



Technical Documentation

SixTies GAP 028. Low Level Design specification.

Department:	WTBU - Cellular Systems		
Creation Date:	2004-08-18		
Last Modified:	2004-08-19 by Hari Gehlot		
ID:	8462.739.04	Version:	3
Status:	Submitted	ECCN:	Not Applicable

© 2004 Texas Instruments Incorporated. All rights reserved.

Texas Instruments Proprietary Information

Internal Data

0 Document Control

© 2004 Texas Instruments Incorporated. All rights reserved.

Texas Instruments Incorporated and / or its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products, software and services at any time and to discontinue any product, software or service without notice. Customers should obtain the latest relevant information during product design and before placing orders and should verify that such information is current and complete.

All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment. TI warrants performance of its products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI products, software and / or services. To minimize the risks associated with customer products and applications, customers should provide adequate design, testing and operating safeguards.

Any access to and / or use of TI software described in this document is subject to Customers entering into formal license agreements and payment of associated license fees. TI software may solely be used and / or copied subject to and strictly in accordance with all the terms of such license agreements.

Customer acknowledges and agrees that TI products and / or software may be based on or implement industry recognized standards and that certain third parties may claim intellectual property rights therein. The supply of products and / or the licensing of software do not convey a license from TI to any third party intellectual property rights and TI expressly disclaims liability for infringement of third party intellectual property rights.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products, software or services are used.

Information published by TI regarding third-party products, software or services does not constitute a license from TI to use such products, software or services or a warranty, endorsement thereof or statement regarding their availability. Use of such information, products, software or services may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose without the express written permission of TI.

0.1 Export Control Statement

Recipient agrees that it will not knowingly export or re-export, directly or indirectly, any product or technical data (as defined by the U.S, EU and other Export Administration Regulations) including software, or any controlled product restricted by other applicable national regulations, received from Disclosing party under this Agreement, or any direct product of such technology, to any destination to which such export or re-export is restricted or prohibited by U.S or other applicable laws, without obtaining prior authorisation from U.S. Department of Commerce and other competent Government authorities to the extent required by those laws. This provision shall survive termination or expiration of this Agreement.

According to our best knowledge of the state and end-use of this product or technology, and in compliance with the export control regulations of dual-use goods in force in the origin and exporting countries, this

technology is classified as given on the front page.

This product or technology may require export or re-export license for shipping it in compliance with certain countries regulations.

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

Table of Contents

1	Customer Requirement.....	5
1.1	INTRODUCTION	5
1.2	PRELIMINARY INVESTIGATION.....	5
2	Interface changes.	6
2.1	Clock +CCLK	6
3	Proposed Low Level Design.	8
3.1	Interface Changes	8
3.2	ATI Modifications.	8
3.2.1	New Functions:.....	8
3.3	CMH Modications.	8
3.3.1	New Function(s):	8
4	Testing Details.....	9
4.1	Testcase 1	9
4.2	Testcase 2	9
4.3	Testcase 3	9
4.4	Testcase 4	9
4.5	Testcase 5	9
4.6	Testcase 6	10
4.7	Testcase 7	10
4.8	Testcase 8	10

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	22	not found
1	no connection to phone	23	memory failure
2	phone adaptor link reserved	24	text string too long
3	operation not allowed	25	invalid characters in text string
4	operation not supported	26	dial string too long
5	PH SIM PIN required	27	invalid characters in dial string
6	PH-FSIM PIN required	30	no network service
7	PH-FSIM PUK required	31	network timeout
10	SIM not inserted	32	network not allowed - emergency calls only
11	SIM PIN required	40	network personalisation PIN required
12	SIM PUK required	41	network personalisation PUK required
13	SIM failure	42	network subset personalisation PIN required
14	SIM busy	43	network subset personalisation PUK required
15	SIM wrong	44	service provider personalisation PIN required
16	incorrect password	45	service provider personalisation PUK required
17	SIM PIN2 required	46	corporate personalisation PIN required
18	SIM PUK2 required	47	corporate personalisation PUK required
20	memory full	100	unknown
21	invalid index		

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)