



Technical Documentation

SixTies GAP 028. Low Level Design specification.

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0.2 Document History

Date/Change	Version	Status	Author
2004-09-26 Amended test cases to include more checks. And corrected the specification.	003	Draft	Hari Gehlot
2004-08-27	002	Draft	Hari Gehlot
2004-08-19 Initial version.	001	Draft	Hari Gehlot

0.3 References, Abbreviations, Terms

Ref 1 - For reference for: '+CCLK' see specification:

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

Ref 2 – TI Real Time Clock User Interface Specification

RIV141
Ver. 0.2

Ref 3 – TI Technical Documentation

RTC EXTENSION API

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1 Customer Requirement

1.1 INTRODUCTION

From Customer:

“To support NITZ, the following commands +CTZU/+CCLK must be supported.”

1.2 PRELIMINARY INVESTIGATION

The '+CTZU' command was already implemented within the code and the '+CCLK' not implemented.

The GAP28 issue reported in conquest says: " AT+CCLK? and AT+CTZU=1 are not supported by the MODEM. They both return +EXT: I ERROR ".

In the case of the AT+CTZU command - it needs to be re-tested to confirm/deny the report.

At this moment in time, it is understood that the AT+CTZU command is implemented.

2 Interface changes.

2.1 Clock +CCLK

See Ref1 for information for: '+CCLK'

'+CCLK' parameter command syntax:

Command	Possible response(s)
+CCLK=<time>	+CME ERROR: <err>
+CCLK?	+CCLK: <time> +CME ERROR: <err>
+CCLK=?	

Description

Set command sets the real-time clock of the MT. If setting fails in an MT error, +CME ERROR: <err> is returned.

General errors:

0	phone failure
1	no connection to phone
2	phone adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index

22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalisation PIN required
41	network personalisation PUK required
42	network subset personalisation PIN required
43	network subset personalisation PUK required
44	service provider personalisation PIN required
45	service provider personalisation PUK required
46	corporate personalisation PIN required
47	corporate personalisation PUK required
100	unknown

Read command returns the current setting of the clock.

Defined values

<time>: string type value; format is "yy/MM/dd, hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -47...+48). E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"

NOTE:

If MT does not support time zone information then the three last characters of <time> are not returned by +CCLK?.

(The format of <time> is specified by use of the +CSDF command - but we DO NOT support the CSDF command so the default format as shown above shall be used).

IMPORTANT NOTE

Currently there is no support for timezone in the +CCLK command.

The supported <time> >: string type value; format is: "yy/MM/dd, hh:mm:ss"

3 Proposed Low Level Design.

3.1 Interface Changes

The new command +CCLK will be defined as described above.

3.2 ATI Modifications.

3.2.1 New Functions:

- setatPlusCCLK() - will handle the 'AT+CCLK = <time>' command.

This function will parse the command and - if no error is reported - will pass the <time> and <date> parameters to the sAT_PlusCCLK() function in the command handler.

- queatPlusCCLK() - will handle the 'AT+CCLK?' command.

This function will parse the command and - if no error is reported - will initiate the qAT_PlusCCLK() function in the command handler.

The ATI array "cmds", in the file ati_cmd.c, will be updated with the new function setatPlusCCLK() and queatPlusCCLK().

3.3 CMH Modifications.

3.3.1 New Function(s):

(See document references Ref 2 and Ref 3 for information about the RTC routines used below)

sAT_PlusCCLK() will be responsible for:

a) – passing the received date time structure variables on to the RTC routine RTC_SetDateTime() to set the date and time.

qAT_PlusCCLK() will be responsible for:

a) - calling RTC routine: RTC_GetDateTime() – to obtain date and time data back from the real time clock.

b) – converting the time and date data received into a string ready for reporting the setting in the phone.

4 Testing Details

The following Windows test cases will be added

(As shall support the current implementation of the +CCLK command):

4.1 Testcase 1

a) Test +CCLK= <time> (Set MT real time clock with 'syntactically correct' time setting and check setting)

AT+CCLK="04/08/17,13:31:01"

OK

b) Read setting in RTC.

AT+CCLK?

4/8/17,13:31:4 (Target testing will return a value marginally different to time set because target clock will always be incrementing.)

OK

4.2 Testcase 2

a) Test +CCLK= <time> (Set MT real time clock with time setting with illegal year values)

AT+CCLK="104/08/17,13:31:01"

ERROR

AT+CCLK="-1/08/17,13:31:01"

ERROR

4.3 Testcase 3

a) Test +CCLK= <time> (Set MT real time clock with time setting with illegal month values)

AT+CCLK="04/13/17,13:31:01"

ERROR

AT+CCLK="04/0/17,13:31:01"

ERROR

4.4 Testcase 4

a) Test +CCLK= <time> (Set MT real time clock with time setting with illegal days value)

AT+CCLK="04/08/32,13:31:01"

ERROR

AT+CCLK="04/08/0,13:31:01"

ERROR

4.5 Testcase 5

a) Test +CCLK= <time> (Set MT real time clock with time setting with illegal hours value)

AT+CCLK="04/08/17,26:31:01"

ERROR

AT+CCLK="04/08/17,-1:31:01"

ERROR

4.6 Testcase 6

a) Test +CCLK= <time> (Set MT real time clock with time setting with illegal minutes value)

AT+CCLK="04/08/17,13:60:01"

ERROR

AT+CCLK="04/08/17,13:-1:01"

ERROR

4.7 Testcase 7

a) Test +CCLK= <time> (Set MT real time clock with time setting with illegal seconds value)

AT+CCLK="04/08/17,13:31:60"

ERROR

AT+CCLK="04/08/17,13:31:-1"

ERROR

4.8 Testcase 8

a) Test +CCLK= <time> (Set MT real time clock with time setting equal to '??')

AT+CCLK=?

OK

Where the mobile DOES NOT supports timezone the following applies:

+CCLK: yy/MM/dd,hh:mm:ss

(The time returned is dependent on time elapsed since last successful time setting command issued earlier)

Similar functionality will be tested in the target.

Where the mobile SUPPORTS timezone the following applies:

+CCLK: yy/MM/dd,hh:mm:ss±zz

(The time returned is dependent on time elapsed since last successful time setting command issued earlier)