the DEACTIVATE FILE function conforms to the above requirements.

6.8.1.14.4   Method of test

NOTE 1: Deactivation requires the verification of ADM, and the respective requirements for their fulfilment are the responsibility of the appropriate administrative authority. Therefore, the following test procedure shall be understood as an example.

NOTE 2: When EF_{CCP2} under ADF_{USIM} is not supported by the UICC, any supported linear fixed EF in the USIM application may be chosen.

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate the USIM application.

c) The ME simulator shall send a DEACTIVATE FILE command using "file ID selection" to the UICC to deactivate EF_{CCP2}.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '82' - access condition not fulfilled [CR4].

d) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

e) The ME simulator shall send a READ RECORD command to the UICC to read record 1.

The status condition returned by the UICC shall be SW1 = '69', SW2 = '86' – command not allowed (no EF selected) [CR6].

f) The ME simulator shall reset the UICC.

g) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

h) The ME simulator shall gain the security access condition(s) specified for both DEACTIVATE and ACTIVATE on EF_{CCP2}. (This procedure is dependent on the respective requirements of appropriate administrative authority and may require several steps).

i) The ME simulator shall send a SELECT command to the UICC to select EF_{CCP2}.

The following shall be true of the response data:

- *The value of Life Cycle Status Integer of the response data shall indicate that the EF is activated.*

j) The ME simulator shall send a DEACTIVATE FILE command using 'file ID selection' to the UICC to deactivate EF_{CCP2}.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR2a, CR3, CR4].

k) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

l) The ME simulator shall send an UPDATE RECORD command to the UICC to update record 1.

~~The status condition returned by the UICC shall indicate an error~~ The UICC shall return an error code appropriate to the command [CR5, CR7].

m) The ME simulator shall send a SELECT command to the UICC to select EF_CCP2.

The value of Life Cycle Status Integer of the response data shall indicate that the EF is deactivated.

The status condition returned by the UICC shall be SW1 = '62', SW2 = '83' – selected file invalidated.

n) The ME simulator shall send an UPDATE RECORD command to the UICC to update record 1.

~~*The status condition returned by the UICC shall indicate an error*~~ *The UICC shall return an error code appropriate to the command [CR7].*

o) The ME simulator shall send an ACTIVATE FILE command to the UICC to select and activate EF_CCP2.

p) The ME simulator shall reset the UICC.

q) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

r) The ME simulator shall gain the security access condition(s) specified for both DEACTIVATE and ACTIVATE on EF_CCP2. (This procedure is dependent on the respective requirements of appropriate administrative authority and may require several steps.)

s) The ME simulator shall send a DEACTIVATE command using 'path selection from MF' to the UICC to deactivate EF_CCP2.

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

t) The ME simulator shall send a SELECT command to the UICC to select the EF_CCP2.

The value of Life Cycle Status Integer of the response data shall indicate that the EF is deactivated [CR2b].

The status condition returned by the UICC shall be SW1 = '62', SW2 = '83' – selected file invalidated.

u) The ME simulator shall send an ACTIVATE FILE command to the UICC to select and activate EF_CCP2.

v) The ME simulator shall reset the UICC.

w) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

x) The ME simulator shall gain the security access condition(s) specified for both DEACTIVATE and ACTIVATE on EF_CCP2. (This procedure is dependent on the respective requirements of appropriate administrative authority and may require several steps.)

y) The ME simulator shall send a DEACTIVATE FILE command using 'path selection from current DF' to the UICC to deactivate EF_CCP2.

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

z) The ME simulator shall send a SELECT command to the UICC to select EF_CCP2.

The value of Life Cycle Status Integer of the response data shall indicate that the EF is deactivated [CR2b].

The status condition returned by the UICC shall be SW1 = '62', SW2 = '83' – selected file invalidated.

aa) The ME simulator shall send an ACTIVATE FILE command to the UICC to select and activate EF_CCP2.

bb) The ME simulator shall reset the UICC.

cc) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

dd) The ME simulator shall gain the security access condition(s) specified for both DEACTIVATE and ACTIVATE on EF_CCP2. (This procedure is dependent on the respective requirements of appropriate administrative authority and may require several steps.)

ee) The ME simulator shall send a SELECT command to the UICC to select EF_CCP2.

ff) The ME simulator shall send a DEACTIVATE FILE command with P1 = P2 = '00' and with the empty data field to the UICC.

The status condition returned by the UICC shall be SW1 = '90', SW2 = '00' - normal ending of the command [CR8].

gg) The ME simulator shall send a SELECT command to the UICC to select EF$_{CCP2}$.

The value of Life Cycle Status Integer of the response data shall indicate that the EF is deactivated [CR8].

The status condition returned by the UICC shall be SW1 = '62', SW2 = '83' – selected file invalidated.

hh) The ME simulator shall send an ACTIVATE FILE command to the UICC to select and activate EF$_{CCP2}$.

7.2 Security features

7.2.1 Definition and applicability

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

7.2.2 Conformance requirement

CR1 The USIM application shall use key reference '01' as PIN and key reference '81' as PIN2.

CR2 Access with PIN2 shall be limited to the USIM application (i.e. PIN2 is used only in the ADF).

CR3 For a USIM application on a multi-verification capable UICC, the only valid usage qualifiers shall be '00' and '08' which mean verification requirements is not used and user authentication knowledge based (PIN) as defined in ISO/IEC 7816-9 [11].

CR4 Every file in the USIM application shall have a reference to an access rule stored in EF$_{ARR}$.

CR5 Every file under DF$_{TELECOM}$ shall have a reference to an access rule stored in EF$_{ARR}$ under DF$_{TELECOM}$.

CR6 A multi-verification capable UICC (from the security context point of view) shall support the referenced format using SE ID as defined in TS 102.221 [1].

CR7 A multi-verification capable UICC (from the security context point of view) shall support the replacement of a UICC application PIN with the Universal PIN, key reference '11', as defined in TS 102.221 [1]. Only the Universal PIN is allowed as a replacement.

Reference: 3G TS 31.102 [3], subclause 6.4.

Test Group Reference (TGR): TGR_USIM_TP31.102_SEC2

Test Procedure Reference (TPR): TPR_USIM_TP31.102_SEC2

7.2.3 Test purpose

To verify that the UICC conforms to the above requirements.

NOTE 1: CR1, CR2 are tested in the subclause 6.6.4.

NOTE 2: CR6 is tested in the subclause 6.6.3.

7.2.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

Test procedure

For a multi-verification capable UICC

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select DF$_{TELECOM}$.

   The response data shall contain the TLV DO with tag '8B' [CR5].

c) The step b) shall be repeated for all the EFs under DF$_{TELECOM}$ in the UICC [CR5].

d) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

   The following shall be true of the response data:

   - *TLV DO with tag 'C6' (PS Template DO) shall contain for the Universal PIN the TLV DO with tag '95' (Usage Qualifier) and the value of this TLV shall be '00' or '08' [CR3];*

   - *TLV DO with tag '8B' shall contain the SE number(s) and EF$_{ARR}$ record number(s) [CR5, CR6].*

e) Step d) shall be repeated for all the EFs under the selected ADF in the UICC [CR4].

For a single verification capable UICC

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select DF$_{TELECOM}$.

   The response data shall contain the TLV DO with tag '8B' and the value of this tag shall be the record number of EF$_{ARR}$ [CR5].

c) The step b) shall be repeated for all the EFs under DF$_{TELECOM}$ in the UICC [CR5].

d) The step b) shall be repeated for all the ADF$_{USIM}$s and the EFs under the selected ADF in the UICC [CR4].

CR-Form-v3

CHANGE REQUEST

| ⌘ | **31.122** CR **008** | ⌘ rev **-** ⌘ | Current version: | **3.2.0** | ⌘ |

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

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

Title: ⌘	Removal of test for use of procedure byte '61xx' for case 2 commands	
Source: ⌘	T3	
Work item code: ⌘	TEI	***Date:*** ⌘ 27/05/02
Category: ⌘ **F**		***Release:*** ⌘ R99

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

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

Reason for change: ⌘	TS 102 221 allows several possibilities to handle case 2 commands and procedure bytes 61xx and 6Cxx. Test steps f) and h) of section 6.4.3.1.5.1 cannot cover all possible implementations
Summary of change: ⌘	Removal of steps f) and h) in section 6.4.3.1.5.1
Consequences if not approved: ⌘	TS 31.122 mandates one specific behaviour while TS 102221 allows several.

Clauses affected: ⌘	6.4.3.1.5.1, 6.5.2.2.3

Other specs Affected: ⌘	☐ Other core specifications ⌘	
	☐ Test specifications	
	☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

6.4.3.1.5 Use of Procedure Bytes '61xx' and '6Cxx'

6.4.3.1.5.1 Case 2 Commands

6.4.3.1.5.1.1 Definition and applicability

It shall be mandatory for all cards complying with TS 102.221 [1] to support all functions described therein.

6.4.3.1.5.1.2 Conformance requirement

CR1 If the UICC receives a case 2 command header and Le = '00' or Le > Luicc, under normal processing it shall return procedure bytes '6C Luicc' instructing the Transport Layer of the Terminal to immediately re-send the command header with P3 = Luicc.

CR2 If the UICC receives a case 2 command header and Le = '00' or Le> Luicc, under abnormal processing it shall return status indicating a warning or error condition (but not SW1 SW2 = '90 00').

CR3 If the UICC receives a case 2 command header and Le = Luicc, under normal processing it shall return data of length Le (= Luicc) under the control of the INS, $\overline{INS}$, or '60' procedure bytes followed by the associated status or procedure bytes '61xx'.

CR4 If the UICC receives a case 2 command header and Le = Luicc, under abnormal processing it shall return status indicating a warning or error condition (but not SW1 SW2 = '90 00').

CR5 If the UICC receives a case 2 command header and Le < Luicc, under normal processing it shall return data of length Le under the control of the INS, $\overline{INS}$, or '60' procedure bytes followed by procedure bytes '61xx'.

CR6 If the UICC receives a case 2 command header and Le < Luicc, under abnormal processing it shall return status indicating a warning or error condition (but not SW1 SW2 = '90 00').

Reference: TS 102.221 [1], subclause 7.3.1.1.5.1.

Test Group Reference (TGR): TGR_USIM_TP102.221_TP_TL_TAPDU0

Test Procedure Reference (TPR): TPR_USIM_TP102.221_TP_TL_TAPDU0_PB_C2

6.4.3.1.5.1.3 Test purpose

To verify that the UICC conforms to the above requirements.

NOTE: For CR3 and CR6 the return of data from the UICC under the control of the $\overline{INS}$, '60' and '61xx' procedure bytes shall not be tested as it is not possible to force the UICC to behave in this way.

6.4.3.1.5.1.4 Method of test

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) EF$_{LOCI}$ shall contain the data string: 'A1 A2 A3 A4 A5 A6 A7 A8 A9 00 00'.

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate the USIM application.

c) The ME simulator shall send a SELECT command to the UICC to select EF$_{LOCI}$.

d) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

e) The ME simulator shall send a READ BINARY command header to the UICC with the P3 parameter set to '00'.

The UICC shall return the procedure bytes '6C 0B' to the ME simulator [CR1].

~~f)   The ME simulator shall send a READ BINARY command header to the UICC with the P3 parameter set to '15'.~~

   ~~*The UICC shall return the procedure bytes '6C 0B' to the ME simulator [CR1].*~~

f~~g~~) The ME simulator shall send a READ BINARY command header to the UICC with the P3 parameter set to '0B'.

   The UICC shall return the procedure byte 'B0' followed by the data string 'A1 A2 A3 A4 A5 A6 A7 A8 A9 00 00', ending with the status condition SW1 = '90', SW2 = '00' - normal ending of the command [CR3].

~~h)   The ME simulator shall send a READ BINARY command header to the UICC with the P3 parameter set to '05'.~~

   ~~*The UICC shall return the procedure byte 'B0' followed by the data string 'A1 A2 A3 A4 A5', ending with the procedure bytes '61xx' [CR5].*~~

g~~i~~) The ME simulator shall send a READ BINARY command header to the UICC with an incorrect P2 parameter and the P3 parameter set to '00'.

   The status condition returned by the UICC shall be SW1 = '6B', SW2 = '00' - wrong parameter(s) P1-P2, or SW1 = '6A', SW2 = '86' - incorrect parameters P1-P2 [CR2].

h~~j~~) The ME simulator shall send a READ BINARY command header to the UICC with an incorrect P2 parameter and the P3 parameter set to '15'.

   The status condition returned by the UICC shall be SW1 = '6B', SW2 = '00' - wrong parameter(s) P1-P2, or SW1 = '6A', SW2 = '86' - incorrect parameters P1-P2 [CR2].

i~~k~~) The ME simulator shall send a READ BINARY command header to the UICC with an incorrect P2 parameter and the P3 parameter set to '0B'.

   The status condition returned by the UICC shall be SW1 = '6B', SW2 = '00' - wrong parameter(s) P1-P2, or SW1 = '6A', SW2 = '86' - incorrect parameters P1-P2 [CR4~~5~~].

j~~l~~) The ME simulator shall send a READ BINARY command header to the UICC with an incorrect P2 parameter and the P3 parameter set to '05'.

   The status condition returned by the UICC shall be SW1 = '6B', SW2 = '00' - wrong parameter(s) P1-P2, or SW1 = '6A', SW2 = '86' - incorrect parameters P1-P2 [CR6].

[…]

6.5.2.2.3   Cyclic EF

6.5.2.2.3.1   Definition and applicability

Cyclic Elementary Files structure the way in which information is held in a record format with chronological order on the UICC and provide means on how this information is accessed.

6.5.2.2.3.2   Conformance requirement

CR1   An EF with a cyclic structure consists of a fixed number of records with the same (fixed) length.

CR2   In this file structure there shall be a link between the last record (n) and the first record.

CR3   When the record pointer is set to the last record n, then the next record shall be record number 1.

CR4   When the record pointer is set to record 1, then the previous record shall be record number n.

CR5   The last updated record containing the newest data shall be record number 1, and the oldest data shall be held in record number n.

CR6   For update operations only PREVIOUS record shall be used.

CR7   For reading operations, the methods of addressing shall be Next, Previous, Current and Record Number.

CR8   If an action following selection of a record is aborted (e.g. due to an unsuccessful execution of a command), then the record pointer shall remain set at the record at which it was set prior to the action.

Reference: TS 102.221 [1], subclause 8.2.2.3.

Test Group Reference (TGR): TGR_USIM_TP102.221_AFS_FT_EF_CF

Test Procedure Reference (TPR): TPR_USIM_TP102.221_AFS_FT_EF_CF

6.5.2.2.3.3   Test purpose

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

NOTE: CR8 are tested in subclause 6.8.1.

6.5.2.2.3.4   Method of test

NOTE: When EF_{ICI} is not supported by the UICC, any supported cyclic EF in ADF_{USIM} may be chosen.

Initial conditions

1) The UICC shall be connected to a ME simulator.

2) EF_{ICI} shall have at least 4 records.

3) The records in EF_{ICI} shall contain the following data:

   1st record   '01' for all bytes
   2nd record   '02' for all bytes
   3rd record   '03' for all bytes
   xth record   '0X' for all bytes

Test procedure

a) The ME simulator shall reset the UICC.

b) The ME simulator shall send a SELECT command to the UICC to select and activate USIM application.

c) The ME simulator shall send a VERIFY PIN command with PIN to the UICC.

d) The ME simulator shall send a SELECT command to the UICC to select EF_{ICI}.

e) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

   The response data shall be the data in the first record [CR1].

f) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step db).

   The response data shall be the data in the last record [CR1, CR4].

g) The ME simulator shall send a READ RECORD command using NEXT mode to the UICC. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step db).

   The response data shall be the data in the first record [CR2, CR3, CR4, CR7].

h) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step db).

   The response data shall be the data in the last record [CR4, CR7].

i) The ME simulator shall send an UPDATE RECORD command using PREVIOUS mode to the UICC with 'FF' for all the bytes. The record length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step db) [CR5].

j) The ME simulator shall send a READ RECORD command using ABSOLUTE mode with record 1 to the UICC. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The response data shall be the new data that has been updated in step j) [CR5].

k) The ME simulator shall send a READ RECORD command using PREVIOUS mode to the UICC. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The response data shall be the previous data in the second last record [CR5].

l) The ME simulator shall send an UPDATE RECORD command using ABSOLUTE mode with record 1 to the UICC with 'FF' for all the bytes. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR6].

m) The ME simulator shall send an UPDATE RECORD command using CURRENT mode to the UICC with 'FF' for all the bytes. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR6].

n) The ME simulator shall send an UPDATE RECORD command using NEXT mode to the UICC with 'FF' for all the bytes. The length used shall be that of bytes 5 and 6 in TLV DO with tag '82' of the response data in step d).

The status condition returned by the UICC shall be SW1 = '69', SW2 = '81' – command incompatible with file structure [CR6].