LLD ACI CSIM

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0 Document Control

0.1 Document History

ID	Author	Date	Status

0.2 References, Abbreviations, Terms

[TI 7010.801] 7010.801, References and Vocabulary, Texas Instruments.

[1] ETSI Specification GSM 07.07

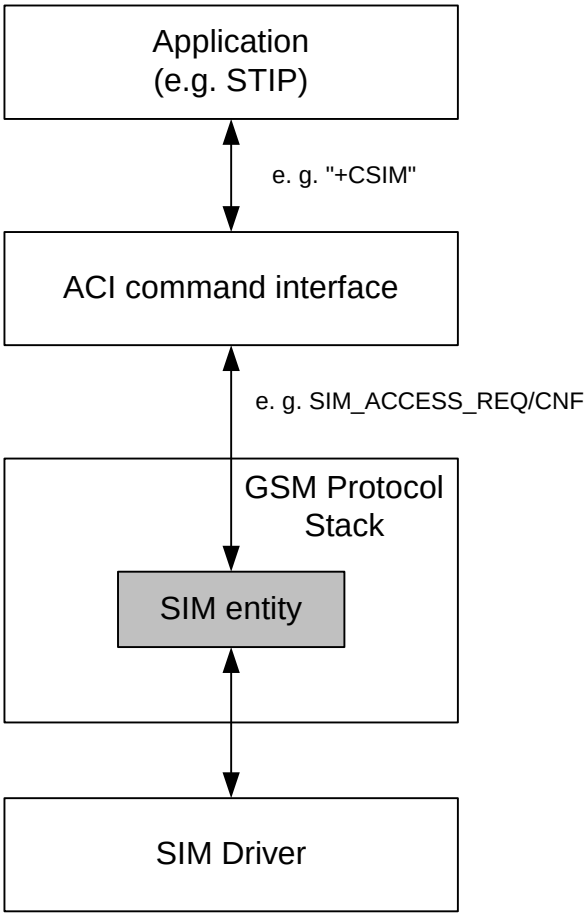
[2] ETSI Specification GSM 11.11

Table of Contents

1 Introduction

This document describes the modifications and implementation of CSIM/APDU feature in the ACI. Therefore two new AT commands will be introduced, AT%ATR (answer-to-reset) and AT+CSIM. AT%ATR is a proprietary command but AT+CSIM can be found in ETSI specification GSM 07.07 [1].

2 Overview


Application
(e.g. STIP)
e. g. "+CSIM"
ACI command interface
e. g. SIM_ACCESS_REQ/CNF
GSM Protocol
Stack
SIM entity
SIM Driver

3 Interface description

3.1 Generic SIM access

3.1.1 AT command

3.1.1.1 AT+CSIM

Table 1: +CSIM parameter command syntax

Command	Possible response(s)
+CSIM=<length>,<command>	+CSIM: <length>,<response> *+CME ERROR: <err>*
+CSIM=?	

Description
Set command transmits to the ME the <command> it then shall send as it is to the SIM. In the same manner the SIM <response> shall be sent back by the ME to the TA as it is.

This command allows a direct control of the SIM by an distant application on the TE. The TE shall then take care of processing SIM information within the frame specified by GSM.

NOTE: Compared to Restricted SIM Access command +CRSM, the definition of +CSIM allows TE to take more control over the SIM-ME interface. The locking and unlocking of the interface may be done by a special <command> value or automatically by TA/ME (by interpreting <command> parameter). In case that TE application does not use the unlock command (or does not send a <command> causing automatic unlock) in a certain timeout value, ME may release the locking.

Defined values

<length> : integer type; length of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response)

<command> : command passed on by the ME to the SIM in the format as described in GSM 11.11 [2] (hexadecimal character format; refer +CSCS)

<response> : response to the command passed on by the SIM to the ME in the format as described in GSM 11.11 [2] (hexadecimal character format; refer +CSCS)

The description for this AT command is taken from ETSI specification GSM 07.07 [1].

3.1.2 Data types

3.1.2.1 T_SIM_TRNS_ACC_PRM

```
typedef struct SIMTrnsAccPrm
{
 UBYTE      cmd;        /* access command */
 USHORT     reqDataFld; /* requested datafield identifier */
 UBYTE      p1;         /* parameter 1 */
 UBYTE      p2;         /* parameter 2 */
 UBYTE      p3;         /* parameter 3 */
 USHORT     dataLen;    /* data length in bytes */
 UBYTE      *transData; /* points to data buffer */
} T_SIM_TRNS_ACC_PRM;
```

For +CSIM the field *cmd* has the value SIM_TRANSP_CMD (taken from SIM SAP). The *transData* points to all transparent data that will be sent to the SIM entity. The data type of *dataLen* was changed from UBYTE to ULONG, because the *transData* can have a maximum length of 262 bytes (in SIM SAP: MAX_SIM_TRANSP). The fields *p1*, *p2*, *p3* and *reqDataFld* are not used in this case.

3.1.2.2 T_SIM_TRNS_RSP_PRM

```
typedef struct
{
 UBYTE      sw1;        /* SIM result code 1 */
 UBYTE      sw2;        /* SIM result code 2 */
 USHORT     rspLen;     /* length of response data */
 UBYTE      *rsp;       /* pointer to response data */
} T_SIM_TRNS_RSP_PRM;
```

This data structure contains the response data that are received from the SIM entity. The data type of *rsp* was changed from UBYTE to USHORT because the maximum length of the response data can be 256 bytes (in SIM SAP: MAX_SIM_CMD).

3.1.3 Functional interface

3.1.3.1 sAT_PlusCSIM

Prototype:

```
T_ACI_RETURN sAT_PlusCSIM (T_ACI_CMD_SRC     srcId,
                           USHORT            dataLen,
                           UBYTE             *data);
```

Parameters:

src_id	source identifier
dataLen	length of data in *data*
data	data which are sent to the SIM (max. length: 262 bytes)

Return:

AT_EXCT	execution of command is in progress
AT_FAIL	execution of command failed
AT_BUSY	execution of command is rejected due to a busy command handler

Description:

This function allows sending data to the SIM. This data must be formatted as described in GSM 11.11. [2]

3.1.3.2 rAT_PlusCSIM

Prototype:

```
void rAT_PlusCSIM (SHORT      rspLen,
                   UBYTE      *rsp   ));
```

Parameters:

rspLen	length of response data in bytes
rsp	response data including sw1 and sw2 (max. length: 258 bytes)

Return:

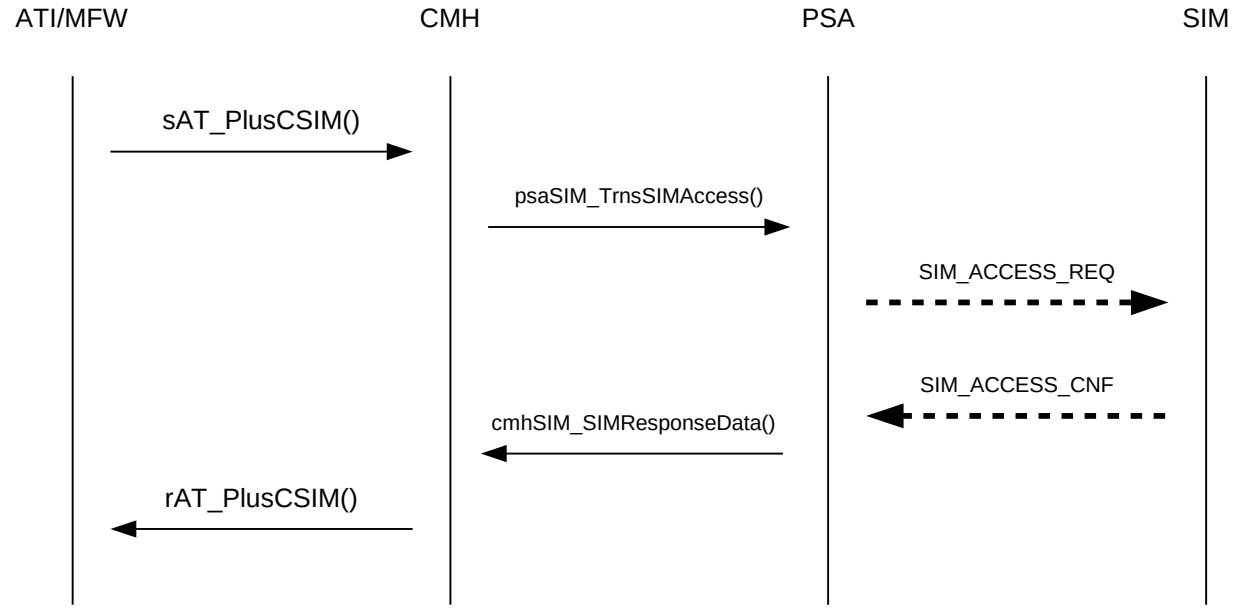
void

Description:

Informs MFW/ATI about the response data that received from the SIM.

3.1.4 MSC

```
[Generic SIM Access, set command]
AT+CSIM= 18,81A400000200053100
+CSIM: 12,800200509000
OK
```



3.2 Answer to reset

3.2.1 AT command

3.2.1.1 AT% ATR

Table 2: %ATR parameter command syntax

Command	Possible response(s)
%ATR?	%ATR: <phase>,<atr> *+CME ERROR: <err>*
%ATR=?	

Description
The query command can be used by an application to obtain information about the phase, status and answer to reset (ATR) of the SIM.

Defined values
<phase> : integer type; phase of the SIM that is stored in the EF Phase (GSM 11.11 [2])

<atr> : answer to reset (hexadecimal character format), described in GSM 11.11 [2]

3.2.2 Functional interface

3.2.2.1 qAT_PercentATR

Prototype:

```
T_ACI_RETURN qAT_PercentATR (T_ACI_CMD_SRC  srcId,
                             UBYTE          *phase,
                             UBYTE          *atr_info);
```

Parameters:

src_id	source identifier
phase	phase of the SIM card
atr_info	atr (answer to reset) according to GSM 11.11 [2] (max. length: 33 bytes)

Return:

AT_FAIL	execution of command failed
AT_CMPL	execution of command completed

Description:
Queries the phase and atr info. The atr is received when switching the mobile on. The phase is received after PIN1 is entered.