Technical Documentation

SixTIes GAP 026. Low Level Design Modification specification.

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0 Document Control

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0.2 Document History

Date	Version	Status	Author
2004-09-4 Initial version.	001	Draft	Hari Gehlot

0.3 References, Abbreviations, Terms

Ref 1 - For reference for: '+CEER' refer to section 6.10 in specification:

3GPP TS 27.007 V3.13.0 (2003-03)
AT command set for User Equipment (UE)
(Release 1999)

Ref 2 –Condat cause concept document: cause_concept.doc

Abbreviations:

ME - Mobile equipment
ACM - Accumulated call meter.
MT - Mobile Terminal
FDN – Fixed dial number

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1 Customer Requirement

1.1 Introduction

Requirement from Customer:

GAP.026	Last exit code	**Explanation:** All the last exit codes described in the GSM 4.08 specification (Annexe H) must be managed by the +CEER command. In addition there are three exit codes required that are not managed by the network (but certainly by the modem itself). **1) No service** Used when user tries to make a call when phone is out of service. There should be some kind of indication from modem, (depends how the modem side informs about this situation). **2) Acm Max reached** Error returned when the user can't make a call when the limit is already exceeded. (This is a different error compared to the GSM error 68). **3) Invalid FDN** Call creation is not possible because number is not found from the FDN list. The relevant party which checks FDN list. **TI 2004-06-03:** The +CEER command will be extended.

1.2 Preliminary Investigation

At present the exit codes (CAUSES) describes in the 3GPP TS 24.008 V3.19.0 (2004-06) Release 1999 specification (Annexe H) are covered by the +CEER command. The exit codes required by the customer for the situations described above are not covered by the standard and will have to be implemented as proprietary causes.

1.3 Understanding of the 'No Service' problem

No report relating to 'No Service' is given when CEER is executed after a phone call attempt is made to a mobile in out of service state.

1.4 Understanding of the Acm Max reached problem

The current understanding of 'ACM max reached' is to do with a MT being in a call and the 'ACM' setting reaching the 'ACM max' setting – at which point the call is terminated - and when an AT+CEER is

subsequently issued the cause (68) relating to this issue being reported. This is as defined by the standard and already implemented.

The extension required for AT+CEER is to do with the MT 'ACM' setting already being equal to or greater than 'ACM max' and not in a call. Then, when the user tries to make a call, a cause relating to this issue is reported by the AT+CEER command.

1.5 Understanding of FDN_problem

The extension required for AT+CEER is fairly straightforward to understand from its description in the table:

Call creation is not possible because the dialled number is not found in the FDN list, by, the relevant party which checks FDN list.

1.6 Work To Be Carried Out

Exit codes for the situations 1), 2) and 3) in the table above shall be covered by subsequent work.

2 Command Description from ETSI specification.

2.1 Extended error report +CEER

+CEER action command syntax

Command	Possible response(s)
+CEER	+CEER: <report>
+CEER=?	

Description

Execution command causes the TA to return one or more lines of information text <report>, determined by the MT manufacturer, which should offer the user of the TA an extended report of the reason for

- the failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- the last call release;

Typically, the text will consist of a single line containing the cause information given by GSM/UMTS network in textual format.

Defined values

<report>: the total number of characters, including line terminators, in the information text shall not exceed 2041 characters. Text shall not contain the sequence 0<CR> or OK<CR>.

2.2 Format of <report> for the new proprietary causes:

For 'Acm Max reached':

<report> shall be: 1,1,1,0,ACM reached ACM maximum

For 'Invalid FDN':

<report> shall be: 1,1,1,1,number not in FDN list

For 'No service':

<report> shall be: 1,1,4,128,no service

Note: for breakdown of the 4 numbers at the front of the report see section 3.

3 Structure of Cause Parameter used within the report (See Ref 2).

The causes at SAPs / interfaces shall use a 16 bit value with the structure shown and explained below:

Bit#	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Meaning	DefinedBy	OriginatingSide	OriginatingEntity						CauseValue							
Range	0,1	0,1	0-63						0-255							

- Bit 16 is the most significant bit, bit 1 is the least significant.
- The meaning of values is explained in the following table:

Bit Field name	Bit Field Value	Meaning of Value
DefinedBy	0	CauseValue is defined by a standardisation body (usually 3GPP)
	1	CauseValue is defined by Condat/TI, i.e. internally
OriginatingSide	0	the network is the originating side
	1	the mobile station is the originating side
OriginatingEntity	000000	SIM is the entity originating the cause
	000001	ACI is the entity originating the cause
	000010	RLP is the entity originating the cause
	000011	RR is the entity originating the cause
	000100	MM is the entity originating the cause
	000101	CC is the entity originating the cause
	000110	SS is the entity originating the cause
	000111	SMS-CP is the entity originating the cause
	001000	SMS-RP is the entity originating the cause
	001001	SMS-TL is the entity originating the cause
	001010	GMM is the entity originating the cause
	001011	SM is the entity originating the cause
	001100	FAD is the entity originating the cause
	001101	T30 is the entity originating the cause
	001110	GRR is the entity originating the cause
	001111	PPP is the entity originating the cause
	010000	LLC is the entity originating the cause
	010001	SNDCP is the entity originating the cause
	other values	are reserved; **NOTE**: additional values shall be allocated starting with the small, unallocated numbers first to keep the possibility to use bits 14-13 for other purposes than OriginatingEntity in the future

CauseValue	• in case of DefinedBy = 0 the meaning of the CauseValue is defined by an appropriate technical specification issued by a standardisation body • in case of DefinedBy = 1 the meaning of the CauseValue is defined by an appropriate (OriginatingEntity!) SAP • in this case the value 255 = 0xFF = NOT_PRESENT_8BIT is used to indicate that no cause is present / provided

4 Proposed Low Level Design.

4.1 Interface Changes

The +CEER command look and feel shall NOT be changed. The functions in code supporting the +CEER commands shall change to accommodate the new proprietary causes.

4.2 ATI Modifications.

4.2.1 Modified functions:

- atPlusCEER() - shall be modified to return cause and description text for the new proprietary causes as opposed to a non-related cause output without description text.
- GetCeerDesc() – shall be modified to allow the description text from a new proprietary (manufacturer specific) CEER description table to be obtained for a proprietary cause.

4.3 CMH Modications.

4.3.1 Modified function:

- qAT_PlusCEER shall be modified to allow the 'making' of the new proprietary cause parameters for use by the atPlusCEER() function.

4.4 Additional Changes

A new global variable for setting of either one of the two new cause values shall be defined.

A new member 'USHORT pCauseCEER' shall be added to structure : Struct SIMShrdParm to hold the new proprietary causes.

Note:

- The global variable shall be set with a related proprietary cause value when tests for either of the conditions 'Acm Max already reached' or 'Invalid FDN' is performed.
- The global variable shall be reset whenever a new call is initiated or a mobile terminated call is received. Or when a test to find a FDN number in the phone book yields a positive result.
- The global variable shall also be reset before a SMS is sent.

5 Testing Details

The following Windows test cases will be added:

Assume that the FDN list is empty before each test case.

5.1 Test case 1

Activate FDN
Add phone number to FDN list using Pin2
Make call to number added to FDN list
Hang up call from calling end.
Run AT+CEER command - ensure cause comes back as: '+CEER: 0,0,5,16,normal call clearing'

5.2 Test case 2

Activate FDN
Add phone number to FDN list using Pin2
Make call to a number not added to FDN list
Check 'NO CARRIER' comes back as response.
Run AT+CEER command - ensure cause comes back as: '+CEER: 1,1,1,1,number not in FDN list'

5.3 Test case 3

After power on issue command: at+cfun=1
-then dial a number e.g. atd030398311676;
Check 'NO CARRIER' comes back as response.
Run AT+CEER command - ensure cause comes back as: +CEER: 1,1,4,128,no service

5.4 Test case 4

Ensure an AOC supported sim is used.
Do following check using a sim in which it is known that ACM reading has exceeded the ACMMax sim setting.
Initiate a call.
Check that call does not occur and immediately 'ERROR' is reported.
Run AT+CEER command - ensure cause comes back as: +CEER: 1,1,1,0,ACM reached ACM maximum

5.5 Test case 5

To be decided.

5.6 Test case 6

To be decided.