

CE910 Series Software User Guide

1w0301011 Rev.5 – 2015-02-09



APPLICABILITY TABLE

PRODUCT
CE910-DUAL
CE910-SC

SW Version
18.12.001 (Sprint)
18.12.012 (Aeris.net)
18.02.022 (Verizon, HW 1.00)
18.12.022 (Verizon, HW 1.10)
18.02.031 (US Cellular)
18.02.392 (-SC)



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1. Introduction

1.1. Scope

This document describes software solutions that can be used to develop a product containing the Telit CE910 Series module, as follows:

- Describing the basic functions of the module
- Suggesting a proper software control solution for each function
- Describing typical wrong solutions and the most common errors to be avoided

This document is not intended to provide an overall description of all software solutions and all products that may be designed.

The solutions suggested serve as a guide or starting point for correctly developing a product with the Telit CE910 Series module.

However, avoiding the wrong solutions and most common errors described here should be regarded as mandatory.

1.2. Audience

This manual is intended for software and applications developers who design products that integrate the CE910 Series module.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit's Technical Support Center (TTSC) at:

TS-NORTHAMERICA@telit.com, TS-EMEA@telit.com, TS-APAC@telit.com or use <http://www.telit.com/en/products/technical-support-center/contact.php>

For detailed information about where you can buy Telit modules or for recommendations on accessories and components visit <http://www.telit.com>

To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

1.4. Product Overview

The CE910 Series is a CDMA-1XRTT wireless module designed to have the same form factor of its GSM/GPRS, UMTS/HSPA and EVDO counterpart products of the xE910family: GE910, HE910 and DE910 respectively.



3. Basic Operations

3.1. Command Syntax

In the next paragraphs the following notations are used:

- <cr> represents the Carriage Return Character (13)
- <lf> represents the Line Feed Character (10)
- <xx> represents a parameter. (<> characters are only for delimiting the parameter and must not be issued to the terminal).
- [<xx>] represents an optional parameter. ([] characters are only for delimiting the optional parameter and must not be issued to the terminal).

3.2. Command Response Timeout

Every command issued to the Telit CE910 Series returns a result response if response codes are enabled (default) (see command ATQn). The time needed to process the given command and return the response varies and may depend on the network also. As a result every command is provided with a proper timeout period. If this time elapses without any result from the operation, the ERROR response is reported.

The timeout period is quite short for internal setup commands, but may be very long for commands that interact with the network (or networks).



NOTE: If no response is received after the timeout has expired, then try repeating the last command and if still no response is received before the timeout, an Unconditional Shutdown MUST be issued followed by powering ON the device again.

The table below lists all the commands with timeouts that differ from the default 100 ms:

Command	Time-Out (Seconds)
+CGMI	5
+CGMM	5
+CGMR	5
+CGSN	20
+CSQ	5
+GMI	5
+GMM	5
+GMR	5
+GSN	20
+CSMS	5
+CMGF	5
+CSMP	5



3.4.1. Software Shutdown

1. Send command AT#SHDN<cr>
2. Wait for response OK

The device shuts down with the following sequence of activities:

1. Detach from the network
2. Module Shutdown

In case the network is unavailable the detach procedure will be attempted for a few seconds (typically 6 seconds). After this timeout the module will be shut down.

3.4.2. Hardware Shutdown

To turn OFF the CE910 Series the pin ON# must be tied low for at least 2 seconds and then released.

The same circuitry for the power ON can be used.

The device shuts down after the release of the ON# pin.



TIP: To check if the device has powered off, the hardware line PWRMON should be monitored. When this line goes low, the device has powered off.

3.4.3. Hardware Reset



WARNING:

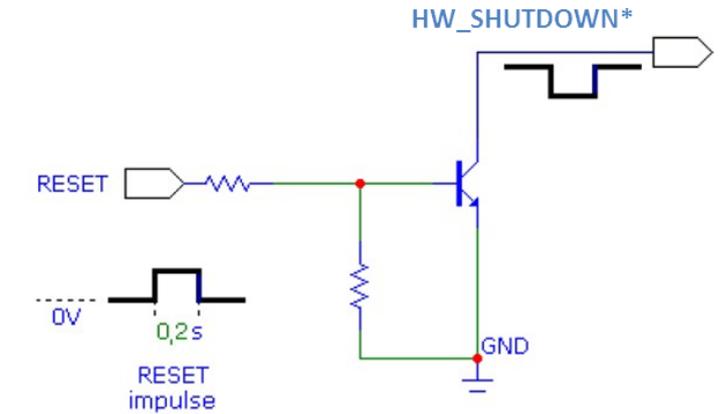
The Hardware Reset must not be used during normal operation of the device since it does not detach the device from the network. It shall be kept as an emergency exit procedure to be performed in the rare case that the device gets stuck waiting for some network message.

3.4.3.1. Hardware Unconditional Shutdown

To unconditionally shutdown the CE910 Series, the pad HW_SHUTDOWN* must be tied low for at least 200 milliseconds and then released.

A simple circuit to unconditionally shutdown the module is illustrated below:





NOTE:

Do not use any pull up resistor on the HW_SHUTDOWN* line or any totem pole digital output. Using a pull up resistor may bring latch up problems on the CE910 Series power regulator and result in improper functioning of the module. The line HW_SHUTDOWN* must be connected only in open collector configuration.

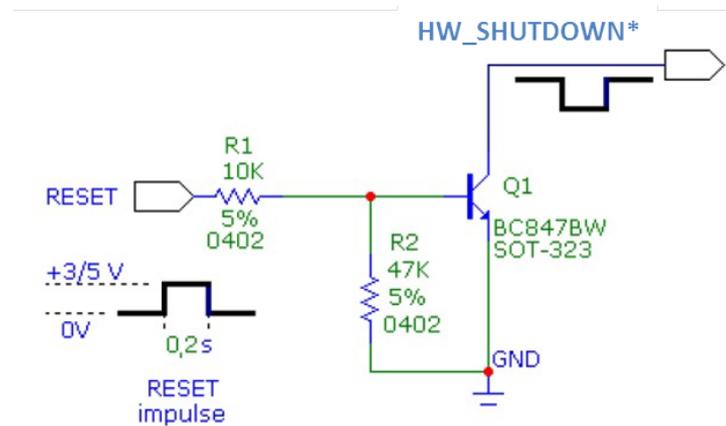


TIP:

The unconditional hardware Shutdown must always be implemented on the boards and the software must use it only as an emergency exit procedure.

For example:

To drive the HW_SHUTDOWN* pad with a totem pole output of a +3/5 V microcontroller (uP_OUT2):



- 14 - Current TX Rate
- 15 - Current Service Option
- 16 - Current Slot Cycle Index
- 17 - Current Frame Error Rate
- 18 - Current Voice Privacy Mode
- 19 - Current Band

Example

Command:

AT#CAI?<cr>

Response:

#CAI: 4139,41,10323,1,50,216,6,6,6,-90,-9,0,2,0,0,2,0,0,1

OK



NOTE: Since with this command a network scan is performed, some seconds may be required before the output is given.

3.5.2.3. **Check for Received Signal Strength & Quality**

Once the module has registered on a network, it may be useful to know the received signal strength & quality to give the user an indication of the reliability of the network connection.

1. Send command AT+CSQ<cr>
2. Wait for response in the format:

+CSQ: <rsssi>,<fer>

OK

where:

<rsssi> is an integer from 0 to 99 that indicates the received signal strength:

<rsssi> value	Signal strength	Indication (for devices with a User Interface (MMI))
0	-113 dBm or less	Signal is VERY low: at the extreme sensibility limit
1	-111 dBm	MMI may indicate only 1 antenna bar
2	-109 dBm	MMI may indicate only 1 antenna bar
3	-107 dBm	MMI may indicate only 1 antenna bar
4	-105 dBm	MMI may indicate only 1 antenna bar
5	-103 dBm	MMI may indicate only 1 antenna bar
6	-101 dBm	MMI may indicate 2 antenna bars
7	-99 dBm	MMI may indicate 2 antenna bars



8	-97 dBm	MMI may indicate 2 antenna bars
9	-95 dBm	MMI may indicate 2 antenna bars
10	-93 dBm	MMI may indicate 3 antenna bars
11	-91 dBm	MMI may indicate 3 antenna bars
12	-89 dBm	MMI may indicate 3 antenna bars
13	-87 dBm	MMI may indicate 3 antenna bars
14	-85 dBm	MMI may indicate 3 antenna bars
15	-83 dBm	MMI may indicate 4 antenna bars
16	-81 dBm	MMI may indicate 4 antenna bars
17	-79 dBm	MMI may indicate 4 antenna bars
18	-77 dBm	MMI may indicate 4 antenna bars
19	-75 dBm	MMI may indicate 4 antenna bars
20	-73 dBm	MMI may indicate 4 antenna bars
21	-71 dBm	MMI may indicate 4 antenna bars
22	-69 dBm	MMI may indicate 4 antenna bars
23	-67 dBm	MMI may indicate 4 antenna bars
24	-65 dBm	MMI may indicate 4 antenna bars
25	-63 dBm	MMI may indicate 4 antenna bars
26	-61 dBm	MMI may indicate 4 antenna bars
27	-59 dBm	MMI may indicate 4 antenna bars
28	-57 dBm	MMI may indicate 4 antenna bars
29	-55 dBm	MMI may indicate 4 antenna bars
30	-53 dBm	MMI may indicate 4 antenna bars
31	-51 dBm or more	MMI may indicate 4 antenna bars
99	not detected	MMI may indicate flashing antenna bars



NOTE: when <rss> is less than 6, only 1 MMI antenna bar, the quality of a call will be poor and the call may even drop.

<fer> is an integer from 0 to 7 and 99 that reports the received signal quality measured on the radio traffic channel.



NOTE: The quality is measured on the traffic channel, hence it is available only during a conversation. The reported value in idle mode must not be considered.

In conversation the quality decreases with the increase of the <fer> number.



NOTE: The <fer> value refers strictly to the CDMA radio channel and is a very technical parameter; it can be used to monitor the voice call quality since the voice quality is inversely proportional to the <fer> number.



3.5.2.4. Quick Network Status Checking

Once the module has registered on a network, it may be useful to know the received signal strength and the network on which the mobile is registered.

1. Send command `AT#CAI=?<cr>`
2. Wait for response format:
`<Current System ID>,<Current Network ID>.....,<Current Band>`

3.5.2.5. Service status of 1x

It is possible to query the service status of a 1x system:

1. Send command `AT#SVCSTAT?<cr>`
2. Wait for response in the format:
`<1x_svc_stat>,0`

where:

`<1x_svc_stat>` - Status for 1x service.

0 – No Service State

2 – Normal Service State

3.5.3. R-UIM Status Checking (R-UIM only)

Once the device is turned on, the device starts initialization. The user needs to check the R-UIM status in order to move to the next operation such as display possible function or restriction.

1. Send command `AT#QSS?<cr>`

Wait for response format:

`#QSS:<mode>,<status>`

`<mode>`

- 0- Disabled(factory default): It's possible only to query the current SIM status through Read command `AT#QSS?`
- 1- Enabled: the ME informs at every SIM status change through the following basic unsolicited indication:
- 2- Enabled; the ME informs at every SIM status change through the following unsolicited indication:

`<status>`

- 0- SIM NOT INSERTED (mode = 0 or 1)



3. Ensure you have a value of “0” in the bold location 18.X1.0**XX**

Ensure that module is able to see a CDMA network.

1. Send command AT#CAI?
<cr>
2. Wait for response – section 3.5.2

Ensure the module is registered on the network.

1. Send command AT+CREG?
<cr>
2. Wait for response – section 3.5.2

This command initiates the “Sprint Hands Free Activation” (HFA) session.

1. Send command AT#HFA
<cr>
2. Wait for response - #904 (initiate OMA)
3. Wait for response - #914 (provisioning successful)
4. Wait for response - #905 (PRL DM session started)
5. Wait for response - #909 (PRL updated)
6. Start a FUMO session where an upgrade is available.
7. Wait for response FUMO session finish
8. Wait for response the module to reset

3.6.3. AERIS.Net

Check to see what software revision is being used:

1. Send command AT+GMR
<cr>
2. Wait for response OK
3. Ensure you have a value of “1” in the bold location 18.11.0**XX**

Ensure that module is able to see a CDMA network.

1. Send command AT#CAI?
<cr>
2. Wait for response – section 3.5.2

Ensure the module is registered on the network.

1. Send command AT+CREG?
<cr>



8. Right click the “Telit HS Modem” to access the “Properties” menu
9. Select the “Power Management” tab
10. Check the box labeled “The computer can power this device off to save power”



4. Advanced Operations

4.1. CDMA Power saving function

The Telit CE910 Series provides a special function that reduces the power consumption during the IDLE time. Thus allowing a longer activity with a given battery capacity. The power saving function can be configured by user needs with following power saving function mode.

Power saving function mode

0 - minimum functionality, In this mode the AT interfaces is not accessible. Consequently, once +CFUN=0 AT commands cannot be sent. Any commands will remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level +CFUN=1 (Default setting)

1 - mobile full functionality with power saving disabled (factory default)

2 - disable TX

4 - disable both TX and RX

5 - mobile full functionality with power saving enabled

Use the following AT command to select the power saving mode in accordance with your Telit Module:

AT+CFUN=[<fun>[,<rst>]]

Examples

Check the current mode:

AT+CFUN?

+CFUN: 1 → module with full functionality and power saving disabled (factory setting)

OK



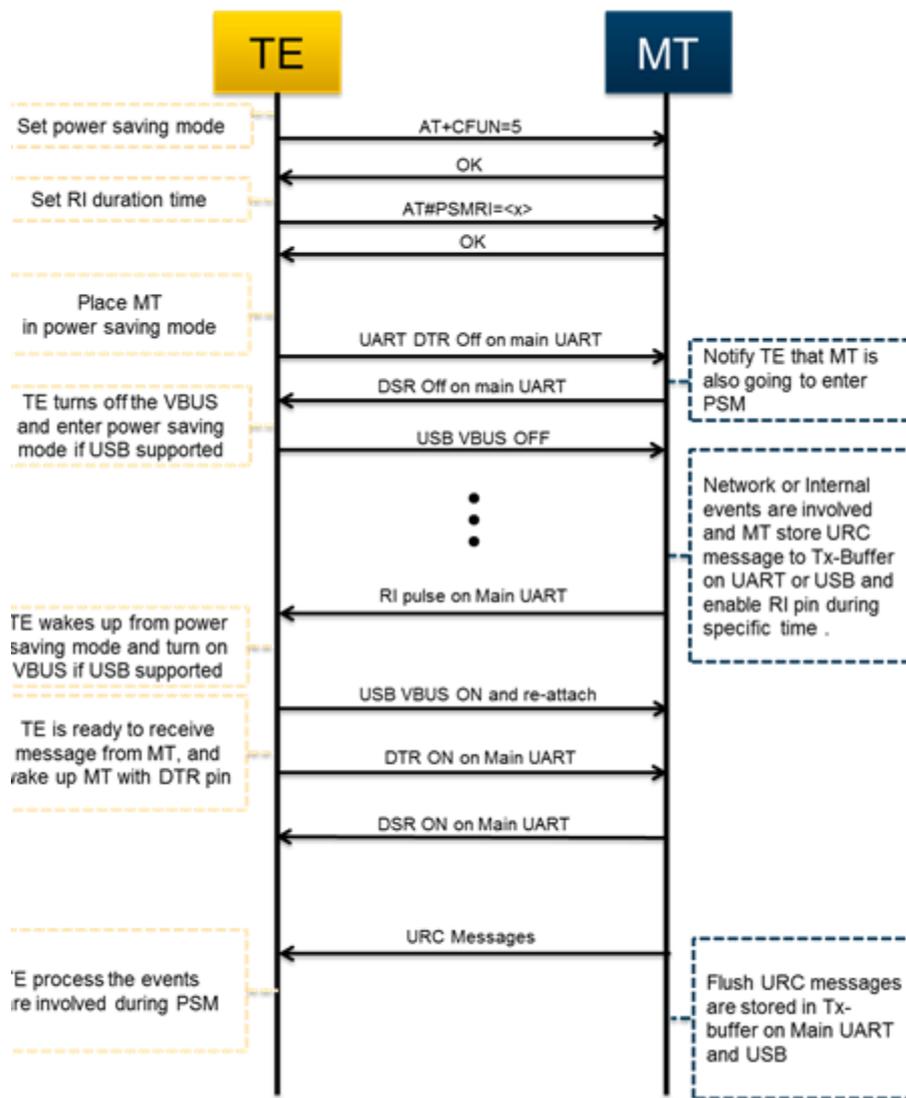
NOTE: URCs and network behavior (incoming calls or SMS) can wake up from CFUN=0 only (RTS not supported)



4.1.1. Enabling/Disabling the power saving function

When DTR (RS232 Pin 4) goes high and USB_VBUS (USB Pin 1) goes low (0v), the OEM application is not going to send any commands and the CE910 Series module can enter the power saving mode.

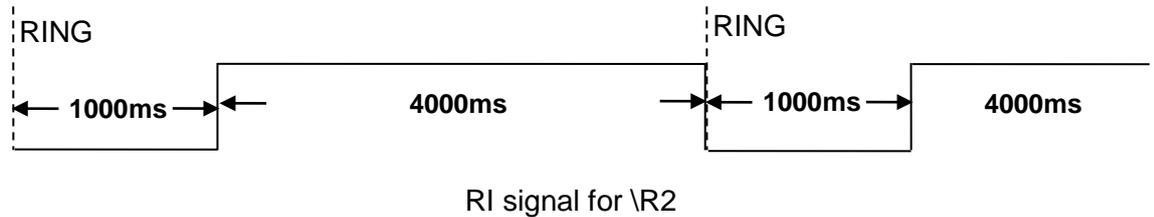
TE use UART or USB interface shall observe the scenario depicted in below flow chart to place MT in PSM and process the event invoked during PSM



Power Saving Mode Flow Chart

NOTE: In case TE uses both UART and USB as serial interface, TE should do VBUS OFF on USB and DTR Off on UART to place MT in PSM.

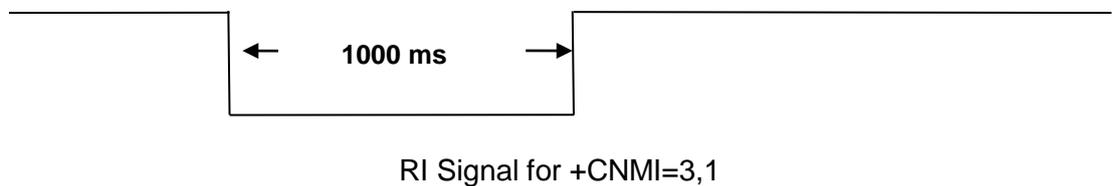




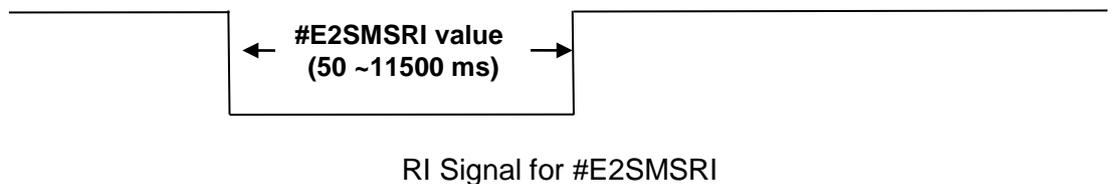
4.1.2.2. RI Signal for incoming SMS

RI signal for incoming SMS has two types in accordance with the value of +CNMI or #E2SMSRI.

In case of +CNMI=3,1, the negative going pulse is generated as below once



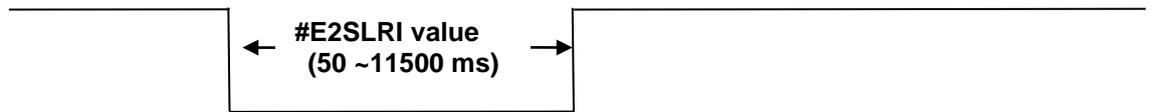
In case of #E2SMSRI = <x>, the negative going pulse is generated as below once



NOTE: In case both +CNMI=3,1 and #E2SMSRI=<x> is issued, RI signal behavior by #E2SMSRI is ignored by +CNMI.

4.1.2.3. RI Signal for socket listen

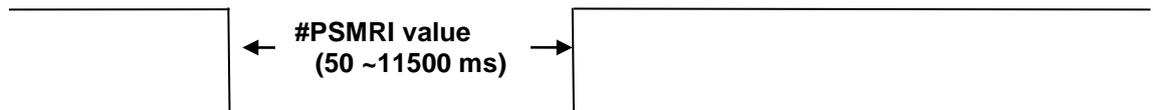
RI Signal is generated, when modem receive TCP connection request from remote client during socket server mode. This signal is the negative going pulse and is generated, one time.



RI Signal for #E2SLRI

4.1.2.4. RI Signal for event in power saving mode

RI Signal for URC message is generated, only when MT is in PSM



RI Signal for #PSMRI



NOTE: RI signal for Incoming Call, SMS, Socket Listen and #PSMRI are generated at the same time in PSM, RI signal for #PSMRI will be ignored.

4.1.3. Power Saving Mode performance

The current consumption is changed by +CFUN setting value, UART (Serial interface - RS-232C), USB and with no connection.

Mode	AVERAGE IDLE CURRENT(= mA) Slot Cycle = 2 (see note for explanation)		
	RS232 connection	USB connection	No connection
+CFUN=0	1	1	1
+CFUN=1	5	5	5
+CFUN=2	5	5	5
+CFUN=4	5	5	5
+CFUN=5	1	1	1



NOTE: CDMA devices monitor the paging channel on a periodic cycle. All major carriers use Slot Cycle Index 2 as this default setting. SLC=2 means the device will power up and monitor the paging channel every 5.12 seconds. The chart above does not reflect this.



4.2. SMS

The Telit CE910 Series supports the Short Message Service. It is possible to store, delete, write, send and receive a SMS, which is a short text message up to 160 characters long.

4.2.1. SMS device setup

Before accessing the Short Message Service, the device has to be properly set up.

4.2.1.1. Select SMS Message Format

Set command selects the “message format” in which SMS will be handled by the module and network.

You can choice between PDU (default) and TEXT formats.

Send command `AT+CMGF=<mode><cr>` where:

<mode> - message format

0 – PDU Mode

1 – TEXT Mode

4.2.1.2. Select New Messages indication behavior

Set command selects the behavior of the device when receiving new messages from the network is indicated to the DTE.

Send command `AT+CNMI=<mode><cr>` where:



NOTE: The information below written in italics will be present depending on the last setting of +CSDH.

<mode> - unsolicited result codes buffering option

0 - No SMS-DELIVER indications are routed to the TE.

1 - Indication of the memory location is routed to the TE using the following unsolicited result code:

`+CMTI: <memr>,<index>`

where:



For Verizon:

0 – Normal (factory default)

1 – High

<enc_type> - Encoding type of message

0 - 8-bit Octet

2 - 7-bit ASCII

4 - 16-bit Unicode

<length> - Length of message

<data> - Message data (Indicates the new voice mail count, if <tele_id> is voice mail notification)

Preparation for the examples

AT+CNMI=?

+CNMI: (0-2)

OK

AT+CNMI=1

OK

AT+CNMI?

+CNMI: 1

OK

+CMTI: "ME",98

AT+CNMI=2

OK

AT+CNMI?

+CNMI: 2

OK

+CMT: "01191775982",20071221163655,129,4098,0,2,8

TEST SMS

#SMSFULL



<memr>: memory storage for Read and Delete commands

"ME" or "SM" (In case supporting RUIM)

<memw>: memory to which writing, sending, and receiving operations are made

"ME" or "SM" (In case supporting RUIM)

2. Wait for response in the format:

+CPMS:<memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>

OK

Where:

<memr> - memory from which messages are read and deleted

<usedr> - number of SMS stored into <memr>

<totalr> - max number of SMS that <memr> can contain

<memw> - memory to which writing and sending operations are made

<usedw> - number of SMS stored into <memw>

<totalw> - max number of SMS that <memw> can contain

From this response whether the selected storage has room for new SMSs can be determined. The free positions in the storage X (where X can be r,w,s) are <totalX> -<usedX>.

4.2.2. Writing a New SMS to storage

A new SMS can be written in the selected storage <memw> (in the current SW version only "ME" is supported) and then can be sent to the desired destination.

To write the new SMS, do the following:

1. Send command AT+CMGW="<da>"<cr>

where:

<da> - destination address

2. Wait for prompt ">"
3. Send SMS text (MAX 160 characters)
4. End command with CTRL-Z character (0x1A hexadecimal) or abort command with ESC character (0x1B hexadecimal)



TIP: If command is aborted with ESC character, then the **OK** result code is returned only.



Example

Write a new SMS to storage and the destination address is the number +39338123456789. Assuming the device is set up for text SMS mode as described in the previous paragraphs.

Command:

AT+CMGW="+39338123456789"

Response:

>

Now insert the message text in IRA format (note that the IRA format and ASCII format coincide for the alphabet characters but not for the others).

...the SMS message text will be inserted here....

Conclude text entry with the character CTRL-Z.

In this case, the new SMS was successfully written to the location index 3 of the selected write memory (always "ME" Mobile Equipment memory).

4.2.2.1.

PDU Mode Breakdown

AT+CMGW=22 //Send message, 22 octets
 >07801091346554F307801096224658F11002000209D19766CDFA32ECD9BC
 <ctrl-z>

There are 23 octets in this message except Length of Destination address.

Octet(s)	Description
07	Length of Destination address.
80	Type-of-Address. (80 indicates national format of the phone number).
1091346554F3	The Destination phone number in semi octets (01194356453). The length of the Destination phone number is odd (7), therefore a trailing F has been added as if the phone number were "1091346554F3". Using the unknown format (i.e. the Type-of-Address 81 instead of 91) would yield the phone number octet sequence 7080523185 (0708251358). Note that this has the length 6, which is even.
07	Length of Callback address.
80	Type-of-Address. (80 indicates national format of the phone number).



1096224658F1	The phone number in semi octets (01692264851). The length of the phone number is odd 7, therefore a trailing F has been added, as if the phone number were "46708251358F". Using the unknown format (i.e. the Type-of-Address 81 instead of 91) would yield the phone number octet sequence 7080523185 (0708251358). Note that this has the length 6, which is even.
1002	Teleservice Id
00	Priority. 00 - Normal 01 - Interactive 02 - Urgent 03 - Emergency
02	TP-DCS. Data coding scheme. This message is coded according to the 7-bit default alphabet. Having "00" instead of "02" here, would indicate that the TP-User-Data field of this message should be interpreted as 8-bit rather than 7-bit. Data Coding Scheme: 00: Octet (8-bit) 02: 7-bit – ASCII
09	TP-User-Data-Length. The length would be the number of octets from TP-User-Data.
D19766CDFA32ECD9BC	TP-User-Data. These octets represent the message "hellohello".

4.2.2.1.1. Coding 7-bit data into octets

The message "hellohello" consists of 10 characters called septets when represented by 7 bits each.

These septets need to be transformed into octets for the SMS transfer.

CDMA does not support GSM 7-Bit encoding scheme.

h	e	l	l	o
104	101	108	108	111
1101000	1100101	1101100	1101100	1101111
1101000	1 100101	11 01100	110 1100	1101 111

h	e	l	l	o
104	101	108	108	111
1101000	1100101	1101100	1101100	1101111
1101000	1100101	1101100	1101100	1 101111



The first septet (h) is turned into an octet by adding the leftmost bit of the second septet. This bit is inserted to the right which yields 1101000+1 = 11010001 ("D1"). The leftmost bit of the second character is then consumed, so the second character (septet) needs two bits (yellow) of the third character to make an 8-bit octet.

This process goes on and on yielding the following octets:

1101000 1	100101 11	01100 110	1100 1101
D1	97	66	CD

111 11010	00 110010	1 1101100	1101100 1	101111 00
FA	32	EC	D9	BC

The 9 octets from "hellohello" are D19766CDFA32ECD9BC, where **00** are padding bits.

4.2.3. Sending a New SMS without Storing It

A new SMS can be sent directly to the network without storing it.

1. send command AT+CMGS="<da>"<cr>
where:
<da> - destination address
2. wait for prompt ">"
3. send SMS text (MAX 160 characters)
4. end command with CTRL-Z character (0x1A hexadecimal) or abort command with ESC character (0x1B hexadecimal)
5. wait for response:

Response	Reason	Action
+CMGS: <mr>	Message has been successfully sent. <mr> represents the message reference number.	proceed ahead
OK		
ERROR	some error occurred	Enable the extended error codes report and retry.
OK	command aborted by user	ESC char was issued

Example

Send a new SMS to the destination address number 9194397977.



Assume the device has been set up for text SMS mode as described in the previous paragraphs:

Command:

```
AT+CMGS="9194397977"
```

Response:

>

Now insert the message text in IRA format (note that the IRA format and ASCII format coincide for the alphabet characters but not for the others).

...The SMS message text to be sent will be inserted here....

Conclude text with the character CTRL-Z.

Response:

```
+CMGS: 4
```

OK

In this case, the new SMS was successfully sent to the SC and its network reference number is 4.



NOTE: Do not confuse message reference with message index position. The first number indicates the network reference for identifying the sent message (the requested status report will have the same reference number) while the second number indicates the position where the message has been stored in memory.

4.2.4. Deleting an SMS

An already written/received SMS can be deleted from the selected storage.

To delete the SMS its location index is needed:

1. send command **AT+CMGD=<index>[,<delflag>]<cr>**
where:
<index>: SMS location index
2. Test command shows the valid memory locations and omits the values of <delflag>.
0 Delete the message specified in <index>
3. wait for response:



1. Send command **AT+CMGR=<index><cr>**
where:
 <index>: SMS location index
2. Wait for response in the format:
+CMGR: <stat>,<orig_num>,<callback>,<date> [<tooa>,<tele_id>,<priority>,<enc_type>,<length>] <CR><LF><data>

where:

<stat> - status of the message

"REC UNREAD" - new received message unread

"REC READ" - received message read

"STO UNSENT" - message stored not yet sent

"STO SENT" - message stored already sent

<orig_num> - origination number

<callback> - callback number

<date> - arrival time of the message to the MC

<tooa> - type of number

129 - number in national format

145 - number in international format (contains the "+")

<priority> - Priority

Note: The priority is different with each carrier.

For Sprint and Aeris.Net:

0 – Normal (factory default)

1 - Interactive

2 - Urgent

3 - Emergency

For Verizon:

0 – Normal (factory default)

1 – High

<tele_id> - Teleservice ID

4097: page

4098: SMS message

<enc_type> - Data Coding Scheme

<length> - text length



<data> - Message_data (Indicates the new voice mail count, if <tele_id> is voice mail notification)



NOTE: In both cases if status of the message is “received unread”, status in the storage changes to ”received read”.

Example

Read the SMS that is stored at the position index 4.

Assuming the device has been set up for text SMS mode as described on the previous paragraphs.

Command:

AT+CMGR=4

Response:

**+CMGR: "REC READ","01191775982",,"",20071217190804,,4098,,16,12
TEST MESSAGE**

4.2.6. Listing a group of SMSs

An SMS can be grouped into 5 different categories depending on its status:

REC UNREAD	Received messages still not read
REC READ	Received messages already read
STO UNSENT	Stored messages not yet sent
STO SENT	Stored messages already sent
ALL	All types of messages

It is possible to list all the messages in one group:

1. Send command **AT+CMGL=<stat><cr>**

where:



- <stat> - status group of the message
 - "REC UNREAD" - new message
 - "REC READ" - read message
 - "STO UNSENT" - stored message not yet sent
 - "STO SENT" - stored message already sent
 - "ALL" - all messages

2. Wait for response in the format:

For every message in the group:

+CMGL: <index>,<stat>,<oa/da>,<callback>,<date>
 [,<tooa/toda>,<tele_id>,<priority>,<enc_type>,<length>] <CR><LF><text>

where:

- <index> - message index position on the storage
- <stat> - status of the message
 - "REC UNREAD" - new message
 - "REC READ" - read message
 - "STO UNSENT" - stored message not yet sent
 - "STO SENT" - stored message already sent
- <oa/da> - sender number/destination number
- < tooa/toda > - type of number <oa/da>
 - 145 - international number (contains "+" character)
 - 129 - national number
- <callback> - callback number
- <date> - arrival time of the message to the SC
- <tooa> - type of number
 - 129 - number in national format
 - 145 - number in international format (contains the "+")
- <priority> - Priority
 - Note: The priority is different with carrier.
 - For Sprint and Aeris.Net:
 - 0 – Normal (factory default)
 - 1 - Interactive



- 2 - Urgent
- 3 - Emergency

For Verizon:

- 0 – Normal (factory default)
- 1 - High

<tele_id> - Teleservice ID

4097: page

4098: SMS message

<enc_type> - Data Coding Scheme

<length> - text length

<data> - Message_data (Indicates the new voice mail count, if <tele_id> is voice mail notification)



NOTE: If the status of the message is "received unread", status in the storage changes to "received read".

Example

List all the SMSs "received read" that are stored.

Assume the device has been set up for text SMS mode as described in the previous paragraphs.

Command:

AT+CMGL="REC READ"

Response:

+CMGL: 0,"REC READ",,,,,,"01191775982",20071129013659,129,4098,0,2,13
TEST MESSAGE

+CMGL: 1,"REC READ",,,,,,"01191775982",20071217190804,129,4098,0,2,13
TEST MESSAGE1

+CMGL: 2,"REC READ",,,,,,"01191775982",20071221160610,129,4098,0,2,13
TEST MESSAGE2

+CMGL: 3,"REC READ",,,,,,"01191775982",20071224163607,129,4098,0,2,13
TEST MESSAGE3



OK

4.3. Using General Purpose Input/Output Pins

The CE910 Series provides various General Purpose Input/Output pins. These pins can be configured via AT commands as Inputs, Outputs and some of them as "alternate function".

The "alternate function" is supported by the following pins:

- GPIO1, which can be configured to become the STAT_LED output that reflects the modules current network interaction.
- GPIO5, which can be configured to become an RF Transmission monitor output pin that reflects the RF transmission activation,
- GPIO6, which can be configured to become an alarm output pin that reflects the alarm status

With these pins the application can control external hardware directly using the Telit CE910 Series pins with little or even no hardware added.

4.3.1. GPIO Pin Setup

GPIO pins must be configured to select their direction or alternate function.

4.3.1.1. Setting a GPIO Pin as OUTPUT

When a GPIO is set up as output, the value must be specified that the pin output must take:

1. Send command `AT#GPIO=<pin>,<value>,1<cr>`

where:

<pin> is the GPIO pin number to which the command applies:

- | | |
|-----------|-------------|
| 1 - GPIO1 | 6 - GPIO6 |
| 2 - GPIO2 | 7 - GPIO7 |
| 3 - GPIO3 | 8 - GPIO8 |
| 4 - GPIO4 | 9 - GPIO9 |
| 5 - GPIO5 | 10 - GPIO10 |

<value> is the GPIO pin value that the pin will assume:



0 – LOW

1 – HIGH

2. Wait for response OK



WARNING: The #GPIO setting is not saved and will be lost on power off or reset and the GPIOs will be configured as INPUT by default. So at start-up repeat pin initialization commands.

Note that GPIO6 is handled differently from the above. The setting for GPIO6 is maintained even after a shutdown or reset to permit the alarm feature to always work.

Example

Set GPIO3 pin as Output with LOW status:

Command:

AT#GPIO=3,0,1<cr>

Response:

OK

In this case, the GPIO3 pin was successfully put in output direction and its status has been set to LOW.

4.3.1.2. Setting a GPIO Pin as INPUT

When a GPIO is set as input, a dummy value for the pin state must be specified:

1. Send command AT#GPIO=<pin>,<dummy_value>,0<cr> where:

<pin> is the GPIO pin number to which the command applies:

- | | |
|-----------|-------------|
| 1 - GPIO1 | 6 - GPIO6 |
| 2 - GPIO2 | 7 - GPIO7 |
| 3 - GPIO3 | 8 - GPIO8 |
| 4 - GPIO4 | 9 - GPIO9 |
| 5 - GPIO5 | 10 - GPIO10 |

<value> is a dummy value which can be either:



5 - GPIO5

10 - GPIO10

3. Wait for response in the format:
#GPIO: <dir>,<stat>
OK

where:

<dir> - GPIO<pin> direction setting

<stat> - status of the pin

0 - LOW

1 - HIGH



NOTE: In case the GPIO pin direction is set to ALTERNATE FUNCTION (2), then the reported <stat> has no meaning and shall not be regarded as valid and must be treated as a dummy value.



TIP: The query report depends on the pin direction: the actual read pin status if the direction is input; and the previously set pin state if the direction is output. In any case, you can know if the pin at the query moment is high or low and the pin direction.

Example 1

Query the GPIO3 pin for its status:

Command:

AT#GPIO=3,2<cr>

Response:

#GPIO: 0,1

OK

In this case, the GPIO3 pin was set to input direction and its status has been measured to be HIGH.

Example 2

Query the GPIO4 pin for its status:

Command:

AT#GPIO=4,2<cr>



Example

Set the GPIO3 pin HIGH:

Command:

AT#GPIO=3,1,1<cr>

Response:

OK

In this case, the GPIO3 pin was set to output direction and its status has been set to HIGH.

4.3.2.3. Using the GPIO1 Pin as STAT_LED (Alternate Function)

When the GPIO1 is set as STAT_LED function, the pin shows information on the network service availability and call status.

1. Send command AT#GPIO=1,0,2<cr>
2. Wait for response OK

To save the STAT_LED setting for the next power cycle use the &W command.

4.3.2.4. Using the GPIO5 Pin as RFTXMON OUTPUT (Alternate Function)

When the GPIO5 pin is set as RFTXMON output function, the pin reports the Transmitter active status. To set the pin in alternate function a dummy value must be specified for the pin status:

1. Send command AT#GPIO=5,<dummy_value>,2<cr>

where:

<value> is a dummy value can be either:

- 0 – dummy value
- 1 – dummy value

2. wait for response OK



TIP: Remember that the alternate function permanently places the GPIO5 pin in OUTPUT direction.





NOTE: The #GPIO5 direction setting is saved and will be kept after a power off or reset. This applies for the alternate mode setting only.

Example

Set GPIO5 pin as RFTXMON OUTPUT:

Command:

AT#GPIO=5,0,2<cr>

Response:

OK

In this case, the GPIO5 pin was successfully set to RFTXMON function, and the direction is OUTPUT.

4.3.2.5. **Using GPIO6 Pin as ALARM OUTPUT (Alternate Function)**

When GPIO6 pin is set as alarm output function, the pin reports the alarm state according to the +CALA settings.

To set the pin to an alternate function a dummy value must be specified for the pin state:

1. Send command AT#GPIO=6,<dummy_value>,2<cr>

where:

<value> is a dummy value can be either:

0 – dummy value

1 – dummy value

2. wait for response OK



TIP: Remember that the alternate function places the GPIO6 pin permanently in OUTPUT direction and since the GPIO6 pin value is controlled by the internal software, the corresponding function (+CALA) must be properly setup.



NOTE: The #GPIO6 direction setting is saved and will be kept after a power off or reset.



Example

Set GPIO6 pin as ALARM OUTPUT:

command:

AT#GPIO=6,0,2<cr>

response:

OK

In this case, the GPIO6 pin was successfully put in alarm output direction.

4.4. Clock/Alarm Function

The Telit CE910 Series provides a Real Time Clock and Alarm embedded in the product. It is therefore possible to set-up the proper time, check the actual time, and set-up an alarm time at which the alarm will be triggered with various behavior depending on the +CALA setting.

The only requirement is that the power input to the Telit CE910 Series has to be guaranteed without interruptions. Since the CE910 Series has no backup battery, it will lose the time setting if its power supply is interrupted.

On Alarm trigger the Telit CE910 Series can:

- Automatically Wake-up fully operative from shutdown as a normal startup.
- Automatically Wake-up from shutdown in a special status, namely "alarm status", where it will not look for or try to register on any network as if it was off, except for the fact that it proceeds with the alarm action and it can receive commands to return completely operative or shutdown immediately.
- If already ON at alarm trigger time, simply proceed with the Alarm action

Once Woken-up the Telit CE910 Series proceeds with the chosen action that can be any of the following options:

- Issue an unsolicited code "+CALA: <user_text>" on the serial port until a 90s timeout expires or a special Wake-up command is received.
- Play an Alarm tone until a 90s timeout expires or a special Wake-up command is received.
- Rise pin GPIO6 until a 90s timeout expires or a special Wake-up command is received.



The device keeps on sending the unsolicited code every 3s until a #WAKE or #SHDN command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down (default).

- 3 - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command #SRP)

The device keeps on playing the alarm tone until a #WAKE or #SHDN command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.

- 4 - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its <direction> has been set to alarm output, and keeps it in this state until a #WAKE or #SHDN command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.

- 5 - The MODULE will make both the actions as for <type>=2 and <type>=3.

- 6 - The MODULE will make both the actions as for <type>=2 and <type>=4.

- 7 - The MODULE will make both the actions as for <type>=3 and <type>=4.

<text> - unsolicited alarm code text string. It has a meaning only if <type> equals 2, 5 or 6.

- 2. wait for response OK



TIP: Remember that the string time has to be encapsulated in (double) quotation marks. Furthermore the Alarm time will not be computed for a different time zone, therefore the alarm time will always refer to the same time zone as the clock setting regardless of the time zone set in the +CALA command.



NOTE: If the GPIO6 pin is used as ALARM OUTPUT, then it must be set to "alternate function" otherwise the pin will not respond to the alarm settings. In case the alarm type equals 1, 3 or 7 then a dummy empty text parameter must be used "".



NOTE: If the unsolicited codes +CALA: <text> are used, then the port speed rate must be set and store in the active profile (see command &W) in order to make the Telit CE910 Series start up with the desired port speed. Otherwise at the alarm wakeup the module will start with the default port speed.



4.4.2.2. Stopping the Alarm Activity

When the alarm time expires, the module starts the alarm activity according to the selected alarm behavior.

The alarm activity can be stopped three ways:

- Exit from alarm and shutdown the device
- Exit from alarm and enter the normal operational status
- Leave the alarm to go on until the 90s timeout is reached

4.4.2.2.1. Exit From the Alarm Status and Shut Down

1. Send command `AT#SHDN<cr>`
2. wait for response OK

At the OK result code, the device will end any alarm activity and perform a shutdown.

4.4.2.2.2. Exit From the Alarm Status and Enter the Normal Operating Mode

1. Send command `AT#WAKE=0<cr>`
2. wait for response OK

At the OK result code, the device stops any alarm activity and enters normal operating mode.

If the device is already in normal operating mode (alarm was triggered when the module was already ON), then this command will terminate the alarm activity only.

4.4.2.3. Querying the Alarm Status

When the device wakes up from an alarm time trigger, the module starts the alarm activity but no network activity, permitting some operations to be done by the controlling application without registering the mobile in the network.

To check it if the module is in the "alarm status" and therefore no network activity is performed or the device is in the normal operating status:

1. Send command `AT#WAKE?<cr>`



2. wait for response in the format:
 +WAKE: <status>
 OK

where:

<status> is the operating mode:

- 0 - normal operating mode
- 1 - alarm mode



NOTE: If the device is in alarm mode then no network activity takes place, therefore the only commands that are accepted are the #WAKE and the #SHDN.

When the device is in alarm mode, no operation is allowed towards the network, therefore it is not possible to receive or send calls, SMS or any other CDMA services.

4.4.2.3.1. Alarm Operation Example

Example

A battery powered meteorological unit that measures the conditions every hour and therefore needs to send a new SMS to the central server every hour indicating the weather status just measured.

The application shall consume the absolute minimum power to achieve the job since the device is placed in a remote location where its battery must last as long as possible. It should shut down completely and wake up every hour just for the time needed to measure and send the weather data before shutting down again.

1. Set up the time in the internal clock (at first time only)

Command:

AT+CCLK="02/11/07,12:24:30+01"<cr>

Response:

OK

2. Set up the next alarm in order to raise the GPIO6 pin to power up the controlling application as well.

Command:

AT+CALA="02/11/07,13:24:30+01",0,6,"TIME TO MEASURE & SMS...!"<cr>



AT+CALA="02/11/07,14:24:47+01",0,6,"TIME TO MEASURE & SMS...!"<cr>

Response:

OK

11. Shut down the CE910 Series and consequently the controlling application.

Command:

AT#SHDN<cr>

Response:

OK

12. Repeat steps from step 4 to step 11 as a cycle.

4.5. Multi-Socket Data Session

4.5.1. Connecting to an Echo server using a TCP connection

Ensure that the Correct NAI Profile is selected and correct Mobile IP setting is selected

4.5.1.1. VERIZON

NAI Profile 0 is selected and active

Select NAI Profile 0

- 1 Send command AT\$QCMIPP?
- 2 Wait for response OK
- 3 Verify that \$QCMIPP: 0 was returned
- 4 If not then send command AT\$QCMIPP=0
- 5 Wait for response OK

Ensure that NAI Profile 1 is enabled

1. Send command AT\$QCMPEP?
2. Wait for response OK
3. Verify that \$QCMPEP: 1 was returned
4. If not then send command AT\$QCMPEP=1
5. Wait for response OK

Enable Mobile IP with SIP fallback



1. Send command AT\$QCMIP?
2. Wait for response OK
3. Verify that \$QCMIP: 1 was returned
(Note: Verizon is 1 and Sprint is 2)
4. IF NOT send command AT\$QCMIP=1
5. Wait for response OK

4.5.1.2. **SPRINT & AERIS**

NAI Profile 1 is selected and active

Select NAI Profile 1

- 1 Send command AT\$QCMIPP?
- 2 Wait for response OK
- 3 Verify that \$QCMIPP: 1 was returned
- 4 If not then send command AT\$QCMIPP=1
- 5 Wait for response OK

Ensure that NAI Profile 1 is enabled

6. Send command AT\$QCMPEP?
7. Wait for response OK
8. Verify that \$QCMPEP: 1 was returned
9. If not then send command AT\$QCMPEP=1
10. Wait for response OK

Enable Mobile IP only

1. Send command AT\$QCMIP?
2. Wait for response OK
3. Verify that \$QCMIP: 2 was returned
4. IF NOT send command AT\$QCMIP=2
5. Wait for response OK

4.5.1.3. **Turn on Data Release Notification Message (#DREL)**

1. Send command AT#NOTI=11,1



2. Wait for response OK

4.5.1.4. Configure the Socket Parameters as Needed

1. Send command `AT#SCFG=<connId>,<cid>,<pktSz>,<maxTo>,<connTo>,<txTo>`
Where:
<connId> is the socket connection identifier: 1...6
<cid> is the PDP context identifier
1 – specifies a particular PDP context
<pktSz> is the packet size to be used by TCP/UDP/IP stack for data sending
0 – automatically chosen by the device
1..1500 – packet size in bytes
<maxTo> is the exchange timeout (or socket inactivity timeout); if there is no data exchange within this timeout period the connection is closed.
0 – no timeout
n – timeout in seconds (1 to 65535, default is 90)
<connTo> is the connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised.
n – timeout value in hundreds of milliseconds (10 to 1200, default is 600)
<txTo> is the data sending timeout; after this period data is sent even if they're less than the max packet size
0 – no timeout
n – timeout value in hundreds of milliseconds (1 to 255, default is 50)
2. Wait for response OK

4.5.1.5. Verify that no sockets have a current active session

1. Send command `AT#SS`
2. Wait for response OK
3. Check to make sure that all the second parameter values are 0

Example:

`AT#SS`

`#SS: 1,0`

`#SS: 2,0`

`#SS: 3,0`

`#SS: 4,0`



3. A list of the sockets should be displayed and socket one should have information listed.

Example

AT#SS

#SS: 1,3,XXX.XXX.XXX.XXX,40509,XXX.XXX.XXX.XXX,10510

#SS: 2,0

#SS: 3,0

#SS: 4,0

#SS: 5,0

#SS: 6,0

OK

4.5.1.9. Restore socket session

1. Send command AT#SO=1
2. Wait for response CONNECT
3. Once the session is restored the data that was present do to the SRING: 1 will be visible and now data can continue to be sent to the echo server.
4. Escape the session by using “+++”

4.5.1.10. End socket session

1. Send command AT#SH=1
2. Wait for response OK
3. Verify session has been shut down by sending command AT#SS. The list of sockets should not contain any information.

4.5.1.11. Deactivate context

1. Send command AT#SGACT=1,0



2. Wait for response OK
3. A #DREL notification should be displayed confirming the data session has been released.

4.5.2. Sending and Receiving data to/from an Echo Server while in Command Mode

4.5.2.1. Turn on Data Release Notification Message (#DREL)

1. Send command AT#NOTI=11,1
2. Wait for response OK

4.5.2.2. Turn off the display of the Escape Character (“+++”)

1. Send command AT#SKIPESC=1
2. Wait for response OK

4.5.2.3. Activate context

1. Send command AT#SGACT=1,1
2. Wait for response OK
3. IP address should be displayed as #SGACT: XXX.XXX.XXX.XXX

4.5.2.4. Connect socket to echo server (XXX.XXX.XXX.XXX) using UDP

1. Send command AT#SD=1,0,XXXXXX,“XXX.XXX.XXX.XXX”
2. Wait for response CONNECT
3. Now data can be entered to be sent to the echo server or go to command mode using “+++”



NOTE: Typed data will not be displayed until it comes back from the server.

Example:

```

AT#SD=1,1,XXXXXX,“XXX.XXX.XXX.XXX” <--- UDP connection to an Echo
                                         server

CONNECT                               <--- Connected to server

                                         <--- Use “+++” to enter command mode.

OK                                     <--- Successfully suspended socket connection using
                                         “+++”, now in command mode
    
```



3. Wait for “Data” from buffer to be displayed
4. Wait for response OK

Example:

AT#SRECV=1,20 <--- "#SI" informed us of 20 new bytes in buffer

#SRECV: 1,20

TEST IN COMMAND MODE <--- Data displayed

OK

4.5.2.8. **Close socket connection**

1. Send command AT#SH=1
2. Wait for response OK

4.5.2.9. **Deactivate context**

1. Send command AT#SGACT=1,0
2. Wait for response OK
3. A #DREL notification should be displayed confirming the data session has been released.

4.6. FTP Operations

A set of AT Commands is available to support FTP activities. The first command is called #FTPTO (FTP Time-Out) which defines the time-out for FTP operations. The module already has a factory default time set to 10 seconds.

To modify the setting, the syntax is:

AT#FTPTO=[<tout>]

Where:

<tout> - time-out is 100 ms units

100..5000 – hundreds of ms (factory default is 100)



NOTE: The parameter is not saved in NVM.

Example

Set the timeout to 100 sec.



Command:

```
AT#FTPTO=1000<cr>
```

Response:

```
OK
```

The timeout has been set to 100 sec.

4.6.1. Opening and Closing an FTP Connection

To open the FTP connection, use the commands below:

```
AT#FTPOPEN=<server:port>,<username>,<password>,<mode>
```

where:

<server:port> - string type, address and port of the FTP server (factory default port21)

<username> - string type, authentication user identification string for FTP

<password> - string type, authentication password for FTP.

<mode> - mode

0 – active mode (default)

1 – passive mode



NOTE: In FTP Open case, the solution dependency limits the maximum time out to 1200 (120 seconds). The FTPTO value that exceeds 1200 is considered as 1200.

To close the FTP connection, use the following command:

```
AT#FTPCLOSE
```

4.6.2. Setting the FTP Transfer Type

To configure the file transfer type use the command below. The command must be provided during an FTP connection.

```
AT#FTPTYPE=[<type>]
```

Parameter:

<type> - file transfer type:

0 – binary

1 – ASCII





NOTE: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.

4.6.3. FTP File transfer to the server

To send a file to the FTP server during an FTP connection, use the command below:

```
AT#FTPPUT=<filename>
```

where:

<filename> - string type, name under which the file is saved on the server (must have the right extension: ex. If the file you are sending is .txt then the <filename> can be test.txt)

The command opens a data connection and starts sending the file to the FTP server to target file <filename>.

If the data connection succeeds, a CONNECT indication is sent, otherwise a NO CARRIER indication is sent.



NOTE: Use the escape sequence +++ to close the data connection.



NOTE: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.

Example

Send a file to the FTP server.

Perform the following steps:

1. Activate the Data Session.

The IP address of the module is provided as a response.

Command:

```
AT#SGACT=1,1<cr>
```

Response:

```
#SGACT: 174.156.82.131
```

```
OK
```



2. Open the FTP connection.

Command:

AT#FTPTO=1000<cr> (FTP settings of time-out)

Response:

OK

Command:

AT#FTPOPEN="199.188.25.77","user","pass",0<cr>

Response:

OK



NOTE: In this case the FTP server port is not specified so the default value 21 is used.

Command:

AT#FTPTYPE=0<cr> (FTP settings of file type)

Response:

OK

3. Start the file transfer to the FTP server.

In this example the target file is named "file.txt".

Command:

AT#FTPPUT="file.txt"<cr> (sends the file)

Response:

CONNECT

4. Close the data session.

Command:

+++ (escape sequence +++ to close the data connection)

Response:

NO CARRIER

5. Close the FTP connection.

Command:



AT#FTPCLOSE<cr> <closing FTP connection>

Response:

OK

6. Deactivate the Data Session if required.

Command:

AT#SGACT=1,0<cr>

Response:

OK

4.6.4. FTP File download from the server

To open a data connection and start getting a file <filename> from the FTP server during an FTP connection use the command below.

Command:

AT#FTPGET=<filename>

Where:

<filename> - string type, file name

The command opens a data connection and starts downloading the <filename> file from the FTP server.

If the data connection succeeds, a CONNECT indication is sent, otherwise a NO CARRIER indication is sent. The file is received on the serial port.



NOTE: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.

Example

Download a file from the FTP server.

Perform the following steps:

1. Activate the Data Session.

The IP of the module is provided as a response.

Command:



AT#SGACT=1,1<cr>

Response:

#SGACT: 174.156.82.131

OK

2. Open the FTP connection.

Command:

AT#FTPTO=1000<cr> (FTP settings of time-out)

Response:

OK

Command:

AT#FTPOPEN="199.188.25.77","user","pass",0<cr>

Response:

OK



NOTE: In this case the FTP server port is not specified so the default value 21 is used.

Command:

AT#FTPTYPE=0<cr> (FTP settings of file type)

Response:

OK

3. Change working directory if required.

Command:

AT#FTPCWD="incoming"

Response:

OK



NOTE: In order to get the list of files on the working directory from the server the AT Command AT#FTPLIST should be used.

4. Start the file transfer from the FTP server:



5. A “Network Connection Wizard” will appear.
6. Click “Next”
7. Select “Connect to the Internet” than click “Next”
8. Select “Set up my connection manually” than click “Next”
9. Select “Connect using a dial-up modem” than click “Next”
10. Enter “Telit CE910” in the “ISP Name” field and click “Next”
11. Enter “#777” in the “Phone number” field and click “Next”
12. Select your “Connection Availability” and click “Next”
13. Leave all “Account information” fields blank and click “Next”
14. Now that the “New Connection Wizard” has been completed, select to add a shortcut to the desktop if you wish. Click “Finish” to start using this connection
15. Once the wizard is finished a new window will appear titled “Connect Telit CE910”
16. Ensure that “#777” is in the Dial box, if so click “Dial”
17. If everything is successful an internet connection should be established.

4.8. Email

4.8.1. General Information

The CE910 Series only supports SMTP email service and a commercial grade SMTP provider is recommended.

During testing with free SMTP providers not all the accounts were able to send emails even though they might be with the same provider. This could be due to the fact that spammers prefer to use free SMTP email accounts, thus the SMTP servers may block certain messages.

Hotmail and Gmail accounts will not work on the CE910 Series because they use HTTP and SSL respectively.

4.8.2. Sending an Email

To send an e-mail, do the following.



NOTE: The steps from step 1 to step 8 describe the SMTP parameter settings.

Enter SMTP Server:



1. Send command `AT#ESMTP="smtp.mydomain.com"<cr>`
2. Wait for response OK

Enter Sender Email Address:

3. Send command `AT#EADDR=me@email.box.com<cr>`
4. Wait for response OK

Enter Email Authentication User Name:

5. Send command `AT#EUSER="myE-Name"<cr>`
6. Wait for response OK

Enter Email Authentication Password:

7. Send command `AT#EPASSW="myPassword"<cr>`
8. Wait for response OK

Save Email Parameters:

9. Send command `AT#ESAV<cr>`
10. Wait for response OK

Activate Email Data Connection:

11. Send command `AT#EMAILACT=1<cr>`
12. Wait for response OK
13. An IP address will not be displayed after a data connection is made.

Compose and Send an Email:

14. Send command `AT#EMAILD="user@domain.com","email subject",0<cr>`
15. Wait for ">"
16. Compose body of email
17. Press "Ctrl+Z" to send email
18. Wait for response OK meaning email was sent successfully.
19. If an ERROR is returned send command `AT#EMAILMSG<cr>`. This will return information on the failed email attempt



5. MEID Format and Function

Telit provides Mobile Equipment Identifier (MEID) as part of the Global Hexadecimal Assignment Guidelines and Procedures

The 56-bit identifier structure is compatible between 3GPP IMEI and 3GPP2 MEID. MEIDs

Each MS is assigned a unique MEID. When used as SF_EUIMID, it is uniquely assigned to an R-UIM.

The MEID identifies the manufacturer of the MS. When SF_EUIMID is assigned to an R-UIM, it identifies R-UIM manufacturer.

MEID Structure and Format:

The MEID digit range is hexadecimal and syntactically consistent with the IMEI structure. However, the MEID structure does not utilize all of the fields in the exact semantic manner as in IMEI. The MEID numbering space is allocated in a manner that does not impact the decimally encoded IMEI. The MEID structure is also consistent with the MEID allocation scheme which uses 24-bit Serial Numbers.

The MEID structure:

Manufacturer Code							Serial Number						CD
R	R	X	X	X	X	X	Z	Z	Z	Z	Z	Z	C

In the case of MEIDs for terminals conforming exclusively to 3GPP2 technology, all of these fields are defined as hexadecimal values with the following valid range:

RR - valid range A0 ... FF – globally administered

XXXXXX - valid range 000000... FFFFFFFF

ZZZZZZ - valid range 000000.... FFFFFFFF

C - valid range 0... F – not transmitted over the air

The MEID does not specify the frequency band, air-interface technology or supported service associated with the MS

5.1. MEID Conversion, HEX to DEC

To convert the MEID from HEX to DEC manually you will need to break the MEID down into two parts. Break the MEID into ‘first 8 digits’ (part 1) and ‘last 6 digits’ (part 2). Convert



